

Beta testing of the Northern Ireland Annual Business Inquiry and Broad Economy Sales and Exports Statistics datasets, with a focus on spatial and sectoral analysis of Northern Ireland trade from 2014 to 2020

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Summary

Our project was orientated around four research questions:

1. Is the data provided by the Northern Ireland Statistics and Research Agency (NISRA) – namely, the Northern Ireland Annual Business Inquiry (NI ABI) and Broad Economy Sales and Exports Statistics (BESES) - useable for researching the performance and trading behaviour of Northern Ireland (NI) businesses?
2. How has the relative performance and trading behaviour of business sectors in Northern Ireland changed over the period 2014–2020, with particular emphasis on the 10X priority clusters (see Background)?
3. Are there sub-regional differences in the relative performance and trajectory of business sectors in Northern Ireland over the period 2014–2020, with particular emphasis on the 10X priority clusters?
4. Is it possible to design a model for Northern Ireland trade distinct from the United Kingdom?

What we did

Our project contributes to the beta testing of the Business Data for Research (NI) database by critically reviewing the quality and useability of the NI ABI and BESES datasets and providing feedback to inform future data collection and provision.

As a preliminary research exercise, we provide insights into the trading behaviour