

InterTradeIreland

Export Participation and Performance of Firms on the Island of Ireland



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Abbreviations

ASI	Annual Survey of Industries
BEC	Broad Economic Classification
BESES	Broad Economy Sales and Export Statistics
CIP	Census of Industrial Production
CSO	Central Statistics Office
DfE	Department for the Economy
ESRI	Economic and Social Research Institute
EU	European Union
FDI	Foreign Direct Investment
GB	Great Britain
ITI	InterTradeIreland
NI	Northern Ireland
NISRA	Northern Ireland Statistics and Research Agency
NTB	Non-Tariff Barrier
OLS	Ordinary Least Squares
REU	Rest of European Union (i.e. excluding UK for Irish trade statistics or excluding Ireland for NI/UK statistics)
ROI	Republic of Ireland
ROW	Rest of World
UK	United Kingdom
UN	United Nations
WTO	World Trade Organisation

Executive Summary

This report examines firm participation in exporting, export performance and determinants of export destinations for firms across the island of Ireland. Using detailed aggregate and firm-level data from both Northern Ireland and Ireland, we aim to give as comprehensive a picture as possible about cross-border trade and the international activities of firms in both economies.

The key findings from the report can be grouped under three broad themes reflecting the roles played by exporters, small firms and the cross-border aspect of trade:

1. Exporting firms have systematically better outcomes across a range of key indicators, including employment and productivity. Expanding participation in exporting can therefore make an important contribution to the performance of the economy. This is supported by the following evidence:
   a. In a comparison of the characteristics of exporters and non-exporters we find exporters have consistently higher productivity, turnover and employment.
   b. Exporting activity in neighbouring markets (UK for Irish firms and Ireland for Northern Irish firms) is associated with higher performance relative to firms with domestic sales, with further performance premia for firms that are exporting to the broader international market.
   c. Firms in Ireland tend to be more export-orientated than firms in Northern Ireland, where local sales play a larger role.
2. Micro and small firms play a significant role in cross-border trade and support for their expanded export participation could help underpin economic growth. Evidence for this can be seen from the following patterns:
   a. There is a steadily increasing probability of being an exporter as firm size increases. This is particularly the case for goods firms, with services firms tending to be less export-intensive.
   b. The performance gap between exporters and non-exporters, combined with evidence that entry barriers are lower for beginning to export in the neighbouring market, suggest that cross-border trade can be an important stepping-stone to broader export participation.
3. Cross-border trade has features closer to local trade than to international export activity, suggesting many firms regard the island as their local market and functional economy. A number of patterns in the data support this finding:
   a. Almost all exporting firms in Northern Ireland include Ireland as one of their destination markets and over 80% of the smallest firm size group that export from Northern Ireland have all of their export sales in Ireland. In contrast, 6% of Northern Irish firms sell into the British market only, without having any export sales to Ireland or elsewhere.
   b. The patterns of exporting found in these results are consistent with previous InterTradeIreland work which demonstrated a high degree of cross-border integration through supply chains[1] and with work from NISRA and the Department for the Economy (DfE) which shows a relatively high frequency of delivery and low value per delivery for NI traders across the border.[2]
   c. Empirical modelling of the characteristics of destination markets for Northern Irish and Irish export flows shows there is a very strong neighbouring market effect on the numbers of firms trading and on overall export sales. This shows that the neighbouring market is considerably more accessible than entering exporting more generally.
   d. Looking at how firm patterns of exporting are determined across broader export markets, membership of the EU facilitates export participation for firms from both Ireland and Northern Ireland but has a positive impact on average export sales only for Irish firms. Increased participation by small firms may come about with some firms selling quite small amounts.
   e. Overall, the work suggests that the impacts of any changes in the cost of trading post-Brexit are liable to be felt most particularly by very small firms trading across the border. Firms large enough to have expanded broadly into the EU market already are more likely to have the resources and scale to continue exporting, either in their current markets or by diversifying into alternative locations.

[1]InterTradeIreland (2018) available here: https://intertradeireland.com/insights/publications/cross-border-trade-supply-chain-linkages/
[2]NISRA and DfE (2018) available here: https://www.nisra.gov.uk/sites/nisra.gov.uk/files/publications/SCS_JUNE2018_FINAL.pdf

1. Introduction

As the performance of exporting firms is a key driver of overall economic growth, understanding how enterprises become exporters and what determines their export performance can provide an evidence base that is necessary in order to provide a supportive policy environment for exporters. Previous work in this regard has tended to focus on goods firm exports and a considerable information gap exists on the extent to which services firms export and if the determinants of their export participation and performance differs from that of goods firms. This report examines firm participation in exporting, export performance and determinants of export destinations for firms across the island of Ireland. Using detailed aggregate and firm-level data from both Northern Ireland and Ireland, we aim to give as comprehensive a picture as possible about the international activities of both goods and services firms exporting in both economies.

We consider a range of research questions to examine the overall patterns of trade, both for Northern Irish and Irish firms, drawing out differences between goods and services firms and across firm size groups and nationality of ownership[3]. We examine the determinants of firm export participation and export sales and test for systematic differences between exporters and non-exporters. We then estimate a gravity model of trade flows for Northern Irish goods and services firms and for domestically and foreign-owned firms in Ireland to examine determinants of the attractiveness of destination markets. This includes a test of the importance of EU membership as a factor in explaining the volume and destination of Northern Irish and Irish trade.

The following research questions on export participation and barriers to exporting are the main focus of the report:

- What are the factors influencing whether or not firms export, how much and where they export to?
- What is the influence on exporting of firm characteristics such as size, ownership, broad sector (goods versus services) and productivity?
- How concentrated is this trade and how does it differ by firm type and in goods compared to services?
- Is there any evidence that this structure has changed over time?
- Is there evidence that enterprises use the neighbouring markets on the island as a springboard to trade more extensively?
- How are firms exposed to possible changes in the trade relationship post-Brexit in terms of tariffs or increased costs of trading?

The report is organised as follows: Section 2 describes the data available on aggregate output and trade flows for Northern Ireland and Ireland, including the shares going to the most important broad destination groups. Section 3 uses firm-level data to measure export participation rates, focusing in particular on differences between goods and services firms and in differences across firm size groups. Section 4 tests for differences in firm performance indicators between exporters and non-exporters. Section 5 uses a simple regression framework to explore the determinants of export participation and sales at the firm level. Section 6 presents the results of the gravity analysis of the characteristics of the markets being exported to. Section 7 summarises and concludes.

[3] The analysis by ownership is restricted to firms in Ireland as data on this characteristic is not available for the Northern Ireland firms.

2. Aggregate Trade Flows

This section looks at the overall patterns of sales and export activity in both Northern Ireland and Ireland, showing the relative contributions of goods and services in the totals, along with the broad geographic distribution of external sales and exports.

In the case of Ireland, we also look at how much of the export activity originates with multinational firms compared to domestically-owned firms. The dual nature of the Irish economy, and the export sector in particular, is important to take into account in international comparisons as patterns of contributions from foreign-owned relative to Irish-owned firms could have different policy implications. Although foreign direct investment (FDI) also occurs in Northern Ireland[4], the evidence available does not suggest that the Irish pattern of extremely high concentration of exports in a small number of multinationals is a feature of the Northern Irish economy.

2.1 OVERALL SALES PATTERNS

In the following tables and figures, we document the general patterns of firm sales for Northern Ireland and Ireland by broad sector and geographical area. By broad sector, we distinguish between firms producing physical goods and those supplying services. Table 1 details the distribution of Northern Irish firm sales or turnover, with Figure 1 displaying how these sales are allocated across broad geographic markets (local sales within Northern Ireland, Great Britain, Ireland, the rest of the EU[5] and the rest of the world). Figure 2 zooms in more closely on the distribution of sales occurring outside of Northern Ireland. The corresponding broad allocations of sales for firms located in Ireland are shown in Table 2 and Figures 3 and 4 (for all sales and exports respectively).

The first striking difference in terms of the patterns is the share of overall sales that are accounted for by local sales, with 65% of total sales by Northern Irish firms being sold in Northern Ireland compared to 46% of sales by firms in Ireland being sold domestically. Parallel to this, exports account for the other 54% of turnover by firms in Ireland (including both domestically-owned firms and multinationals). The export orientation of Northern Irish-based firms is lower, with 35% of turnover being sold outside Northern Ireland. Of these external sales, the majority (20%) go to Britain with the remaining 15% exported to international markets.

TABLE 1: NORTHERN IRELAND SALES PATTERNS, 2016

	Broad destination sales (£m)			Share of total		
	Total Sales	Goods	Services	Total Sales	Goods	Services
Turnover	68,881	49,405	19,476			
NI Sales	44,747	30,589	14,158	65%	62%	73%
GB Sales	14,008	10,519	3,489	20%	21%	18%
Ireland Sales	3,401	2,697	704	5%	5%	4%
REU Sales	2,334	1,909	425	3%	4%	2%
ROW Sales	4,391	3,691	700	6%	7%	4%
External	24,134	18,816	5,318	35%	38%	27%
Exports	10,126	8,297	1,829	15%	17%	9%

Source: BESES Statistics (NISRA 2018).

TABLE 2: IRELAND SALES PATTERNS, 2015

	Broad destination sales (€m)			Share of total		
	Total Sales	Goods	Services	Total Sales	Goods	Services
Turnover	431,084	233,804	197,280			
Ireland Sales	197,072	121,397	75,675	46%	52%	38%
NI Sales	n.a	1,744	n.a	N/A	1%	N/A
GB Sales	37,401	13,810	23,591	9%	6%	12%
REU Sales	86,365	44290	42,075	20%	19%	21%
ROW Sales	108,501	52,563	55938	25%	22%	28%
Exports	234,012	112,407	121,605	54%	48%	62%

Sources: CSO Balance of Payments and External Trade statistics for trade patterns, CIP and ASI data for total turnover of manufacturing and services firms (CSO Statbank, May 2018). Note that Northern Ireland can be identified separately as a destination for goods exports but this is not available in the services exports data.

Key Finding

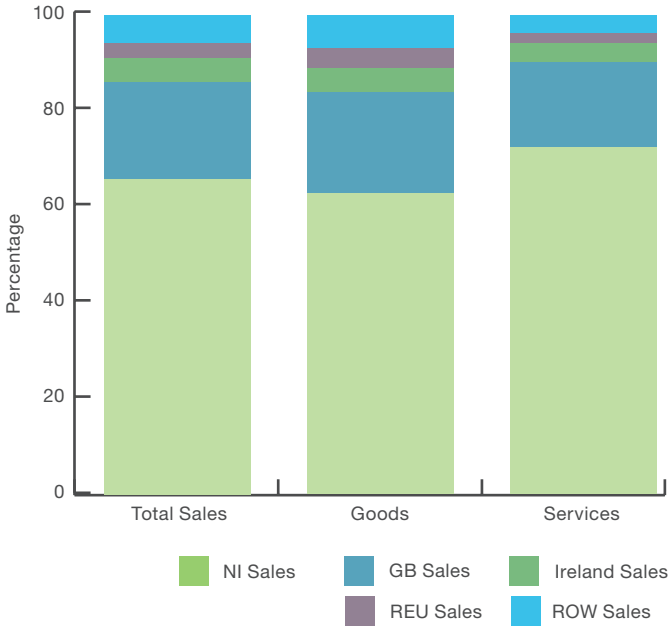
Local sales make up a larger share of total turnover (65%) for Northern Irish-based firms than for Irish firms (46%).

[4] Over 2,000 jobs were created by multinationals in 2015-16 (Department for International Trade, 2016) and US-owned firms are particularly active in NI (Byrne, 2017).
[5] We use the "Rest of the EU" throughout the report to refer to EU member states excluding Ireland and the UK.

2.2 GEOGRAPHIC DISTRIBUTION OF SALES

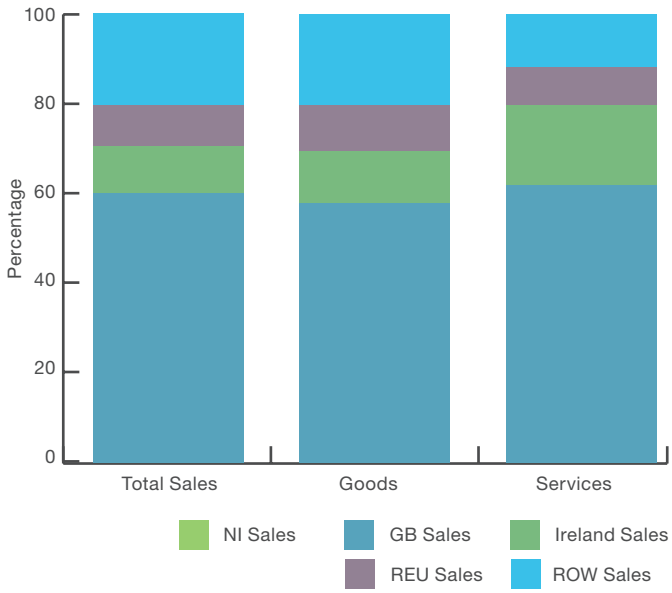
The pattern of export destinations also shows some differences in terms of geographic orientation, with approximately one-third of Northern Irish exports going to Ireland (5% of total sales). A further one-fifth of exports (3% of total sales) from Northern Ireland go to the rest of the EU (i.e. excluding Ireland), with the remainder sold to the rest of the world.

FIGURE 1: NORTHERN IRISH SALES PATTERNS: SHARE OF TOTAL SALES (2016)



Source: BESES Statistics (NISRA 2018).

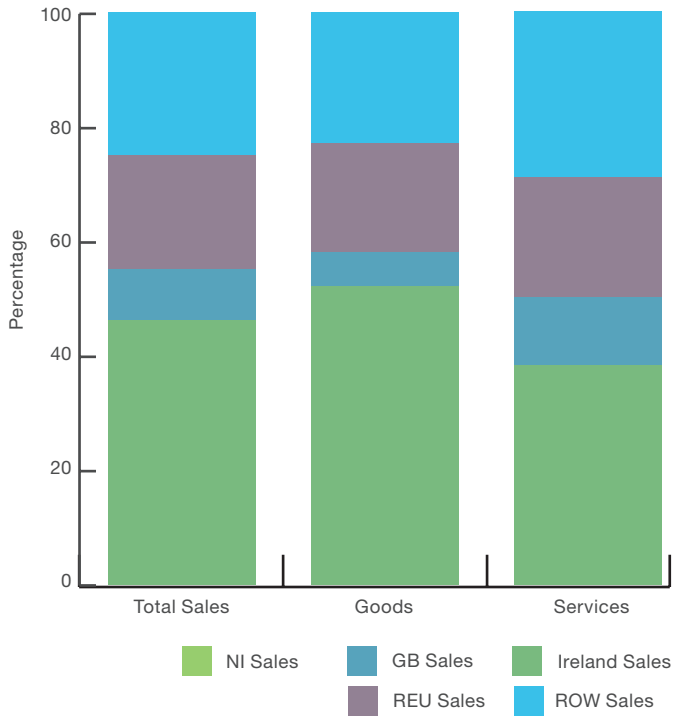
FIGURE 2: NORTHERN IRISH EXTERNAL SALES PATTERNS: SHARE OF TOTAL EXTERNAL SALES



Source: BESES Statistics (NISRA 2018)

The rest of the EU plays a bigger role as a market for exports from Ireland, accounting for 37% of exports (or 20% of total sales). The UK market accounts for 9% of total Irish turnover. Where the exports can be decomposed by the contributions of Northern Ireland compared to Britain for goods output – 7% of which is sold to the UK market – we find that about 1% of the sales go to Northern Ireland, with the remaining 6% of goods sales going to Britain. Given that Northern Ireland accounts for approximately 3% of the UK population, having one-seventh of export sales of Irish firms occurring there demonstrates that this is a very significant market for many firms. The importance of the Northern Irish market for Irish goods firms was highlighted by InterTradeIreland (2018), with approximately one-quarter of exporting firms in Ireland found to export only to Northern Ireland.

FIGURE 3: IRISH SALES PATTERNS: SHARE OF TOTAL SALES (2015)

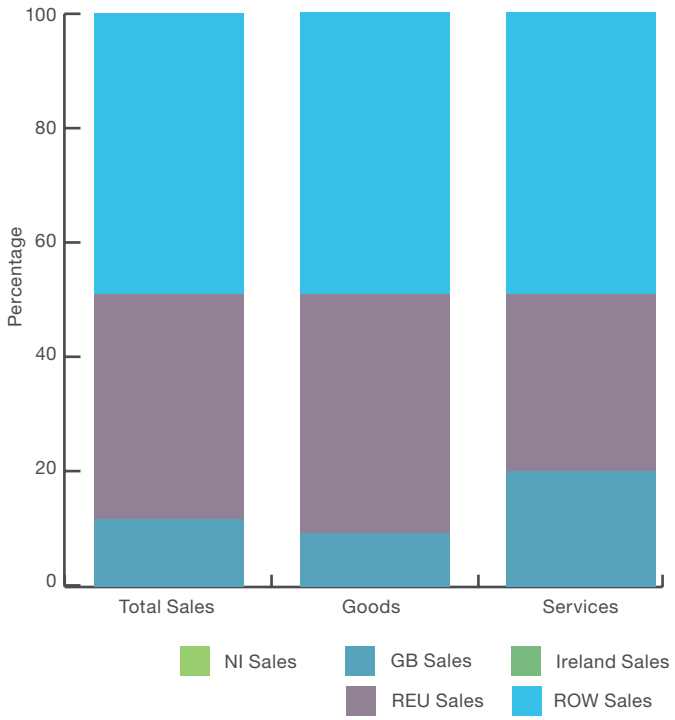


Sources: CSO Balance of Payments and External Trade statistics for trade patterns, CIP and ASI data for total turnover of goods and services firms (CSO Statbank, May 2018).

Key Finding

Great Britain is the largest external market for Northern Irish firms, followed by Ireland. This is also the case for Ireland, with Great Britain as the largest external market, followed by Northern Ireland.

FIGURE 4: IRISH EXPORT PATTERNS: SHARE OF TOTAL EXPORT SALES



Sources: CSO Balance of Payments and External Trade statistics for trade patterns, CIP and ASI data for total turnover of goods and services firms (CSO Statbank, May 2018).

Key Finding

The rest of the EU accounts for substantially more trade from Ireland than from Northern Ireland.

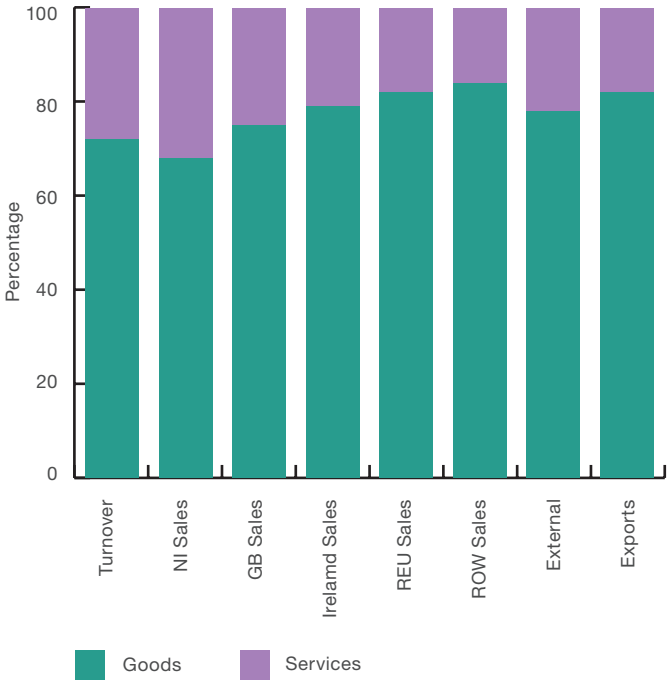
Previous work in this research series, which focused on cross-border supply chains, InterTradeIreland (2018) found that Northern Ireland accounts for between 10-12% of total exports from Ireland to the UK and accounted for 7-8% of imports using CSO trade flow data. That work emphasised that when this share is put in the context of the population of Northern Ireland, making up less than 3% of the UK total, it shows the closeness of the economic ties between the two jurisdictions. Unfortunately, the same split of sales from Ireland between Northern Ireland and Britain cannot be made for services exports, which is reported on a UK-wide basis. The key role of distance as a measure of trade costs and market access will be investigated in more detail in Section 6.

2.3 CONTRIBUTION OF GOODS AND SERVICES

The overall distribution of turnover therefore shows a higher level of export orientation in Ireland relative to that of Northern Ireland, with the extent of the gap depending on whether international exports only are compared or if external sales to the British market are included as a measure of moving beyond local sales for the output of Northern Ireland. We next compare the broad structure of the two economies and their exports in particular, in terms of the contributions of goods and services, with Figures 5 and 6 showing how the shares of goods and services vary within each destination group.

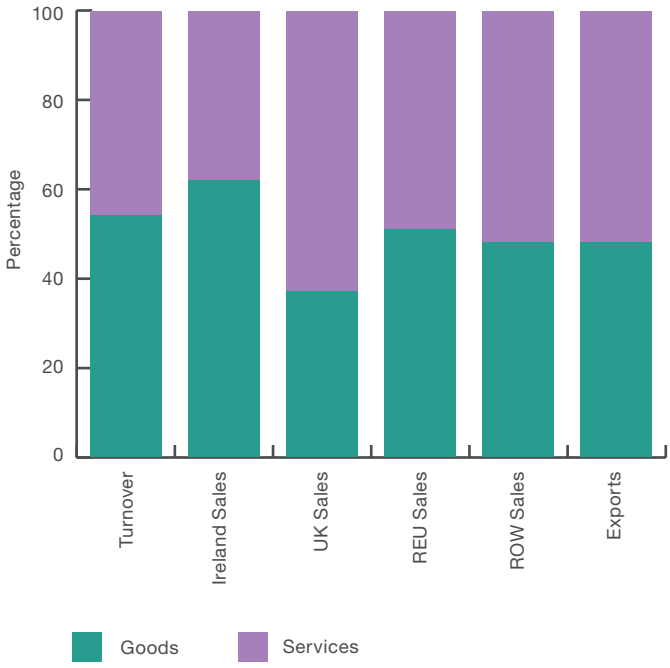
The decomposition of total turnover by sector shows a considerably higher share of output accounted for by goods in Northern Ireland compared to that of Ireland, where the contributions of goods and services are almost close to being equal. Goods output accounts for 72% of total turnover in Northern Ireland (Figure 5) and of this output, Table 1 shows that 62% is sold within Northern Ireland, 21% goes to Britain and the remaining 17% is exported. Across all broad destination groups, the balance of sales ranges from 75% goods (to the British market) to being 84% consisting of goods for 'Rest of World' trade.

FIGURE 5: SHARES OF GOODS AND SERVICES IN NI OUTPUT BY BROAD DESTINATION (2016)



Source: BESES Statistics (NISRA 2018).

FIGURE 6: SHARES OF GOODS AND SERVICES IN IRISH OUTPUT BY BROAD DESTINATION



Sources: CSO Balance of Payments and External Trade statistics for trade patterns, CIP and ASI data for total turnover of goods and services firms (CSO Statbank, May 2018).

Key Finding

The structure of Northern Irish output and exports is dominated by goods. Goods and services approximately equal contributors to Irish sales and exports.

Irish output contains a greater share of services at 46%. The composition of domestic sales at 62% goods and 38% services (Table 4) is, however, reasonably similar to that observed in Northern Ireland. The much greater export orientation of the services sector is therefore the main driver of the differences in the structure of the two economies. Table 1 shows that 27% of services output in Northern Ireland is sold externally, with 9% being exported beyond Britain. Total external sales are therefore 78% composed of goods and 22% composed of services (82% goods and 18% services for non-GB exports), as shown in Figure 5. The services sector in Ireland, on the other hand, exports 62% of its output (Table 2) resulting in services being the slightly dominant source of overall exports, accounting for 52% of total exports, as shown in Figure 6.

For both Ireland and Northern Ireland, external sales or exports of services account for a slightly larger share of the total for geographically closer markets. We see that 25% of Northern Irish sales to Britain are in services, as are 21% of exports to Ireland. The shares of services in total exports are lower for other markets with services accounting for 18% of exports to the rest of the EU and 16% to the rest of the world. Although the overall share of services is higher in all destinations for Irish exports, this pattern of decreasing services share in more distant markets is mirrored in the Irish data. Exports to the UK are made up of 37% goods and 63% services, but the services share in trade to the rest of the EU and ROW are lower, at 49% and 52% respectively.

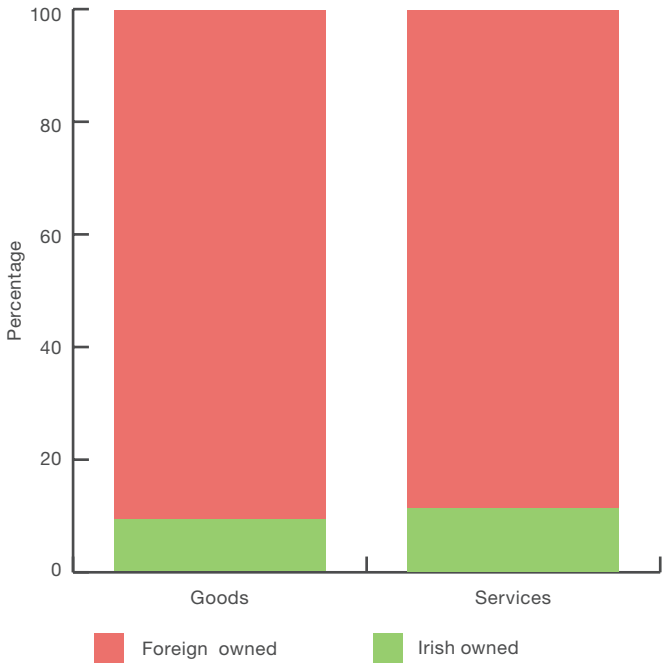
Key Finding

Although services in general are considered less exportable than goods, services make up a considerable proportion of Irish trade, driven mainly by multinational activity in the IT and communications sectors.

2.4 DIFFERENCES BY NATIONALITY FOR IRISH EXPORTERS

The differences between Ireland and Northern Ireland in terms of overall export orientation and, also, in the relative contributions of goods and services, can to a considerable extent be explained by the multinational dominated structure of the Irish export sector. Figure 7 shows the degree to which Irish exports are accounted for by the presence of multinationals. In both the goods and services sectors, Irish-owned firms account for approximately 10% of total Irish exports, with the vast majority originating from foreign-owned firms. The Northern Ireland data does not allow a comparable analysis by the nationality of firm ownership.

FIGURE 7: IRISH EXPORTS BY FIRM NATIONALITY



Author's calculations using CSO CIP and ASI data.

We will look in more detail at the export participation rates by firm type in the next section. In the context of the broad geographic spread of sales outlined above, it is important to note how these patterns differ in Irish exports depending on the ownership of the firm. Table 3 shows the detail of the main export destination markets for Irish-owned and foreign-owned goods-exporting firms[6]. We saw in the aggregate patterns of Table 2 above that the UK accounted for 7% of Irish goods sales, equivalent to 14% of total goods exports. The importance of the share of the UK market for Irish-owned exporters is, however, several times higher than this, at just over 46%. Foreign-owned firms exporting from Ireland are much more broadly internationally orientated, with 26% of their exports going to the USA, 22% to Belgium and 9% to the UK.

Key Finding

Multinationals operating in Ireland have much more diversified patterns of trade than Irish-owned firms. The UK accounts for a much greater share of Irish-owned firm exports than for foreign-owned firms.

[6] The detailed breakdown of destinations by nationality of ownership is not available for services.

TABLE 3: LARGEST 10 MARKETS FOR IRISH GOODS EXPORTS, BY NATIONALITY OF EXPORTING FIRM

Irish-owned firms		Foreign-owned firms	
Country	**Share**	**Country**	**Share**
United Kingdom	46.2%	USA	25.7%
France	7.5%	Belgium	22.0%
Germany	6.8%	United Kingdom	9.2%
USA	6.3%	Switzerland	8.4%
Netherlands	5.3%	Germany	6.1%
Italy	4.1%	France	3.6%
Spain	2.4%	Netherlands	2.7%
Sweden	2.0%	Spain	2.5%
Belgium	1.9%	Japan	2.5%
China	1.7%	Italy	1.9%
Share of top 10 markets	**84.2%**	**Share of top 10 markets**	**84.6%**

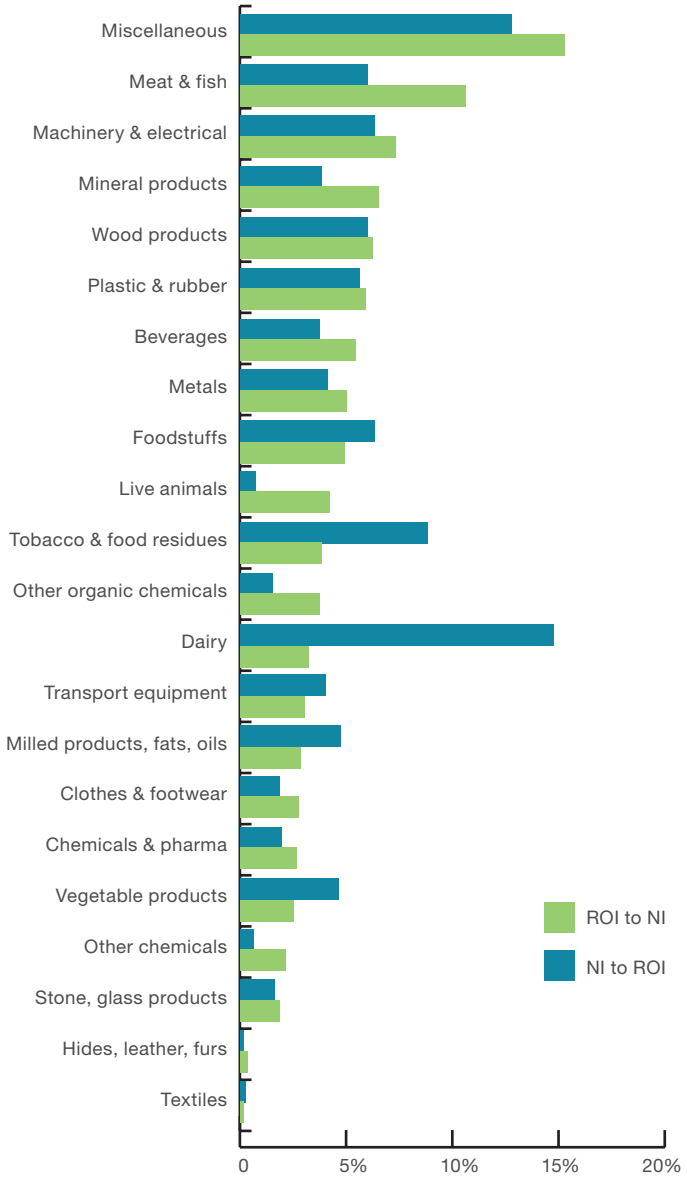
Source: Author's calculations using CSO Customs data, averaged over 2010-2015.

[3] The detailed breakdown of destinations by nationality of ownership is not available for services.

2.5 SECTORAL COMPOSTION OF CROSS-BORDER GOODS TRADE

Finally, in this section, Figure 8 gives an overview of the type of goods that are traded between Ireland and Northern Ireland. The most striking differences in the composition of cross-border trade in each direction is the large share accounted for by the dairy sector in North-South trade.

FIGURE 8: COMPOSITION OF CROSS-BORDER GOODS TRADE (% OF TOTAL)



Source: Author's calculations based on CSO customs data, 2016.

This section gave a broad overview of the export structures in Ireland and Northern Ireland, showing that overall export propensity is higher for Irish firms and, particularly, for those in the services sector. The next section drills into these findings to examine export participation patterns at the firm level, taking into account factors such as firm size and ownership.

3. Firm Export Participation and Intensity

This section examines patterns of export participation and average export sales across broad sectors and firm size groups in Northern Ireland and Ireland. We focus in particular on differences in outward orientation by firm size. This is done by dividing firms into four groups based on their number of employees: micro firms are those with fewer than 10 employees, small firms are those with between 10 and 49 employees, medium firms have between 50 and 249 employees and large firms are those with 250 or more employees.

3.1 DATA ISSUES AND COMPARABILITY

As far as possible, the data breakdowns are intended As far as possible, the data breakdowns are intended to be comparable for both economies but differences in data collection methods, timing and definitions across the sources mean that the figures discussed should be interpreted as indications of broad patterns, with some caution attached to comparing precise estimates. In particular, it should be noted that the Northern Irish data for both goods and services firms comes from the same survey source whereas the information on firms in Ireland is collected using different sources for industrial firms and services firms. In terms of information on exports in particular, somewhat less detail is available on Irish services firms and this is reflected in the comparisons that are presented in this and the subsequent sections of the report.

3.2 SIZE AND SECTOR DISTRIBUTION OF FIRMS

Before examining the export participation rates of different types of firms, we first present some statistics on the overall distribution of firms across the broad sectors and size groups to give context to the export calculations that follow. Table 4 describes the distribution of firms in Northern Ireland and Table 5 presents similar breakdowns for Ireland. The difference in the total number of firms in each economy is broadly linked to the differences in their relative sizes but may also reflect a lower threshold in the reporting on very small firms (those with just one or two employees) in the Irish services numbers, as this is where the bulk of Irish firms are concentrated, so the number of firms being picked up in this source is much greater.

TABLE 4: DISTRIBUTION OF NI FIRMS BY SIZE GROUP AND SECTOR

	Size Group				
	0-9	10-49	50-249	250+	Total
Total Firms (number)	38,799	10,285	1,260	245	50,589
Goods firms	22.6%	7.8%	1.0%	0.2%	31.6%
Services firms	35.5%	7.6%	0.9%	0.2%	44.2%
Both	9.9%	4.4%	0.5%	0.1%	14.9%
N/A	8.6%	0.5%	0.1%	0.0%	9.2%
% by size	76.7%	20.3%	2.5%	0.5%	100%

Source: Author's calculations using BESES Statistics (NISRA 2018).[7]

TABLE 5: DISTRIBUTION OF IRISH FIRMS BY SIZE GROUP, SECTOR AND NATIONALITY

	Size Group				
	0-9	10-49	50-249	250+	Total
Total Firms (number)	173,971	13,238	2,382	417	190,008
Goods firms	7.8%	0.9%	0.3%	0.1%	9%
Services firms	83.8%	6.1%	1.0%	0.1%	91%
% by size	91.6%	7.0%	1.3%	0.2%	100%
Breakdown by ownership (goods firms)					
Irish-owned	55.0%	27.1%	7.2%	1.1%	90.4%
Foreign-owned	1.2%	2.6%	3.8%	2%	9.6%

Sources: CSO data for size distribution of goods and services firms (CSO Statbank, May 2018). Nationality distribution from author's calculations using CIP microdata (2012).

[7]Note that the number of firms refers to those businesses covered by the BESES/ABI and excludes some farming sectors (including live animals), financial, pension services and the public sector, as well as sole traders who are below the VAT threshold.

Table 4 shows that 32% of Northern Irish firms sell goods, 44% are exclusively services firms and a significant proportion (15%) sell a combination of goods and services. In terms of the size distribution of firms, a large majority (77%) are micro firms that employ fewer than ten people, with a further 20% categorised as small. The largest size group accounts for a very small proportion of firm numbers at just 0.5%, although we will see later that they contribute considerably more when we turn to their shares of output and export values. Comparing goods and services firms, we note that services firms make up a larger share of the very small firms, but firms in other size categories are broadly evenly spread between the two sectors.

Key Finding

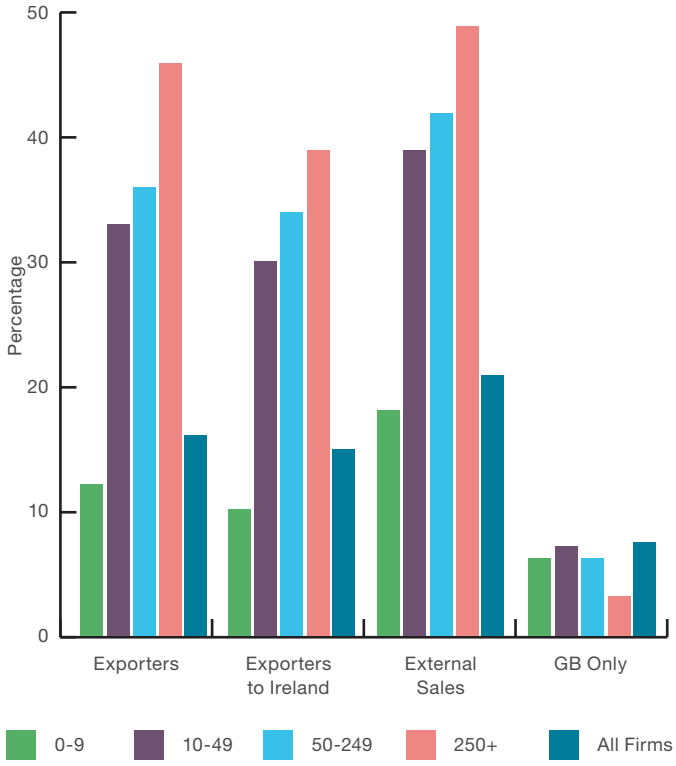
Majority of firms employ fewer than ten employees.

The distribution between goods and services firms in Ireland shown in Table 5 has much greater concentration in small services firms, which account for the bulk of reported firms. As has already been noted, however, some of this may be due to methodological issues in the different data sources with the inclusion of firms with just one or two employees in the services numbers, whereas the data on goods firms requires at least three employees. Due to the collection of information on goods and services firms in Ireland using different sources, we are not able to include a category for firms that supply both goods and services comparable with the Northern Irish data. The breakdown between Irish-owned and foreign-owned in terms of firm numbers is the inverse of the export contributions shown in Figure 1, with the vast majority of firms, and particularly of micro and small firms, being Irish-owned.

3.3 FIRM EXPORT PARTICIPATION IN NORTHERN IRELAND

Against that background of the total firm structure in each economy, we next look at overall export participation rates and at how these vary across firm types in terms of sector and size. We also look at the effect of ownership for Irish goods firms. In addition to participation in the export market in general terms, for Northern Irish firms we look at participation in external sales (i.e. to Britain) and later present calculations for how many exporters concentrate in selling to Ireland as their sole export market. Mirroring this, we look at how patterns of participation in exporting to the UK differs across firm groups in Ireland.

FIGURE 9: EXPORT AND EXTERNAL SALES PARTICIPATION OF NI FIRMS BY SHARE OF SIZE GROUP



Source: Author's calculations using BESES Statistics (NISRA 2018).

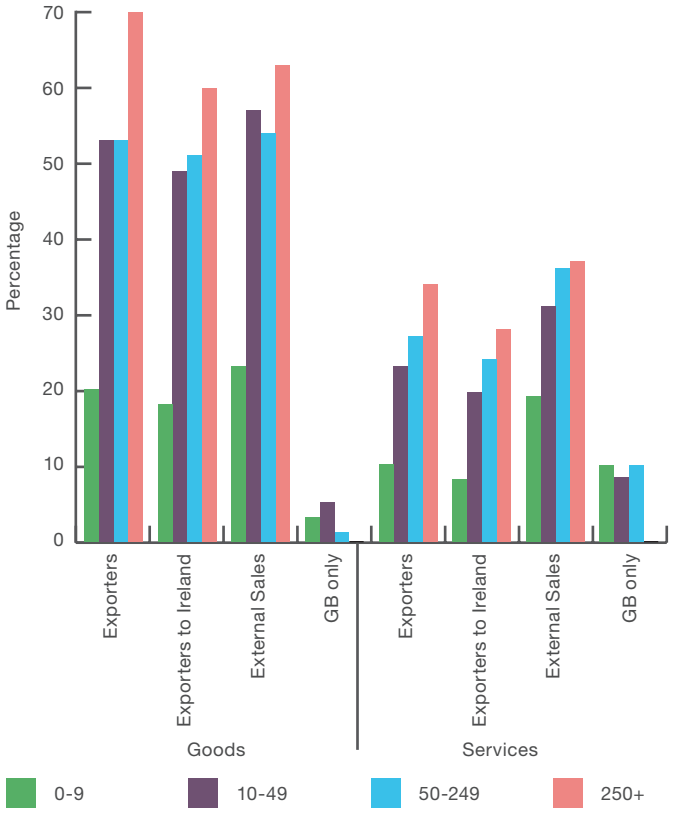
For Northern Ireland, we find that 16.7% of total firms participate in exporting, with a somewhat higher share (22.7%) reporting external sales to either Britain or elsewhere, as indicated by the bars for "All Firms" in Figure 9. Almost all exporting firms appear to include Ireland as one of their destination markets, with 14.6% of firms selling across the border. Comparing the proportions of firms with external sales and those with exports allows us to infer that 6% of Northern Irish firms sell into Britain but do not export. Figure 9 shows there is a very clear pattern of the probability of a firm being an exporter increasing substantially as we move up the size categories: while just under 12% of micro firms are exporters, 46% of large firms export. A similar increase in participation rates can be observed both for exporting to Ireland and for having external sales. With the exception of the largest-size class, there is a fairly stable 6% of each size group that sells to the British market but does not export elsewhere. This is much lower for the largest firms as, despite almost half of them having some sales in Britain, they are more likely to also export more broadly.

Key Finding

Probability of being an exporter increases with firm size. However, many micro and small firms are exporters.

It should be noted that although larger firms have much higher export participation rates, they account for a small percentage of total exporters, reflecting the firm size distribution described in Tables 4 and 5. Of the 16.7% of firms that export, slightly more than half are micro firms (8.9% of the 16.7%) and micro firms also make up approximately half of the firms exporting to Ireland. The smallest two groups also make up almost all of the firms that have external sales to Britain but do not export elsewhere.

FIGURE 10: EXPORT AND EXTERNAL SALES PARTICIPATION OF NI FIRMS BY SIZE GROUP AND SECTOR



Source: Author's calculations using BESES Statistics (NISRA 2018). Data on number of large firms exporting to GB only suppressed to protect confidentiality.

The differences in export participation patterns between goods and services firms are documented in Figure 10[8]. The most immediately striking finding is that export participation is more than twice as high for goods firms as it is for services firms, with 29% of goods firms exporting compared to 13% of services firms.

Key Finding

Export participation rates approximately twice as high for goods firms than for services firms across all size groups in Northern Ireland.

Given the personal delivery inherent in many services, this pattern is largely to be expected and we will see later in the section that the difference in export participation rates is much wider amongst firms in Ireland. This pattern, whereby fewer firms in the services sector engage in international trade than in the goods sector, and where their trade intensities are generally lower, has been documented across a range of countries.[9]

Across size groups, while the participation rates themselves are systematically higher for goods firms compared to services, the pattern of increasing probability of exporting (and of having external sales) as firm size increases is broadly similar for both sectors. When looking at the trade flows in Section 2, we noted that external sales to Britain accounted for a large proportion of total Northern Irish output. Looking at the firm participation patterns, however, we see that those firms that sell to the British market only and do not export either to Ireland or elsewhere are a minority, with the vast majority of firms selling exclusively in Northern Ireland and with the remainder being more likely to export to Ireland than to concentrate all of their external sales in the British market.

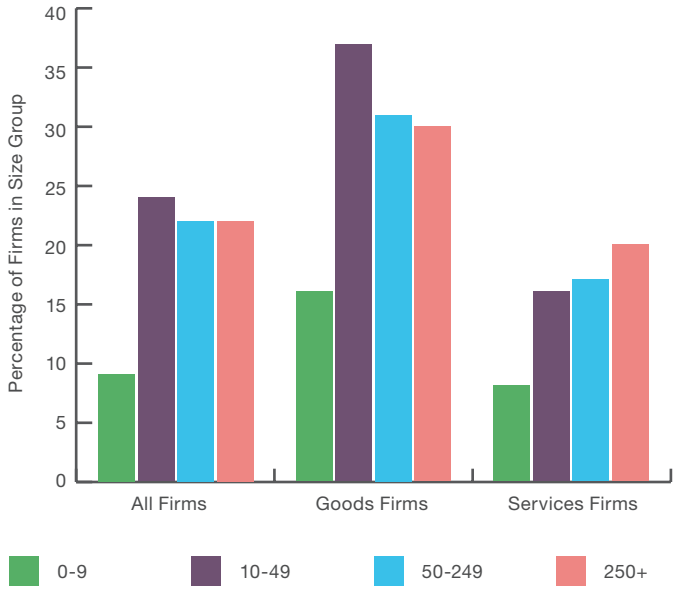
[8]The definitions used in Table 10 relate to firms exporting goods only and those exporting services only. Firms exporting a combination of the two are excluded as the interpretation of the patterns of this group is somewhat unclear.

[9]In previous work on a number of European countries, including Ireland, Damijan et al (2015) found trade participation rates ranging between 3.5% for exports only, to 16.5% for imports only, while two-way traders (exporters and importers) represent around 13.4% of firms. Trade participation rates found in other papers range from 0.14% for exports of services in Germany (Kelle and Kleinert, 2010), 8.1% for the UK (Breinlich and Criscuolo, 2011), 16% for German exports of business activities (Vogel and Wagner, 2010) and up to 18% for Slovenian services exporters (Grublješič and Damijan, 2011).

3.4 IRELAND-ONLY EXPORTERS AMONGST NORTHERN IRISH FIRMS

We next move on to look at the participation of firms in selling to the Irish market specifically. By calculating the difference between total exporters and those that are reported as exporting to other EU markets, we can classify the remainder as being Ireland-only exporters. Figure 11 looks at how these Ireland-only exporters contribute to overall export participation numbers and how the participation again varies by firm size, presenting the information as a share of the number of firms in each size group. Figure 12 then represents the information on the importance of the Irish market for each firm size group by expressing the numbers as a share of exporters. These estimates show that 12.8% of total firms (over three-quarters of exporters) export to Ireland only. This is in keeping with previous work on the patterns of exporting by Irish firms by Lawless, Siedschlag and Studnicka (2017), which showed that a large fraction of exporters export to a single destination.[10]

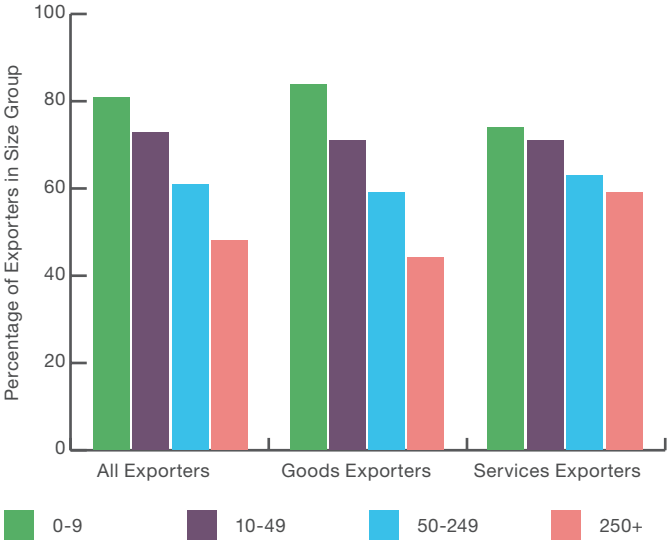
FIGURE 11: SHARE OF NORTHERN IRISH FIRMS EXPORTING TO ROI ONLY



Notes: ROI exporters only is calculated as the difference between the number of total exporters and those that export to other EU markets. As it is not possible to identify firms that export to non-EU markets only, they are excluded from the calculations in this table, with the result that the figures should be regarded as upper estimates. Note also that the goods and services firms sum to less than the total with the remainder being firms that export both. Source: Author's calculations from BESES, 2015.

Across size groups, we find that when micro or small firms do participate in exporting, they are almost overwhelmingly likely to export only to Ireland. Over 80% of micro firms and over 70% of small firms concentrate all of their export activity in Ireland. Even amongst the largest firms, close to half of exporters sell to Ireland only. In keeping with the patterns of overall export participation, services firms are less likely to export to Ireland than are goods firms but there are also some interesting differences across firm size groups.

FIGURE 12: SHARE OF NORTHERN IRISH EXPORTERS EXPORTING TO ROI ONLY



Notes: See Figure 11. Source: Author's calculations from BESES, 2015.

If we compare micro-sized exporting firms in goods with those in services, we see that 84% of the goods exporters sell exclusively to Ireland, with the corresponding figure for services firms being 74%. At this end of the size spectrum, therefore, goods firms seem more reliant on Ireland than services firms. However, amongst large firms that export, reliance on Ireland as the only export market decreases much more rapidly than for services firms, with 44% of large exporters of goods selling only to Ireland compared to 59% of large services exporters.

[10] Lawless et al (2017) found that one-third of Irish-owned exporting firms exported to a single destination. However, that figure is not strictly comparable with the survey evidence presented here as it was based on customs records which have a reporting threshold that excludes firms exporting small amounts and should therefore be treated as a lower bound.

These patterns are consistent with the findings of the InterTradeIreland (2018) report on cross-border supply links, which showed a high degree of integration between business in Northern Ireland and Ireland. In particular, that study found that a substantial share of cross-border trade (measured using CSO import and export data) was undertaken by firms trading simultaneously in both directions: although these two-way traders were a minority of trading firms (18%), they accounted for over 60% of exports and over 70% of imports. This report also showed that a majority of cross-border goods trade occurs in intermediate inputs, further pointing to a strong level of interconnectedness in terms of cross-border supply chains. It is also in line with evidence from research by NISRA (2018) on the patterns of small but very frequent cross-border trade movements.

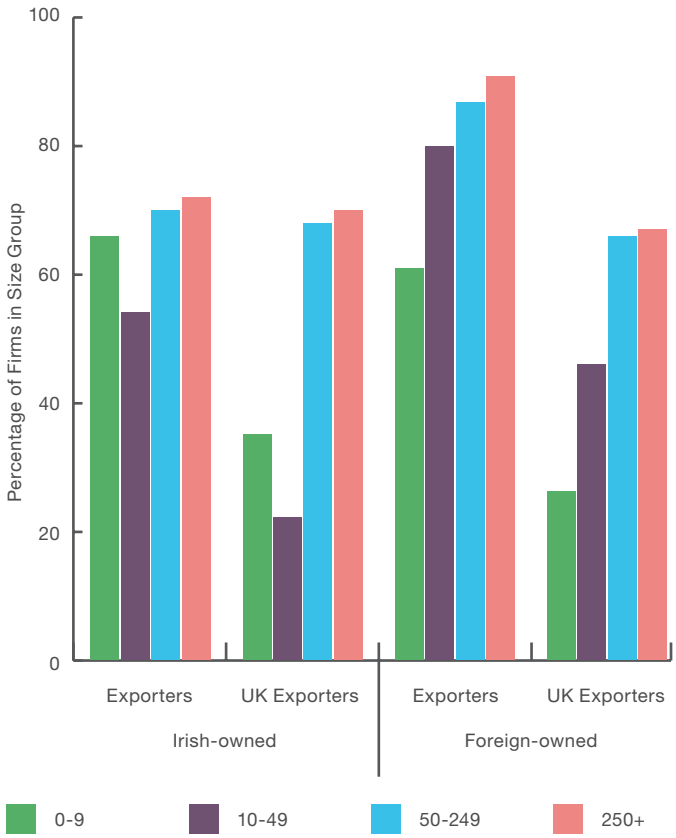
Key Finding

Over three-quarters of Northern Irish exporting firms export to Ireland only.

3.5 FIRM EXPORT PARTICIPATION IN IRELAND

We next look at how the patterns of export participation in Ireland compare to those of Northern Ireland. Figure 13 shows detailed breakdowns by firm size and nationality of ownership for the export participation of Irish goods firms and also the share of firms that export to the UK. The level of detail available on services exporters is considerably more limited and we can include on a comparable basis only the overall participation rate by nationality. Amongst goods firms, the export participation rate in Ireland is quite high compared to that of Northern Ireland, with 62% of Irish-owned goods firms being exporters and almost 83% of foreign-owned firms exporting. There is evidence of increasing participation probabilities as we move up the firm size classes but as participation at the smaller end of the firm size spectrum is quite high at 65%, the gradient across the size groups is correspondingly less steep than amongst Northern Irish firms. Slightly more than one-third of firms and almost 55% of exporters include the UK as one of their export markets amongst Irish-owned firms.

FIGURE 13: EXPORT PARTICIPATION OF IRISH FIRMS BY SIZE, OWNERSHIP AND SECTOR



Note that the export participation calculations for goods firms are based on firms included in the Census of Industrial Production, so firms with fewer than three employees are not captured. The export participation shares are therefore likely to be upper bounds. Source: CSO CIP.

Key Finding

Larger firms in Ireland are more likely to export than smaller firms but main difference in export participation rate is by nationality of ownership.

The participation rates for services firms are extremely low by contrast, with just 1.6% of Irish-owned services firms reported as exporting and 20% of foreign-owned firms. The high share of non-exporting foreign-owned firms is likely to be largely related to the presence of foreign-owned firms in the retail and wholesale sectors. The very low services participation in exporting for Irish-owned firms may, as noted earlier, be related to differences in the inclusion of extremely small firms in the different sources of data and

comparisons with the Northern Ireland participation rates should therefore be treated with caution. Examining the information available on Irish services exports, Lawless and Studnicka (2017) found that Irish-owned services firms were more dispersed across subsectors within services compared to foreign-owned firms, which were found to be very concentrated in a small number of sectors. Consistent with the low tradability of several services subsectors, they found that the main export areas within services were those related to information technology and publishing, regardless of nationality of firm ownership. The presence of a number of large multinationals in these services subsectors explain much of the high value of services exports from Ireland despite the overall low participation rate in exporting by services firms.

We have so far observed a strong pattern of increasing export participation amongst firms in larger size groups that is consistent across goods and services firms in both economies. We next consider whether a similar pattern applies to the extent to which firms export, by looking at the average amounts exported or sold externally (excluding firms that sell locally only and have zero external sales or exports). The patterns we wish to focus on here are those across firm types within each economy, so the averages presented are denominated in the original currency for each data source to avoid any issues that could arise regarding the choice of exchange rate and the composition of the different sources.

3.6 AVERAGE EXPORT SALES

Average exports, external sales and exports to Ireland across sectors and firm size for Northern Irish firms are presented in Table 6. As would be expected from the previous results on export participation, we also observe that average export values increase consistently and considerably as we move along the firm size scale. For goods exporters, we see that micro firms, when they do export, tend to sell fairly modest amounts. Small firms sell close to three times as much in exports, while medium-sized firms then export approximately ten times as much again. There is then a substantial jump in values with the average exports of the largest firms coming in at over £43m. These very large values, however, represent a small number of exporters, as can be seen from the extent to which it differs from the average value of exports for all firms, which is £1.2m. The relative contributions of the different sized exporters to total export flows will be discussed later in the section.

Key Finding

Average export sales very dispersed across firm size groups and many times higher for largest firms compared to smallest firms.

TABLE 6: AVERAGE EXPORTS AND EXTERNAL SALES OF NI FIRMS BY SIZE GROUP AND SECTOR

Average Sales (£'000s)					
	0-9	10-49	50-249	250+	All
Export goods only	201	575	5,761	43,377	1,249
Export services only	111	362	2,784	11,390	438
Export goods and services	174	674	3,854	86,117	2,326
Extern goods only	289	934	10,380	157,144	2,746
Extern services only	144	694	6,405	33,581	763
Extern both goods and services	383	1,542	8,290	118,235	3,445
ROI goods only	165	390	3,515	8,088	560
ROI services only	70	223	1,586	2,686	226
ROI both goods and services	128	537	1,421	9,325	576

Source: Author's calculations using BESES Statistics (NISRA 2018).

Comparing goods firms to services, we note that the same pattern of increasing export values across firm size groups holds in both sectors and also, for the firms that export both goods and services. However, the average values for services exporters are substantially lower than for goods exporters in all size categories. The overall average for services exporters is £438,000, approximately one-third of the average amount exported by goods firms. Firms that export both goods and services, on the other hand, tend to export much more, particularly in the large firm category.

When we include external sales as well as exports in the calculations of Table 6, we see a similar pattern across firm size groups but a substantial increase in the average values across all firm types, showing that sales to Britain make up an important share of firm external output. Sales to Ireland tend to be relatively small despite our earlier finding that a large proportion of firms export only to this market. Increasing market diversification is therefore clearly a key factor in growing export values at the firm level. This also suggests that much of trade with Ireland is perhaps more similar to local trade than to exporting broadly for Northern Irish firms, an issue we will return to in the next section of the report.

TABLE 7: AVERAGE EXPORTS OF IRISH FIRMS BY SIZE, OWNERSHIP AND SECTOR

Average Sales (€'000s)					
	0-9	10-49	50-249	250+	All
Irish-owned goods firms	283	1,226	16,744	104,955	3,459
Foreign-owned goods firms	21,668	7,883	70,314	718,653	199,754
UK goods exports by Irish-owned	83	737	5,386	28,081	1,745
UK goods exports by foreign-owned	2,676	2,271	10,022	84,009	26,550
Irish-owned services firms					4,564
Foreign-owned services firms					57,555

Sources: Shares of goods firms are author's calculations from CSO CIP and shares of services firms are based on CSO ASI data as used in Lawless and Studnicka (2017).

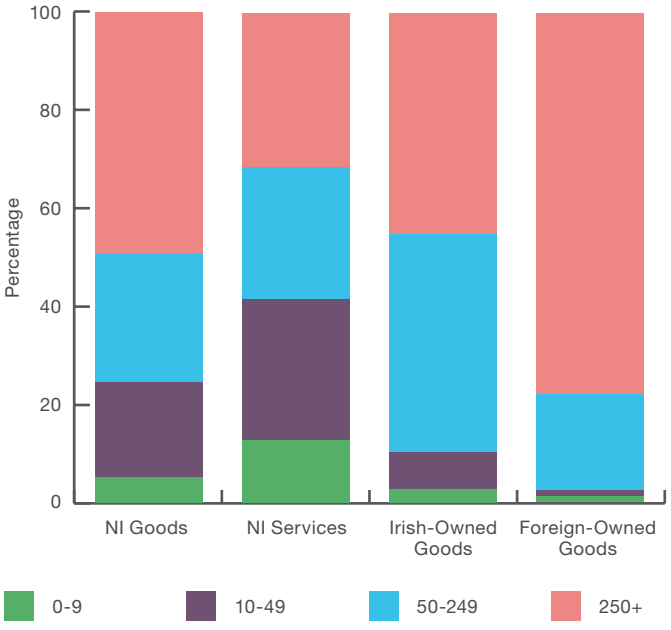
Turning first to the average export values of Irish firms, the same pattern across firm sizes that we observed for Northern Irish firms is also evident in Table 7. The most striking difference is the contrast in scale of exports between Irish-owned and foreign-owned firms. While this disparity holds across the size distribution, it is perhaps most prominent amongst small firms where foreign-owned firms sell substantial amounts as exports, whereas exports of Irish-owned firms in this size group tend to be low. Average services exports are actually slightly higher relative to goods exports for Irish-owned firms but this is not the case for foreign-owned firms, where the average value of goods exported is several times higher.

We noted above that the average exports of larger firms are substantially higher than those of smaller firms but that these relate to a group with a small percentage of the total firm population, as shown at the start of the section. Combining these two factors lets us examine the contribution of each group of firms to total exports and to examine this potential trade-off between having many small exporters compared to a few large exporters. Figure 14 shows the contributions of each sector and size group to total export values, and here we see that the relatively small number of large exporters contributes a substantial share of overall exports both in Ireland and Northern Ireland. Most of the contribution of the largest firm size group (i.e. those employing over 250 people) comes from firms exporting goods.

3.7 CONTRIBUTION TO TOTAL EXPORTS

The contribution of services exporters, however, is somewhat more evenly spread across firm size groups, whereas the contribution to total exports amongst goods (and goods and services) is more strongly concentrated in larger firms. Due to data limitations, we focus on goods firms only to look at the relative contributions of firm size groups for Ireland. This shows a much more strongly skewed pattern, with export values dominated by large foreign-owned firms, which account for three-quarters of total export flows. Within Irish-owned firms, which sell 11% of total exports, the largest firms account for just over 40% of this (4.6% of the 11%) with the medium-sized firms contributing a similar share. Compared to the Northern Irish patterns, this gives a slightly larger role to medium-sized firms but otherwise a similar picture in which total exports are dominated by a relatively small number of large exporters.

FIGURE 14: CONTRIBUTION BY FIRM SIZE AND SECTOR TO TOTAL EXPORTS: NI AND ROI FIRMS



Sources: Author's calculations using BESES Statistics (NISRA 2018) for NI firms and CSO CIP for Irish firms.

Key Finding

Although exporting is reasonably common amongst smaller firms in both economies, total export values are dominated by a few large exporters, with firms that have over 250 employees contributing almost half of total exports in Northern Ireland.

This composition of exports is found across a wide range of countries. In a broad survey of empirical research on firms in international trade, Wagner (2016) documented a number of key findings, including the fact that exporting is highly concentrated in almost all countries. He describes results from the US where the top 1% of exporting firms sell 90% of the value of total exports, and similar, although slightly less extreme, degrees of concentration in Germany, other EU countries and a range of developing economies. Examining detailed customs data on Ireland, Lawless et al (2017) showed that highly globalised Irish-owned firms (those exporting more than 20 products to over 20 destinations) account for 46% of total exports, although they make up just 11% of exporting firms.

3.8 ROLE OF MARKET ENTRY AND "STEPPING STONE" TO EXPORTING

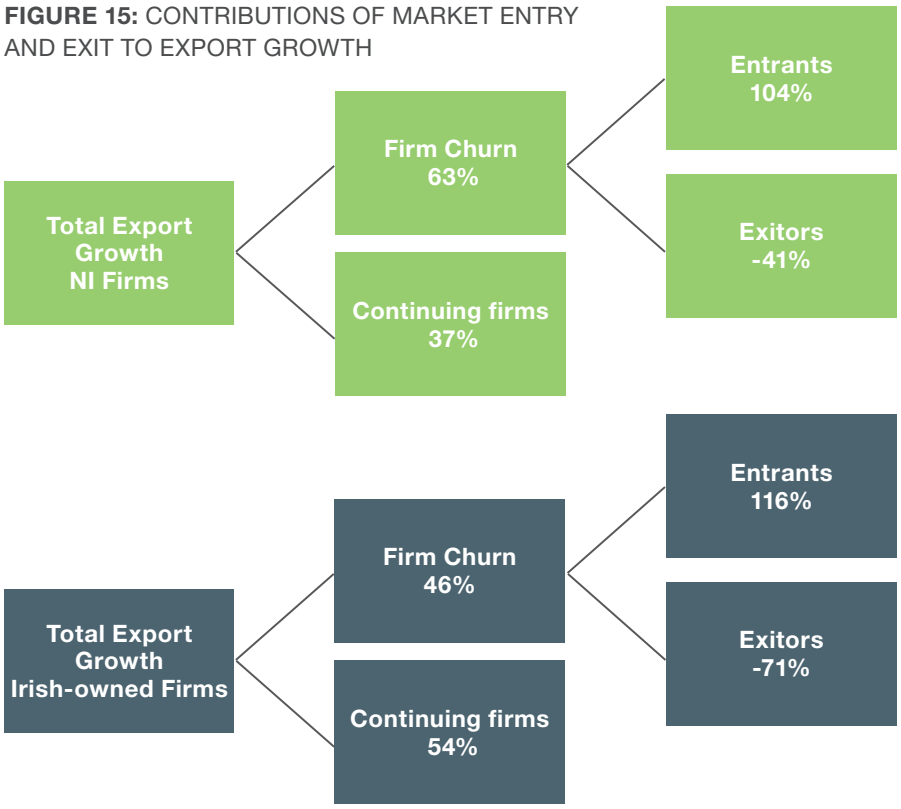
An important aspect of continuing export growth is the relative contributions of firms growing within existing export markets compared to those entering and exiting new markets. This has a particular policy relevance in terms of whether the focus should be on the initial stage of supporting firms to enter exporting in the first instance or if ongoing guidance, such as information on specific markets, would be valuable if diversification is an aim. Previous research by Lawless, Siedschlag and Studnicka (2017) shows that market churn is an important element of export growth and that high rates of product and market entry and exit are a regular feature of firm-level exporting activity, although firms very rarely change their actual export status.

Figure 15 shows how average export growth for Northern Irish and Irish-owned firms compare in terms of the relative contributions of these margins. In both cases, we see that export growth is strongly influenced by changes in market-level participation. The contribution of firm churn (entering and exiting of markets) dominates export growth in Northern Ireland, accounting for 63% of the total, while firms expanding their export sales within their existing markets accounts for the other 37% of growth. The relative contributions are slightly more evenly spread for Irish-owned firms but the contribution of market changes remains substantial.

Key Finding

Market entry and exit are important drivers of overall export growth.

FIGURE 15: CONTRIBUTIONS OF MARKET ENTRY AND EXIT TO EXPORT GROWTH



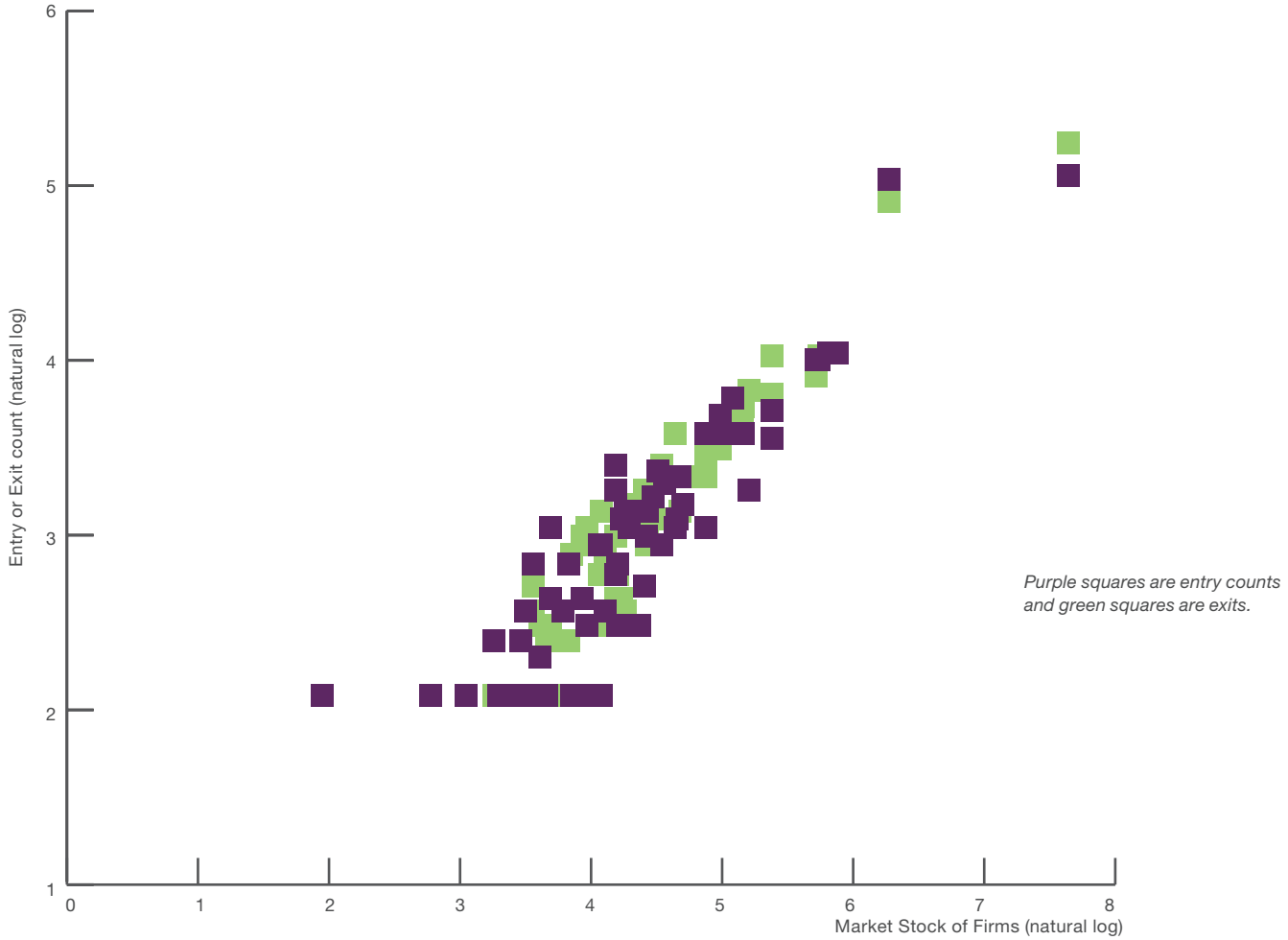
Sources: Author's calculations using BESES Statistics (NISRA 2018) for NI firms and CSO customs data for Irish firms.

In terms of market entry and exit rates, Figure 16 illustrates that the most frequently entered and exited markets are those that already have the largest stock of existing exporters present. Firms trying exporting for the first time will tend to enter the most accessible market where most of its comparator firms are already trading and, as not all exporting attempts are successful, this will also be the market with the highest number of exits. For Northern Irish firms, almost all exporters sell into Ireland and this has the highest number of entry and exit attempts, although one of the lowest rates of churn because the stock of firms trading there is so large. This is indicated by the outlier observations in the upper right-hand corner of Figure 16. The overall linear pattern shows the relationship between stock of current traders and the attractiveness of a market to new entry (and hence the highly correlated risk of exit).

Key Finding

Neighbouring markets are easiest to enter and therefore can act as a stepping-stone to broader export activities.

FIGURE 16: MARKET ENTRY AND EXIT RELATIVE TO STOCK OF EXPORTERS



Sources: Author's calculations using BESES Statistics (NISRA 2018).

This relationship between the stock of firms in a market and the firm churn within it also speaks to a pattern of "ordering" of markets, in terms of how firms tend to diversify their market coverage. The first market entered will be the closest market, where there is high familiarity and low costs to entry. For Northern Irish firms, this will tend to be Ireland as an export market and Britain for external sales. For Irish firms, it will be Northern Ireland and also the broader British market. For many firms in both economies, as we have seen above, this will remain the sole export market. However, if exporting in the first market is successful, firms will then expand into other markets, typically by moving into the next most accessible, whether in terms of distance or familiarity for other reasons, such as links made through supply chain contacts.

Lawless (2013) finds that exporting experience in geographically nearby markets increases the probability of entry into a market and reduces the probability of exit. Total exports of other Irish firms in each market also promoted entry, providing further evidence of a strong demonstration effect, or information spill over, from other exporters. Similarly, InterTradeIreland (2013) previously found that building experience in Ireland is a contributor to firm confidence in their ability to trade in other markets and thereby acts as a "springboard" towards broader external sales activity.

4. Comparing Exporters and Non-Exporters

In this section we study the differences in performance between exporters and non-exporters and also between firms that export to the neighbouring market only, compared to exporting more broadly.

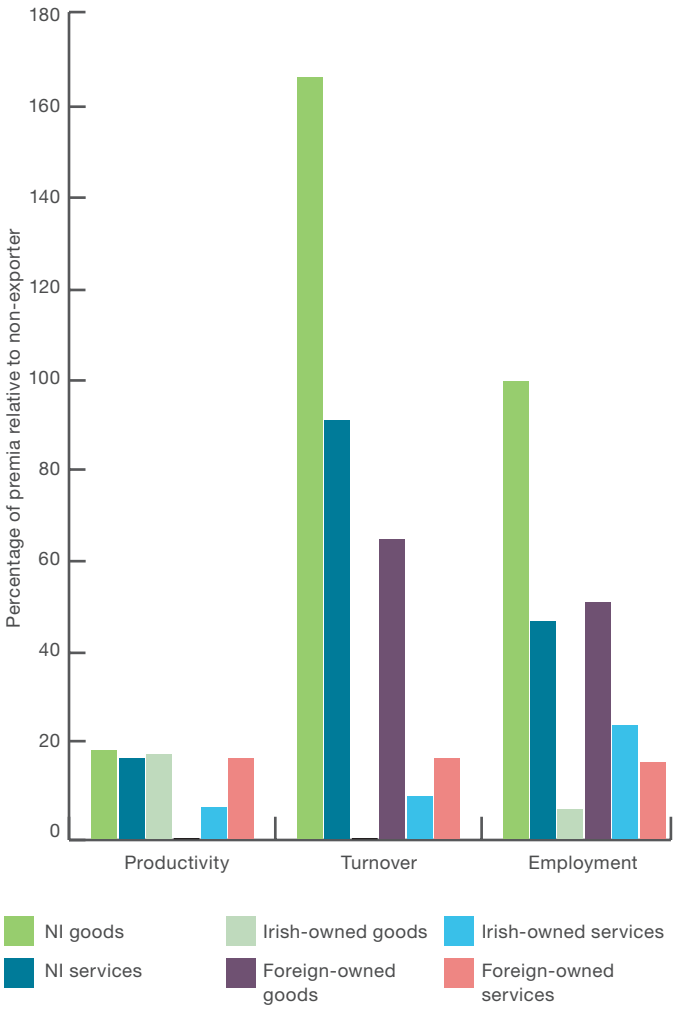
Differences between exporting and non-exporting firms have been extensively documented across countries. This research typically finds that firms engaged in international trade are larger, more capital-intensive, more skills-intensive and more productive. They also pay higher wages than locally-focused firms (Bernard et al, 2009a and 2009b; Wagner, 2016). Although most of this research focuses on goods firms, a small number of recent papers point to similar significant differences also existing in services between firms engaged in international trade and non-traders, with exporters found to be larger and more productive.[11]

4.1 FIRM CHARACTERISTICS AND EXPORT PREMIA

The differences between firms are measured using three different performance indicators: productivity (defined as value added per employee), turnover and employment. Rather than comparing simple averages across firm types, we use the econometric method in Damijan et al (2015) where the log of each of the performance indicators is regressed on the trading status of the firm (export, export to one market only). The reason to prefer this method is that it allows us to also add sector effects[12] and therefore control for differences in scale or capital intensity that might lead to inaccurate conclusions being drawn from comparing average performance.

For each of the performance indicators the trade premia show the average percentage difference in performance (controlling for sector and year). We begin by comparing exporters and non-exporters for six groups of firms: Northern Irish goods and services firms, domestically-owned Irish goods and services firms, and foreign-owned goods and services firms in Ireland. We then look in more detail to see if these performance differences are affected by where the firms export to, distinguishing in particular those firms exporting only to the nearest neighbour market (Ireland for Northern Irish firms and the UK for Irish firms). We also at that stage include external sales as well as exports as a possible margin along which the performance of Northern Irish firms might vary

FIGURE 17: EXPORTER PREMIA BY FIRM TYPE



Sources: Author calculations using BESES Statistics (NISRA 2018) for NI firms and CSO CIP for Irish firms.

[11]Examples of this literature include Damijan et al (2015) comparing Finland, France, Ireland and Slovenia; Grublješic and Damijan (2011) for Slovenian firms; Kox and Rojas-Romagosa (2010) for Dutch firms, and Temouri et al, (2013) for France, Germany and the UK.

[12]At the SITC 3-digit level.

Figure 17 compares the performance gap between exporters and non-exporters for each of the three measures and six groups of firms. For almost all of the combinations, we find positive exporter premia, confirming the findings by Damijan et al (2015). In terms of productivity, we find that, on average, exporters are around 20% more productive than non-exporters for Northern Irish firms and for foreign-owned services firms in Ireland. The gap is smaller for Irish-owned services firms although still positive at 8.5%. The only group for which no statistically significant difference in productivity could be observed between exporters and non-exporters was amongst foreign-owned goods firms in Ireland, although in this case it should be recalled that export participation rates are well over 80%, so the non-exporting group is very small.

Differences in turnover and employment are more varied across the different categories of firms compared to the estimated productivity differentials. The largest differences in performance can be found between exporters and non-exporters for Northern Irish goods firms, where exporters have turnover around 1.7 times higher than non-exporters and employ almost twice as many employees. The extent of the performance gap, although always positive, is somewhat smaller for the other types of firm. Northern Irish services firms that export have turnover which is almost double that of non-exporters and they employ 45% more staff.

The estimated gaps are smaller for firms in Ireland (although this may be affected to some degree by estimating the performance differentials separately for Irish-owned and foreign-owned firms, whereas all are pooled in the estimations for Northern Ireland). Irish-owned goods firms are the only group where the estimation found no statistically robust difference between exporters and non-exporters in terms of turnover, although the exporters are found to employ around 8% more people. Foreign-owned goods firms have the largest performance premia of the groups in Ireland, with exporters having 65% higher turnover and employing almost 60% more than non-exporters. The performance premia for foreign-owned services exporters are somewhat lower, with 18% higher turnover and 12% more employees than the equivalent non-exporter.

Key Finding

Exporting firms have consistently higher productivity, turnover and employment than non-exporters.

Key Finding

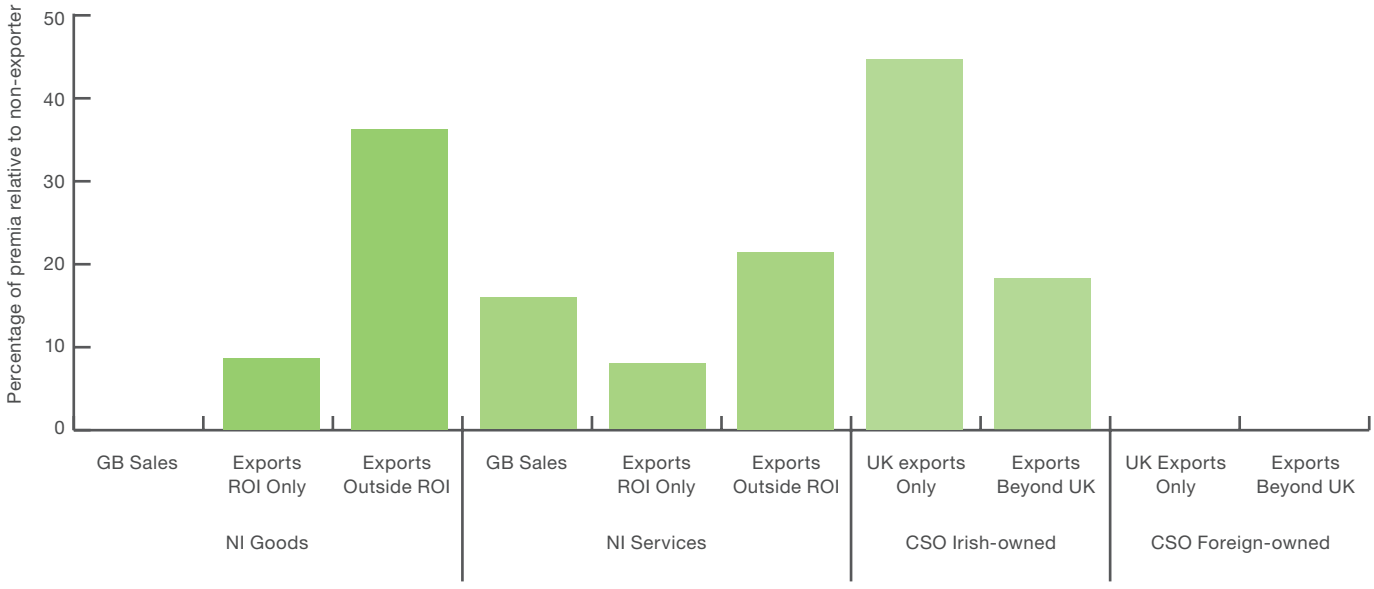
Size of productivity premia fairly consistent across firm types, with greater variation of exporter performance gap for other indicators. Exporter premia in turnover and employment particularly strong for Northern Irish goods firms.

4.2 EXPORT PREMIA DIFFERENCES BY EXPORT DIVERSIFICATION

The next question we address is whether these differences in performance between exporters and non-exporters are affected to a significant extent by the scope of export coverage of the firms. We therefore estimate if there are differences in performance for Northern Irish goods and services firms across four levels of international engagement: local sales only (as the reference category), external sales to Britain (but no other exports) and two sets of exporting firms – those exporting to Ireland only and those exporting to any market other than Ireland.[13] For Irish firms, we distinguish across three types of firm – those selling only within Ireland, those exporting to the UK only and those exporting beyond the UK.

For Irish firms, we continue to estimate the effects separately for Irish-owned and foreign-owned firms.
Looking first at the productivity performance differentials, Figure 18 shows no evidence of a statistically significant difference between Northern Irish firms selling within Northern Ireland and those with external sales (but no exports). Firms exporting to Ireland have a 9% higher level of productivity than firms selling locally. Firms that export beyond the Irish market are found to be 36% more productive than firms selling locally.

FIGURE 18: EXPORTER PRODUCTIVITY PREMIA BY FIRM TYPE AND EXPORT DESTINATION



Sources: Author's calculations using BESES Statistics (NISRA 2018) for NI firms and CSO CIP for Irish firms.

[13] Note that these exporting firms may also sell to Britain but are classified here as exporters – the "GB sales" group are those with GB sales only.

For Northern Irish services firms, the pattern is less clear in terms of the ordering of firm performance. Services firms selling outside of Northern Ireland are all more productive than those with local sales only but the differential across destinations is less marked. Those firms selling to Ireland as their only export market are most similar to firms selling locally, with a productivity gap of 7%, while those selling either to the British market or exporting more broadly have more systematically higher productivity rates (17% and 22% higher respectively). For firms within Ireland, there is the somewhat counter-intuitive finding that although Irish-owned exporters are more productive than non-exporters, the gap in performance is actually higher for those exporting to the UK market only than for those with a wider export reach. For foreign-owned firms, no statistically significant impact was found (as in the previous figure).

Key Finding

There is little difference in productivity between Northern Irish manufacturing firms selling within Northern Ireland and those with external sales to Britain (but no exports). However, those selling to the ROI have a 9% productivity premia over non-exporters.

Key Finding

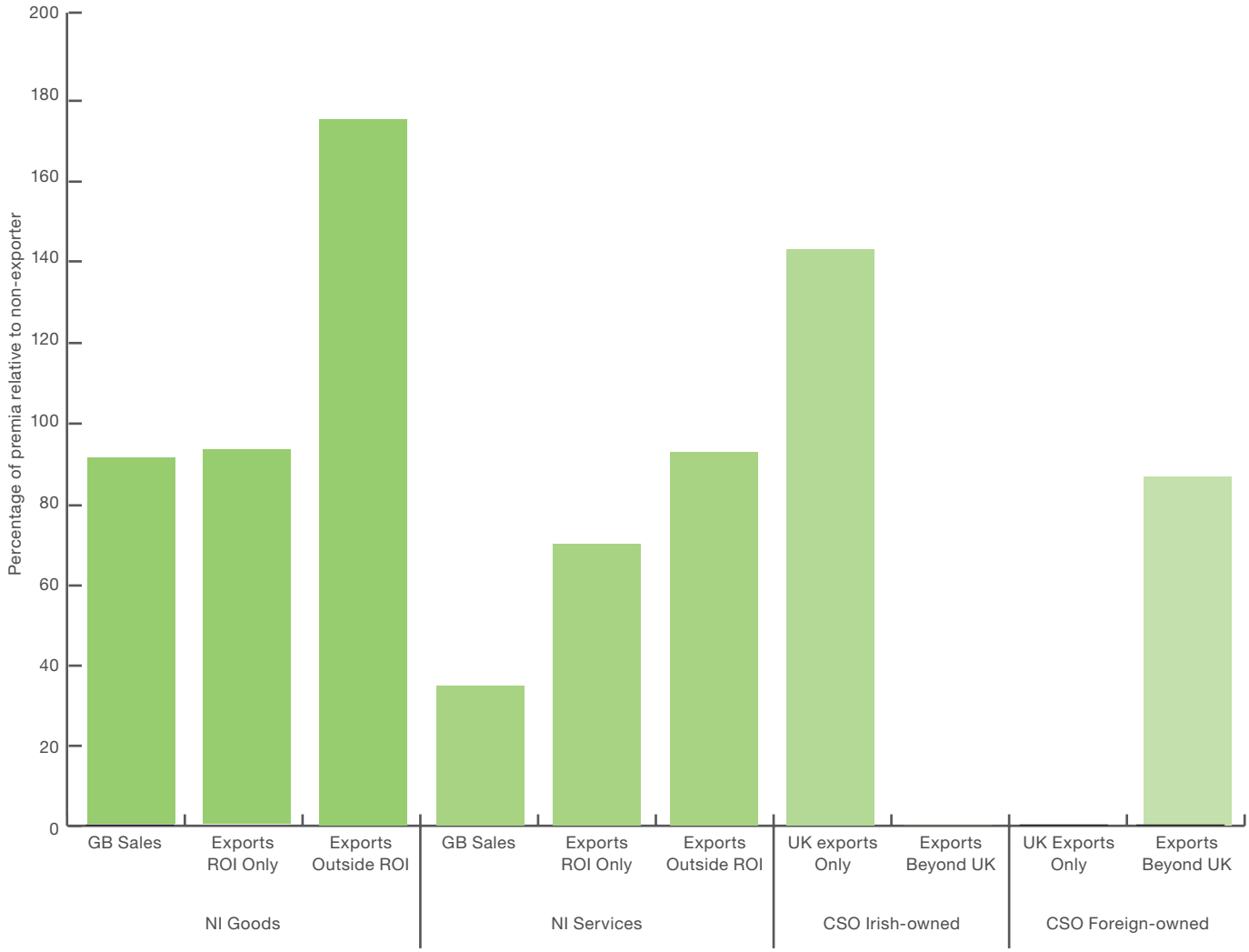
Irish-owned goods firms selling to the UK have a 45% productivity premium relative to non-exporters.

Differences in turnover by broad export destination status are shown in Figure 19. For Northern Irish goods firms, selling outside the local market is associated with higher sales and the size of the effect is almost identical regardless of whether these additional sales come from external sales to Britain or exports to Ireland. Exporting beyond Ireland comes with an effect about twice as large as that from selling to either of these neighbouring markets. For services firms, selling to Britain has a positive impact on sales, though the premium generated is smaller than what they can achieve by selling into the Irish market (4% compared to 7%). Once again, the largest performance gap is between local firms and those selling to a broader set of export markets (9%), although the differential is around half of the equivalent result for goods firms. For Irish-owned firms, selling into the UK is associated with a strong turnover differential whereas, for foreign-owned firms, the main effect comes from exporting beyond the UK market.

Key Finding

Irish-owned firms selling to UK have significant productivity premium relative to non-exporters. Exporting beyond the UK has a more limited impact.

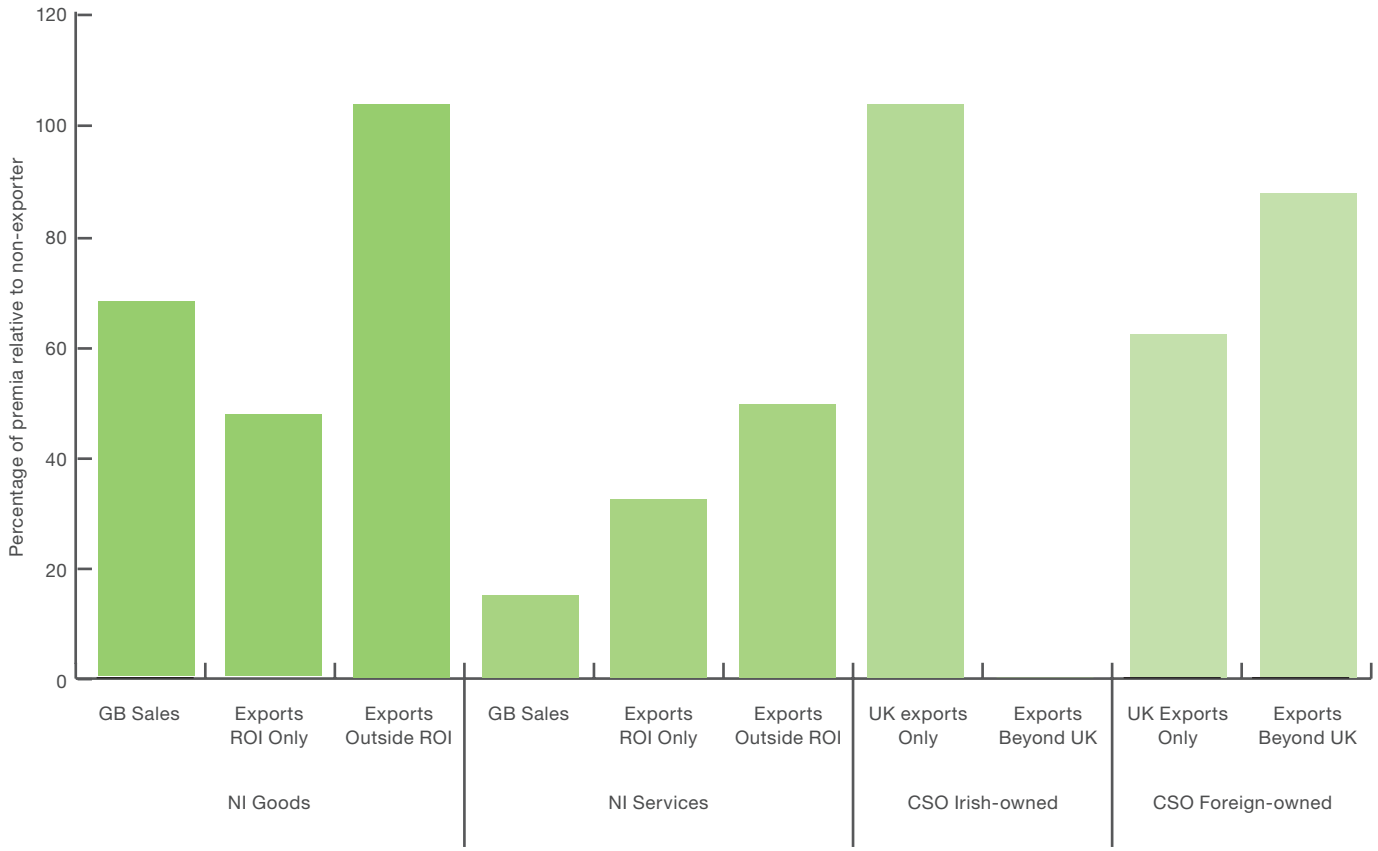
FIGURE 19: EXPORTER TURNOVER PREMIA BY FIRM TYPE AND EXPORT DESTINATION



Sources: Author's calculations using BESES Statistics (NISRA 2018) for NI firms and CSO CIP for Irish firms.

The final measure of performance that we examine across destinations is employment and Figure 20 shows a broadly similar pattern across firm types and destinations as found in the estimation of turnover differentials. Amongst Northern Irish goods firms, firms exporting to Ireland only are the most similar to local firms, although there is still a reasonably large and statistically significant differential, with the exporters employing 40% more than the local firms. Those firms selling to Britain have a somewhat higher employment premium of 68% and those exporting beyond the Irish market are the largest, with average employment that is approximately double that of locally focused firms. The differentials between exporters and non-exporters amongst services firms are smaller than for goods firms but are statistically significant across all of the broad destination groups and remain highest from those exporting beyond Ireland.

FIGURE 20: EXPORTER EMPLOYMENT PREMIA BY FIRM TYPE AND EXPORT DESTINATION



Sources: Author's calculations using BESES Statistics (NISRA 2018) for NI firms and CSO CIP for Irish firms.

This section shows that exporters consistently out-perform non-exporters across a range of different indicators. This lends support to the policy objective of encouraging firm entry into exporting as a route to growth. It further suggests that export diversification is associated with additional gains in firm performance in most cases, so support should not be limited to introducing firms to a single destination but also, to building a broader portfolio of markets.

5. Drivers of Export Participation and Sales

In the previous section, we compared average performance outputs of exporting and non-exporting firms, finding that exporters consistently out-perform non-exporters across a range of firm characteristics. This effect could come about through different channels, one being that higher-performing firms become exporters, or, alternatively, that being involved in exporting has a positive learning effect on other aspects of firm performance. Empirical evidence has found that elements of both channels tend to exist with exporting activity as a positive feedback channel on firm performance.[14] While entirely disentangling these potentially mutually reinforcing effects is difficult in practice, this section looks at the extent to which export participation and performance are related to a range of firms' characteristics. We do this by examining whether or not the firm is an exporter (or exports beyond the nearest market) and then by estimating how much firm characteristics contribute to differences in export sales across firms once they have entered the export market.

This shows strong relationships between firm characteristics, such as size and productivity, along with export activity, while econometrically controlling for other firm-specific factors. This is in line with the average premia estimated in the previous section, but should be interpreted as evidence of the existence of relationships between the characteristics rather than necessarily as driving causes, which would require much longer and more detailed data to fully identify.

5.1 FIRM EXPORT PARTICIPATION DRIVERS

These estimations are based on regressions run on firm-level data, with the participation variable being defined as equal to "1" if the firm exports and "0" otherwise. The estimation procedure used is a probit specification specifically suited to the analysis of this type of binary variable. The reported results have been converted into marginal effects and can therefore be interpreted as percentage contributions to the likelihood of being an exporter. Table 8 presents the results for Northern Irish firms separately for goods and services firms and using two indicators of export participation – firstly, if the firm exports at all and secondly, if it exports beyond the Irish market.

While measuring the quality or skill level of its workforce is clearly difficult, a proxy used widely in the literature on determinants of export status is the average wage paid per employee (see Wagner 2016). Amongst Northern Irish goods firms, the results in Table 8 show that a workforce with 10% higher wages is correlated with a 1% greater probability of being an exporter. The relationship is about half as strong when looking at the drivers of exporting beyond Ireland. Productivity of the firm is positively associated with a greater likelihood of being an exporter across all of the different specifications, with a stronger effect evident when determining export status covering markets beyond Ireland.

The firm size categories are all comparisons to a base group of micro firms and show a steadily increasing probability of being an exporter as size increases. Although the direction of the effect is consistent across all specifications, the magnitude is considerably stronger for goods firms relative to services firms, with large goods firms being 40% more likely to be exporters and 50% more likely to export beyond Ireland than micro firms. For services firms, the comparable probability increases are 14% and 11%, showing a much shallower size gradient in export participation.

TABLE 8: DETERMINANTS OF EXPORT PARTICIPATION – NI FIRMS

	Exporter (any location)		Exporter (excluding Ireland)	
	Goods	Services	Goods	Services
1% increase in:	**Increases probability of exporting by:**			
Skills Proxy	0.11%	0.08%	0.05%	0.04%
Ln Productivity	0.03%	0.01%	0.06%	0.02%
Compared to micro firms:	**Have greater export probability by:**			
Small Firms	13%	6.5%	6%	2%
Medium Firms	24%	8.5%	20%	3.5%
Med-large Firms	34%	6%	32%	4%
Large Firms	40%	14%	50%	11%

Source: Author's calculations using BESES microdata. Probit regression of firm export status on firm characteristics with three-digit sector and year controls.

[14] See for example De Loecker (2007).

The comparable estimates for Irish goods firms are shown in Table 9, this time separating the sample by nationality of ownership and also examining if there are any differences if exporting to the UK is excluded. In contrast to the results for Northern Ireland, we find that wages have a slightly negative effect on export participation amongst Irish-owned firms and have no statistically significant impact on the probability of export participation amongst foreign-owned firms. This could be interpreted as being due to the impact of wages on the firm cost structure overriding any signal it might give of human capital when all other factors are held constant. Productivity, on the other hand, has a much larger impact on the likelihood of export participation for Irish-owned firms relative to the size of the impact estimated for Northern Irish firms.

For Irish-owned firms, the same pattern of increasing export participation across firm size groups seen in Northern Irish firms is also evident, although the magnitudes here are smaller, with large firms 27% more likely to be exporters than micro-firms. Across all of the variables, in both estimating the probability of being an exporter and exporting beyond the UK, there is little evidence of systematic variation across firm characteristics for foreign-owned firms, potentially driven by the very high export participation leading to small numbers of non-exporters to compare against.

TABLE 9: DETERMINANTS OF EXPORT PARTICIPATION – IRISH GOODS FIRMS

	Exporter (any location)		Exporter (excluding UK)	
	Irish-owned	Foreign-owned	Irish-owned	Foreign-owned
1% increase in:	**Increases probability of exporting by:**			
Skills Proxy	-0.04%	0.04%	-0.07%	0.03%
Ln Productivity	0.10%	-0.01%	0.09%	-0.001%
Compared to micro firms:	**Have greater export probability by:**			
Small Firms	-1%	-3%	-5%	2%
Medium Firms	17%	0.1%	5%	5%
Large Firms	27%	-3.8%	27%	7%

Source: Author's calculations using CIP microdata. Probit regression of firm export status on firm characteristics with three-digit sector and year controls.

Key Finding
Larger, more productive firms systematically more likely to be exporters, as are firms with higher skilled workforces (proxied by average wage rates).

5.2 FIRM EXPORT SALES DRIVERS

Using the same set of firm characteristics, we next look at how these correlate with the level of export sales for firms that become exporters. In estimating the determinants of export sales for Northern Irish firms in Table 10, we also include an indicator for whether the firms export to Ireland only and also, a count measure of the number of markets they export to. In both goods and services, firms with higher average wages and higher productivity export more.

There is a steady increase in export sales levels as we move up the firm size groups, with the largest goods firms selling four times more than the reference group of micro firms and the largest services firms selling more than three times as much as the smallest.[15] These calculations show positive differences in firm characteristics for all firm exporting activity. The sizes of the effects increase as firms export more broadly. For firms that export beyond Ireland, for example, we find a further effect of higher export sales even when size and productivity are taken into account, with the size of this effect almost identical for both goods and services firms. Finally, market diversification is positively associated with the scale of export sales.

TABLE 10: DETERMINANTS OF EXPORT SALES BY SECTOR – NI FIRMS

	Goods	Services
1% increase in:	**Increases sales by:**	
Skills Proxy	0.71%	0.48%
Ln Productivity	0.37%	0.44%
Market count	0.04%	0.04%
Compared to micro firms:	**Have higher exports by:**	
Small Firms	77%	94%
Medium Firms	155%	147%
Med-large Firms	257%	243%
Large Firms	411%	327%
Compared to firms exporting to ROI only:	**Increase sales by:**	
Exporters to more destinations	34%	35%

Source: Author's calculations using BESES microdata. OLS regression of firm export sales on firm characteristics with three-digit sector and year controls. Reference category is micro firms.

Key Finding

Largest firms have export sales of three to four times those of micro firms, even when other firm characteristics are controlled for.

Key Finding

Market diversification significantly adds to export sales.

The patterns for Irish goods firms in Table 11 are broadly the same as those for the Northern Irish exporters, with only modest differences in the sizes of the effects by firm nationality, apart from a much larger average wage effect for foreign-owned firms.

[15] These differentials are smaller than those in the descriptive results in Table 11 because the size effect here is the effect after holding other factors such as productivity and sector constant.

TABLE 11: DETERMINANTS OF EXPORT SALES BY OWNERSHIP – IRISH GOODS FIRMS

	Irish-owned	Foreign-owned
1% increase in:	**Increases sales by:**	
Skills Proxy	0.28%	0.74%
Ln Productivity	1.06%	0.97%
Compared to micro firms:	**Have higher exports by:**	
Small Firms	110%	143%
Medium Firms	289%	193%
Large Firms	390%	237%

Source: Author's calculations using CIP microdata. Probit regression of firm export status on firm characteristics with three-digit sector and year controls. Reference category is micro firms.

This section provides further evidence on the links between firm characteristics and exporting activity. There is a strong association found between export participation and firm productivity, size and a skill proxy indicator. The same is true for firm export sales. There may be some two-way causation in these patterns, with higher-performing firms becoming exporters and then also learning from export engagement, which further reinforces their performance. Export participation of firms, and moving into more markets, appears a clear indicator of positive economic performance. This leads into the next section, which looks at the range of markets firms export to and the destination characteristics most associated with firm participation and export sales performance.

6. Destination Market Determinants

Having examined the interplay between firm characteristics and export participation in the previous sections, we move to looking at some of the characteristics of the destination markets for Northern Irish and Irish export flows. To do this, we take the approach of estimating a "gravity" model and decomposing the effects of the destination country characteristics into how they impact on firm participation in exporting and on average sales of exporters.

6.1 GRAVITY MODEL OF TRADE BACKGROUND

The gravity model is widespread in the analysis of international trade flows and has been demonstrated to be an extremely robust empirical method (Head and Meyer, 2013 and Disdier and Head, 2008). The technique acquired its name from the parallel with the physical force of gravity determined by the combined mass of two bodies and the (inverse square) of the distance between them. The gravity model likewise links trade between pairs of countries to the size of their markets and the distance between them (to capture transport and other market access costs). The gravity model is most often applied to goods trade but has also been shown to explain a large percentage of services trade flows (Walsh, 2006). It has further been used to explain other types of international flows, most notably, migration and financial investment flows.

The gravity model approach has previously been used to model North-South trade at sector level in InterTradeIreland reports (2009, 2011). These revealed that cross-border trade on the island of Ireland was substantially below the level that would be predicted on the basis of international comparisons of the effects of proximity and other aspects of economic linkages between the two markets. The approach taken here is quite different from those reports, however, in that we focus on patterns using Northern Irish and Irish data only, whereas the previous work estimated a global pattern of trade and then used this as a basis for comparing predicted and actual cross-border trade flows.

A new feature that we add is to examine how the market characteristics affect different margins of trade. Overall variation in total exports to any market can be decomposed into two factors:

- Number of exporting firms (known as the extensive margin)
- Exports per firm (intensive margin).

The extensive margin exists because some firms will not be able to sell enough to cover the fixed costs of entering a market and will therefore be discouraged from entering even if they could sell some amount of their output. Previous work showed many trade costs work primarily by keeping firms from participating in exporting at all rather than by reducing export levels (Lawless, 2010).

In addition to their basic components of market size and distance, gravity models have been frequently extended to estimate the potential impacts of other factors on trade facilitation. Of most immediate current policy relevance is their use to estimate the economic returns to membership of free trade agreements and to use this to provide an appraisal of the impact of the UK exit of the EU. This is the approach taken by Ebell (2016) in predicting a substantial decline in UK trade following Brexit, the size of which depends, however, on the assumption of the replacement trade arrangement.

6.2 GRAVITY MODELS AND FREE TRADE AGREEMENTS

This gravity model-based estimate of a counterfactual trade level with the EU effect removed from UK trade rests on an assumption that the size of the loss of membership would be symmetric with the gains. While this appears to be a reasonably sensible baseline assumption, the limited number of cases of countries departing from a free trade agreement means the assumption of symmetry has not been thoroughly tested. In related literature, however, research on currency unions has found that the effects of joining and leaving are not necessarily mirror images in terms of economic impact. For example, Rose (2000) found that membership of a currency union could double the trade volume between two countries, but Thom and Walsh (2002) found little negative effects of the Irish break with sterling in 1979.

The use of gravity models to provide estimates of trade reductions following Brexit have also been criticised by Gudgin, Coutts, Gibson and Buchanan (2017) on the basis that the estimates provide an average effect of EU or free trade association membership across a wide range of countries and that this does not necessarily reflect the membership effect on the UK specifically. They re-estimate a range of cross-country gravity models and include a UK country indicator which suggests that the impact of EU membership on the UK is lower than the average for most member states.

6.3 MARKET CHARACTERISTICS

We estimate gravity-style models of trade from Northern Ireland and Ireland to as many destination markets as possible. The explanatory variables used for each destination country and their sources are shown in Table 12.

TABLE 12: EXPLANATORY FACTORS USED IN TRADE GRAVITY MODEL

Variable	Reason	Source
Distance	Trade cost and market similarity	CEPII database
GDP per capita	Income measure to capture demand	World Bank
GDP	Size of market	World Bank
English language	Common language to reduce trade cost	CEPII database
EU membership	Common market effect	Europa.eu
GB/UK indicator	Market specific effect	-
Ireland indicator	Market specific effect	-

There are four sets of estimations that are conducted separately: Northern Irish goods trade, Northern Irish services trade, Irish goods trade by Irish-owned firms and Irish goods trade by foreign-owned firms. Each set of estimations is conducted on total trade flows and then decomposes the effects into those on the number of firms and average exports. Rather than present the results of the regression output for each sample, we group the output by the explanatory variables of interest in order to focus on the differences across firm groups for each country characteristic.

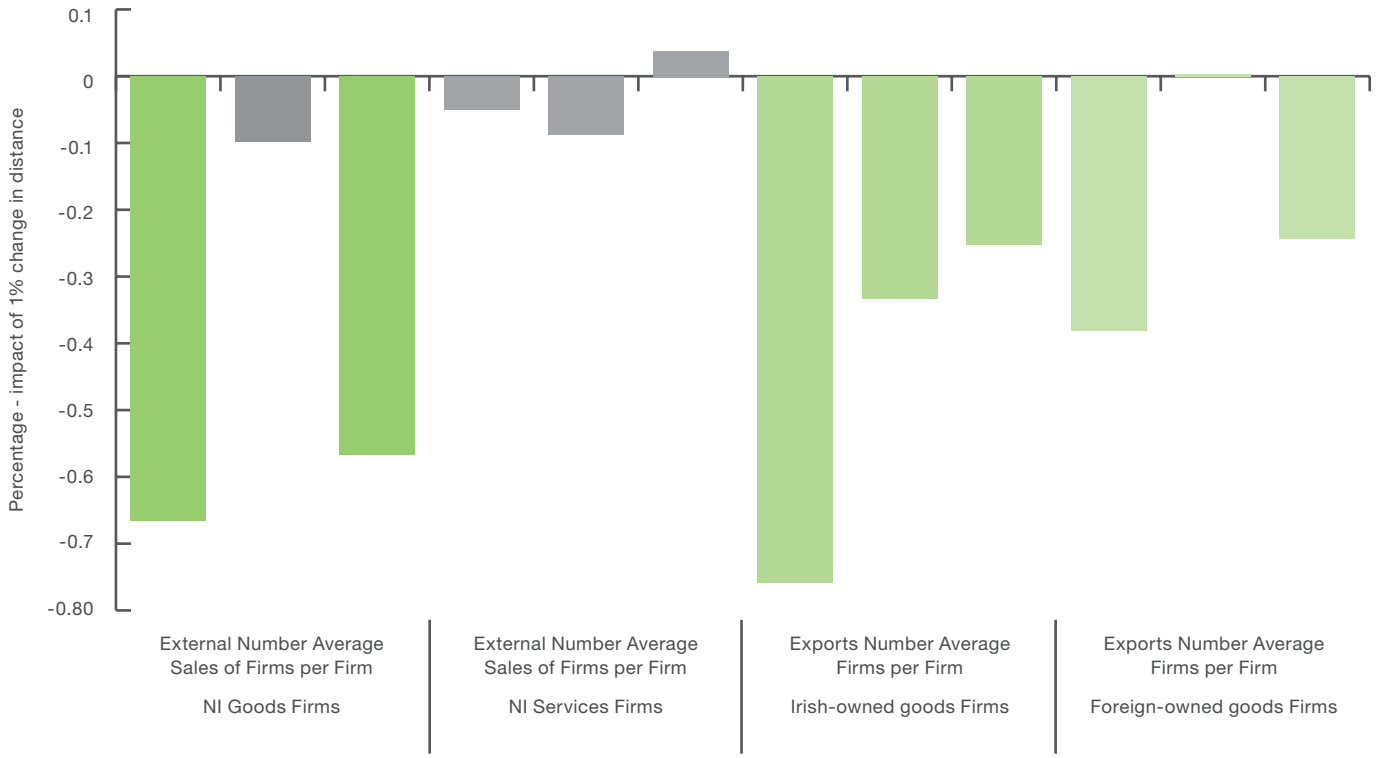
6.4 RESULTS

Effect of distance on trade flows

The first set of results presented in Figure 21 relates to the estimated effect of distance on trade flows, the number of firms exporting and the average exports per firm. The distance effects are estimated for a number of different groups: Northern Ireland goods trade, Northern Ireland services trade, Irish-owned goods firms and foreign-owned goods firms in Ireland. As is the standard expectation for determining where a country's exports are destined for, we find that distance has a negative overall effect for all three groups of goods firms. However, the effect is not statistically significant for services flows from Northern Ireland. For Northern Irish goods trade, the overall effect is that for each 10% increase in distance, trade flows are reduced by 6.6%. For Irish-owned goods firms, the effect is that a 10% increase in distance typically reduces trade flows by 7.6%. For foreign-owned firms within Ireland we find distance has a relatively small effect, close to half of that estimated for the Irish-owned firms.

These are somewhat smaller impacts of distance than is generally found, with an average result of a reduction of 8.9% established in a meta-analysis of over 1,000 distance estimates in papers estimating gravity models for goods trade by Disdier and Head (2008). However, we have included separate indicators for the closest destination markets (Ireland and Britain for the Northern Irish trade model and the UK for the Irish model). This is likely to have an effect on the estimation of the distance effect.

FIGURE 21: EFFECT OF DISTANCE ON TRADE



Source: Author's calculations using BESES data for NI and CIP data for Ireland. Bars in grey indicate results that are not statistically significant.

The overall effect of distance can be broken down into the separate components of how it affects the number of exporters and how it affects average export sales. Our estimates show that distance operates primarily by reducing the average sales of exporters for Northern Irish goods firms and foreign-owned firms within Ireland (although the total effect is considerably lower for the foreign-owned firms). The distance impact has a more evenly dispersed impact on both export participation numbers and average sales for Irish-owed goods firms. For Northern Irish services firms, with the additional indicators included for Britain and Ireland, distance no longer has any statistically significant effect. This may be because, if services are to be traded to more distant markets, this will be undertaken by electronic means and physical distance becomes less of a cost.

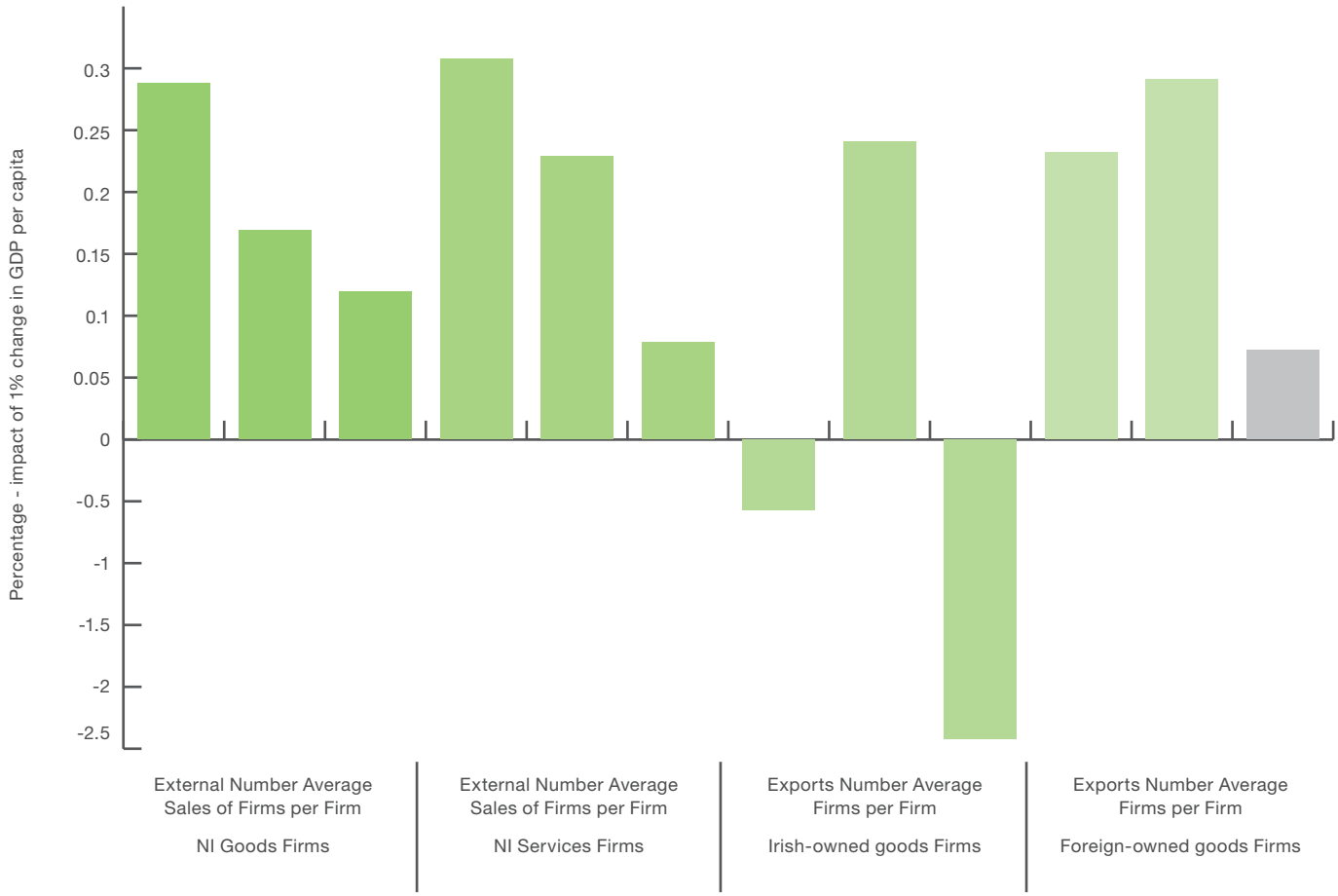
The smaller effect of distance for foreign-owned firms in Ireland compared to Irish-owned firms may be explained by the type of product associated with foreign-owned firms located within Ireland – typically electronics and pharmaceuticals – being lightweight and high-value and hence less impacted by costs of transportation than other goods. The importance of trade with the US, where a substantial share of the multinationals located in Ireland originate, may also be working to mitigate the usual effect of distance.

Key Finding
Distance has a significant negative effect on total trade flows, export participation and average sales for goods.

Effects of market size, income and language on trade flows

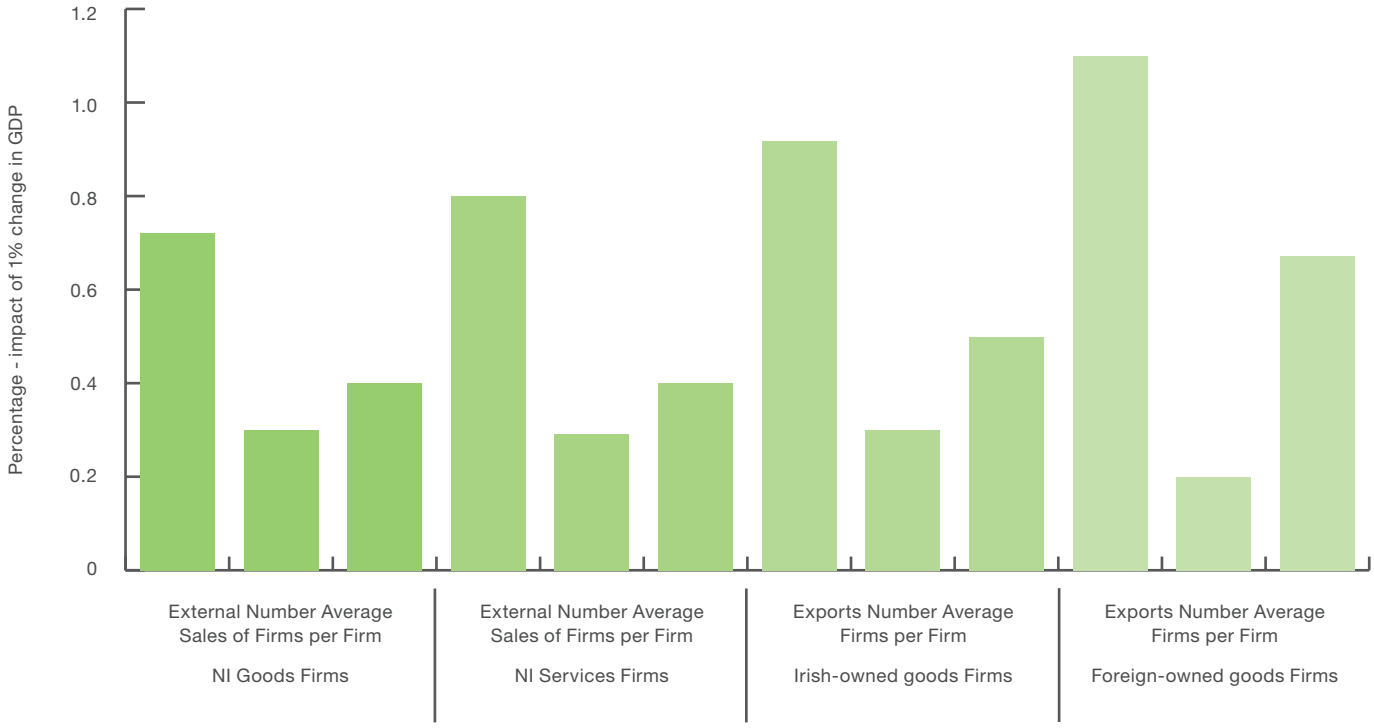
Market income level, total market size and common language are all important determinants of where exports flow to and have positive effects on both the participation and average sales margins for all groups of firms, as shown in Figures 22, 23 and 24 (for GDP per capita, total GDP and language respectively). For Northern Irish goods trade, the effects of each of these characteristics are relatively evenly split in terms of both attracting firms to a market and in increasing sales. For services firms, the country characteristics of size and income have very similar effects to those for goods firms, while the effect of English being spoken in the destination market is significant for firm participation in the destination market but does not have a significant effect on the scale of sales thereafter.

FIGURE 22: EFFECT OF GDP PER CAPITA ON TRADE



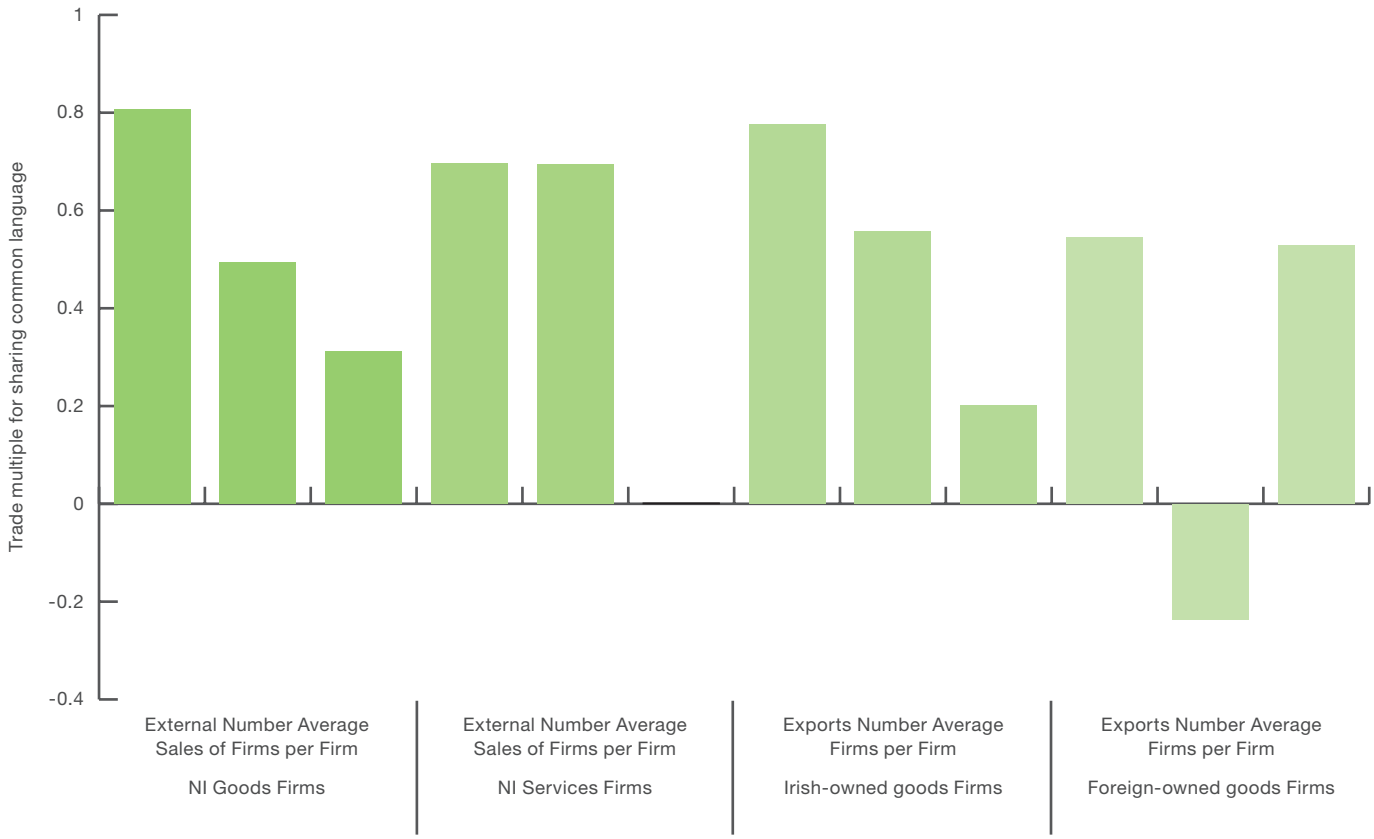
Source: Author's calculations using BESES data for NI and CIP data for Ireland. Bars in grey indicate results that are not statistically significant.

FIGURE 23: EFFECT OF GDP ON TRADE



Source: Author's calculations using BESES data for NI and CIP data for Ireland. Bars in grey indicate results that are not statistically significant.

FIGURE 24: EFFECT OF ENGLISH LANGUAGE ON TRADE



Source: Author's calculations using BESES data for NI and CIP data for Ireland. Bars in grey indicate results that are not statistically significant.

The most unexpected finding from these results is a slight negative effect of GDP per capita on trade coming from Ireland. Although higher income countries attract more firms, as seen by the positive effect of GDP per capita on the number of exporters, this is offset by lower average sales, potentially due to higher levels of competition in these markets. Offsetting this, however, we see that larger overall market size has a large positive effect on all measures of trade activity. English being spoken in the destination market also facilitates trade flows for Irish firms at a similar level to that found for Northern Irish firms.

Key Finding

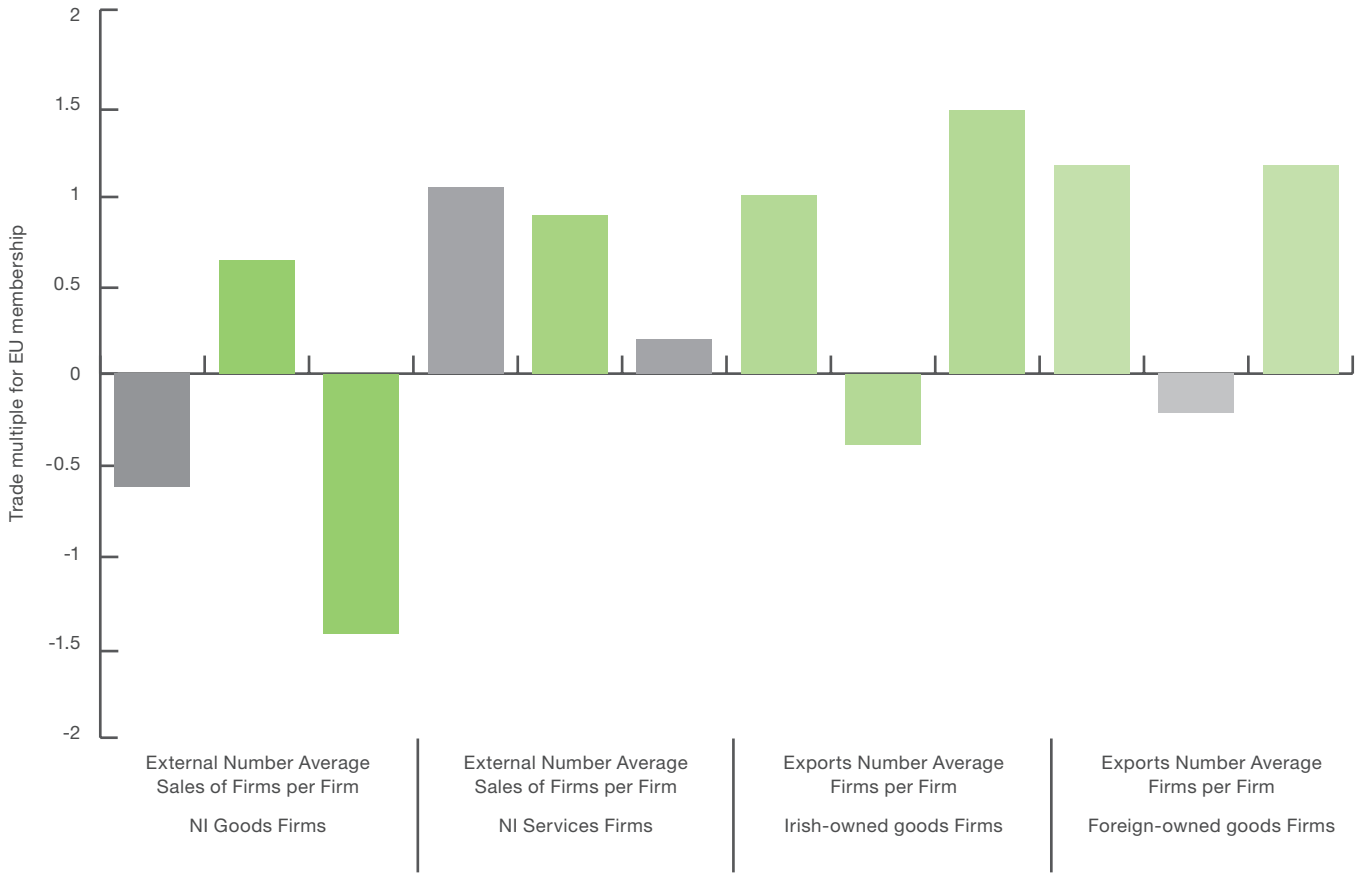
Market size, income level and common language all positively impact trade flows, both through increasing firm numbers and generating higher average sales.

Effects of EU Membership on trade flows

The effects of the indicators of specific destinations are the key variables of policy interest in an environment where trade arrangements with the EU are in the process of change. The estimate of the effect of EU membership on trade is shown in Figure 25 for each of the trade flows.

In contrast to most studies, including Ebell (2016) for the UK as a whole, our estimate of the effect of a destination country being an EU member does not have a statistically significant effect on total trade flows from Northern Ireland, either for goods or services. As noted above, Gudgin et al (2017) have argued that this average effect, estimated from global gravity models, overstated the impact of EU membership on UK trade, so this is in line with their findings that the average effect can vary across markets. However, in the context of the specification reported here, it is important that we also include a separate indicator for trade with Ireland which may absorb some of the effect of being within the EU, given the large share of Northern Irish trade that goes to Ireland.

FIGURE 25: EFFECT OF EU MEMBERSHIP ON TRADE



Source: Author's calculations using BESES data for NI and CIP data for Ireland. Bars in grey indicate results that are not statistically significant.

Although there is no overall impact for Northern Irish goods or services firms of the EU indicator, we do note a strong positive effect of EU membership in facilitating market entry for exporting firms, shown by the positive effects it has on the number of exporters. However, sales within those markets are then lower than would be expected, based on the other characteristics.

In contrast to the results for Northern Irish trade patterns, EU membership in a destination market is a significant driver of total trade flows for Irish-owned firms, more than doubling the trade levels that would be expected from the other country characteristics. The effect comes primarily from higher average sales within EU member countries for Irish-owned firms so the channel through which the EU has a positive effect is slightly different between Ireland and Northern Ireland, where the main driver of the EU effect was in easing firm entry to exporting. EU membership is of considerable explanatory power for exports of foreign-owned firms within Ireland, particularly in terms of their average sales levels. This is consistent with location choice of multinationals coming to Ireland being influenced by access to the larger European market.

Key Finding

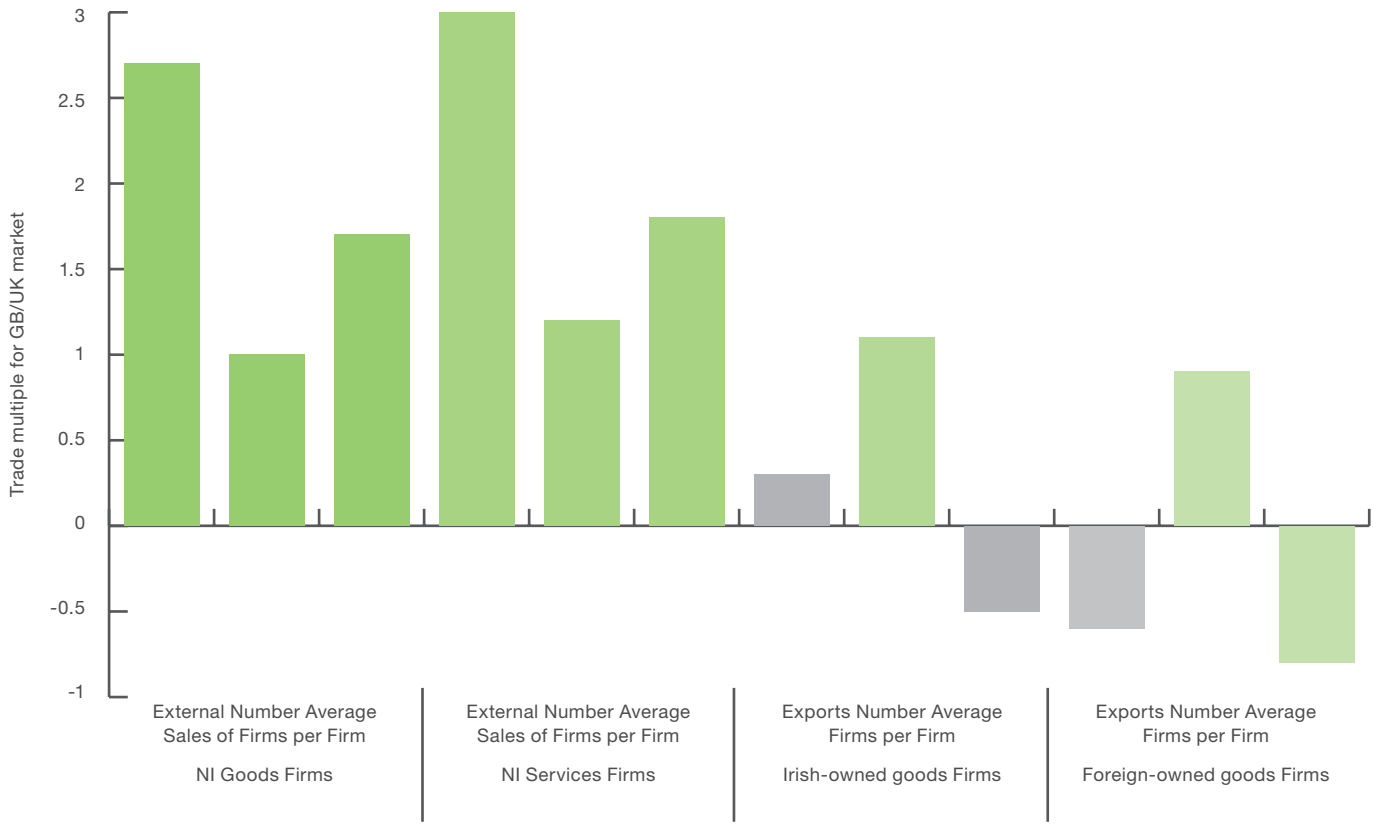
EU membership facilitates market entry by firms both from Northern Ireland and Irish-owned firms but impacts sales only for Irish-owned firms.

Effects of market-specific indicators for GB/UK and Ireland

To pick up differential effects of neighbouring markets, we include a separate indicator for the British market for Northern Ireland trade and the UK as a whole for Irish trade, the results of which are shown in Figure 26. For estimates relating to Northern Ireland, we also include an indicator variable for Ireland, shown in Figure 27. The indicator for the British market shows it is a much bigger market for Northern Irish goods and services trade than could be picked up by the inclusion of the other country characteristics. Likewise, the indictor specifically for the Irish market has a significant positive relationship with all of the measures of total external sales, number of firms exporting and average exports for Northern Irish firms in both sectors. In terms of the size of the effects, goods trade from Northern Ireland to Britain is 2.6 times higher than would be predicted based on the other market characteristics, while goods trade with Ireland is 1.5 times higher. For services trade, the magnitude of the effect is four times greater for Ireland relative to other markets and three times higher for Britain.

Trade with Ireland is shown to be highly accessible, with most of the effect of the Irish indicator working through its effect on increasing the number of exporters, although in this case without having any particular effect on the average sales of exporters. This is consistent with the earlier descriptive results, which showed that when micro or small firms do participate in exporting, they are almost overwhelmingly likely to export only to Ireland. Over 80% of micro firms and over 70% of small firms concentrate all of their export activity in Ireland. In contrast, the firm participation patterns showed that those firms that sell to the British market only and do not export to Ireland account for approximately 6% of firms. The vast majority of firms sell either exclusively in Northern Ireland, with the remainder being more likely to export to Ireland than to concentrate all of their external sales in the British market. Although trade with Britain makes up a larger share of sales value, there is a much greater spread in terms of firm numbers for cross-border trade, making it a particularly important source of economic activity.

FIGURE 26: EFFECT OF GB/UK INDICATOR VARIABLE ON TRADE



Source: Author's calculations using BESES data for NI and CIP data for Ireland. Bars in grey indicate results that are not statistically significant.

The effects of the British and Irish indicators are both strongly positive and considerably larger for services than the equivalents in the goods gravity model, with trade flows to Britain being three times higher and trade to Ireland over four times higher than could be explained with the other country controls. In both cases, this comes from a combination of more firms exporting and also, higher average sales.
The inclusion of a UK indicator for trade coming from Irish-owned goods firms is notable for its facilitation of firm participation with significantly higher numbers of exporters, although there is no evidence of an impact on the average values being traded.

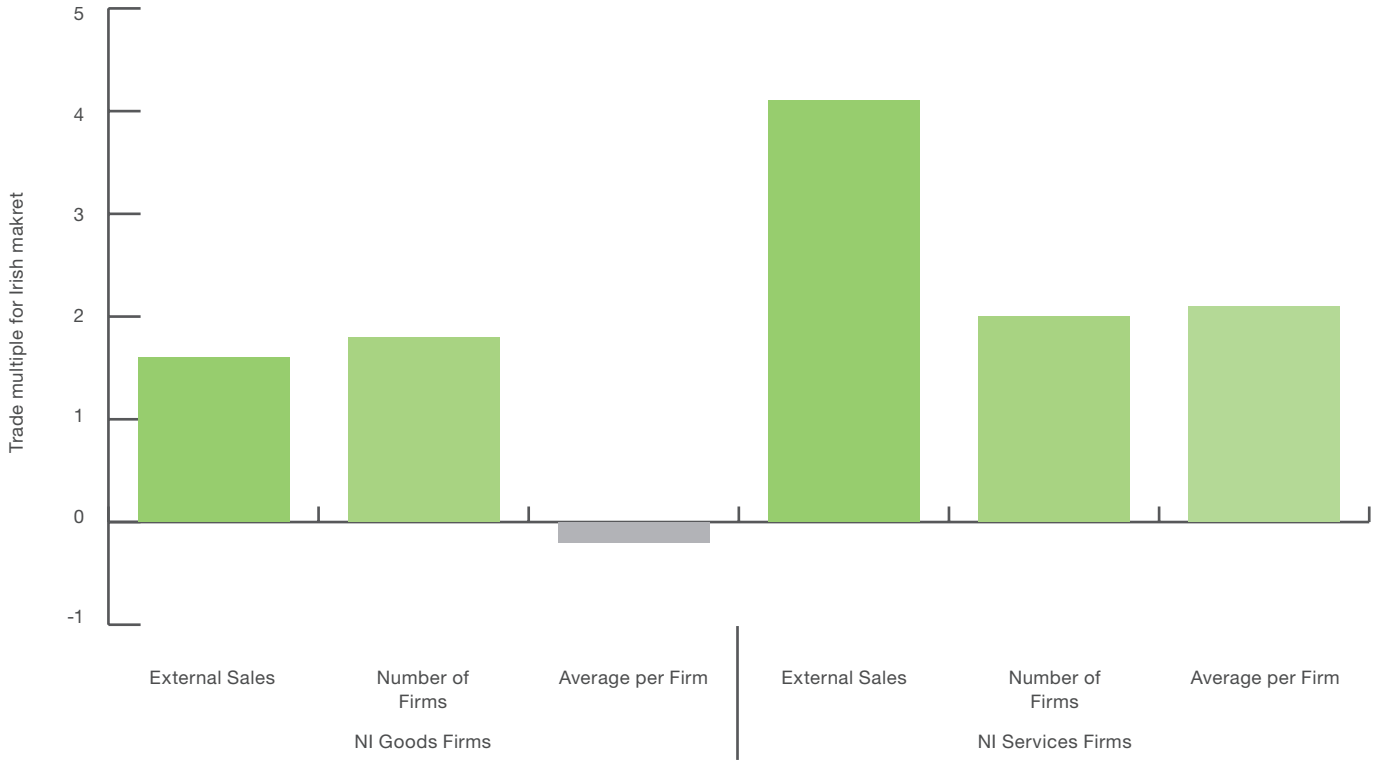
Key Finding

For Northern Irish firms, trade with Britain is several times higher than other country features would predict.

Key Finding

For firms in Ireland, the positive impact of the UK indicator on numbers of firms suggest this is a particularly easy market to access as an exporter.

FIGURE 27: EFFECT OF IRELAND INDICATOR VARIABLE ON NI TRADE



Source: Author's calculations using BESES data for NI and CIP data for Ireland. Bars in grey indicate results that are not statistically significant.

Key Finding

Trade from Northern Ireland to Ireland is considerably higher than other market features would predict, particularly for services firms. This suggests a particularly accessible market.

Implications in the context of Brexit

Previous research on the "Potential Impact of WTO Tariffs on Cross-Border Trade" published by InterTradeIreland in 2017 showed that the imposition of tariffs and other trade costs had the potential to negatively affect cross-border trade in goods, with the size of the effect depending on how large these costs might be and how responsive demand would be to cost increases. That report focused on the composition of affected products, finding that the majority of the effect would be felt by food producers, as this is the sector where the EU's external tariffs to countries without a trade agreement in place are highest. However, it did not include any scenarios on how cross-border services trade might be affected, as the focus was primarily on the observable and officially registered tariff rates of the EU. The analysis presented here on the patterns of trade give additional insight into how the effects of a change in trading relationship would be distributed across all exporters.

The estimates of the gravity relationship between destination market characteristics and Northern Irish exports indicate that it is changes in access to the Irish market specifically that will drive the effects of Brexit on Northern Irish exporters. Although the aggregate trade statistics in Table 1 showed that the Irish market accounts for one-third of Northern Irish exports and the rest of the EU accounts for one-fifth, the gravity model estimates suggest that the Irish market plays a much more substantial role in drawing firms into exporting. This is also shown by the high percentage of firms for whom the Irish market is their sole export destination, particularly amongst micro and small firms. This is also the case for the importance of the Northern Irish market as a springboard to broader exporting for Irish firms, with almost one-quarter of Irish goods exporters selling all exports into Northern Ireland, as shown by InterTradeIreland (2018).

Drawing this all together, then, suggests that the impact of any changes in the cost of trade post-Brexit are liable to be felt most particularly by very small firms trading only across the border. Firms large enough to have already expanded broadly into the EU market are more likely to have the resources and scale to continue exporting, either in their current markets or by diversifying into alternative locations. This is less likely to be an avenue that the very small cross-border traders will have the capacity to pursue. The evidence from the firm size distributions and the gravity model therefore suggests the impact on the number of firms trading could be disproportionately much higher than the estimates on the overall fall in trade, as many small exporters will not have the scale to cover additional costs. An analysis of the possible distribution of this impact across firms and their capacity to absorb potential cost increases will be the basis of the next stage of this research programme.

7. Summary and Conclusions

This report examines firm participation in exporting, export performance and determinants of export destinations for firms across the island of Ireland. Using detailed aggregate and firm-level data from both Northern Ireland and Ireland, we aim to give as comprehensive a picture as possible about the international activities of firms in both economies. This section summarises the key findings of the report, reflecting the over-arching themes that emerge relating to export activity, the role of small firms and the cross-border aspect of trade.

Beginning with the research questions on the concentration and composition of trade, we find that a much larger share of overall sales arises from local sales by Northern Irish firms, with a greater degree of export orientation existing for firms in Ireland. This is particularly the case for the services sector, where despite lower rates of individual firm participation in exporting, the scale of exports coming from Ireland is considerably larger. This is primarily driven by the multinational-dominated structure of the Irish export sector, with Irish-owned firms accounting for just 10% of total Irish exports in either goods or services. A further question posed in the introduction was the extent to which these patterns had changed over time, but within the timeframe of data available, most of the broad patterns appear to be stable.

For Northern Ireland, we find that 16.7% of firms participate in exporting with a somewhat higher share (22.7%) reporting external sales to either Britain or elsewhere. Almost all exporting firms appear to include Ireland as one of their destination markets, with 14.6% of firms selling across the border. In both economies, there is a strong relationship between firm size and external sales or exporting. For smaller firms that do export, the majority in Northern Ireland export to Ireland only. Over 80% of the smallest firm size group that export have all of their export sales in Ireland. Even amongst the largest firms, close to half of exporters sell to Ireland only. Likewise, exports to Northern Ireland make up an important share of exports for many Irish firms, with around one-quarter of Irish exporting firms having over 95% of their export sales recorded in Northern Ireland. The finding that essentially all of the exporting firms in each market sell into the neighbouring one provides suggestive evidence that exporting to the nearby and hence most familiar market can act as a springboard for broader exporting, as considered in the initial research questions.

While exporting is reasonably common amongst smaller firms in both economies, total export values are dominated by a few large exporters, with firms that have over 250 employees contributing almost half of total exports. This shows a considerable degree of concentration.

To answer the research question relating to the influence on exporting of firm characteristics such as size, ownership, broad sector (goods versus services) and productivity, we compare the characteristics of exporters and non-exporters across a number of performance indicators. A clear exporter premium is found with higher productivity, turnover and employment amongst all categories of exporter. Using productivity as an example, on average, exporters are approximately 20% more productive than non-exporters for Northern Irish firms and 8.5% more productive for domestically-owned firms within Ireland. Differences in turnover and employment are more varied across the different categories of firms but exporters consistently out-perform non-exporters on all metrics.

We then look at whether these effects differ by considering where the firms are exporting to and find no evidence of a statistically significant difference between Northern Irish goods firms selling within Northern Ireland and those with external sales to Britain (but no exports). Firms exporting to Ireland are 9% more productive than firms with local sales but the main source of the gap in performance comes from firms that export beyond the Irish market.

For services firms, those selling to Ireland as their only export market are most similar to local firms in terms of productivity, while those selling either to the British market or exporting more broadly have more systematically higher productivity rates. Irish-owned exporters are more productive than non-exporters and the gap in performance is found to be somewhat higher for those exporting to the UK market only than for those with a wider export reach.

We then look at the factors influencing whether or not firms export, how much and where they export to address the next research question relating to the determinants of export participation and levels of export sales. For firms both North and South, this finds that firm productivity is positively associated with a greater likelihood of being an exporter and with selling more and that there is a steadily increasing probability of being an exporter as size increases. The firm size effect is found to be considerably stronger for goods firms relative to services firms.

The final section of the report examines characteristics of destination markets for Northern Irish and Irish export flows, using a gravity-style model and decomposing the effects of the destination country characteristics into how they impact on firm participation in exporting and on average sales of exporters. We particularly focus on the effects of the destination being an EU member, as this type of model has previously been used to estimate potential changes in trade following Brexit by assuming any current positive impact on trade would be removed (Ebell, 2016). In common with most gravity model estimates, we find that distance, market size, income level and common language are all important determinants of export destinations and that they tend to be important factors both for attracting firms to a market and for the average level of export sales.

In contrast to Ebell's (2016) analysis for the UK as a whole, we find little effect of a destination country being an EU member on total trade flows from Northern Ireland, although it is a strong factor in attracting trade from Ireland. However, for the modelling of Northern Irish trade we also include separate indicators for Britain and Ireland and both of these have large positive relationships with total external sales, number of firms exporting and average exports. While EU membership has no overall impact on trade levels for Northern Ireland, it does appear to facilitate market entry for exporting firms. However, sales within those markets are lower than would be expected, based on the other characteristics, possibly as a result of the peripheral location.

The final research question was to examine the results in the context of Brexit. The evidence in the report suggests that, for Northern Irish firms, it will be changes in access to the Irish market specifically that are likely to drive the effects, rather than access to the broader EU. This reflects the high percentage of firms for whom the Irish market is their sole export destination, particularly amongst micro and small firms. It further indicates that the impacts of any changes in the cost of trade post-Brexit are liable to be felt most particularly by very small firms trading only with Ireland. Likewise, the impacts on Irish firms would be concentrated amongst smaller firms whose export activity is more concentrated in cross-border activity.

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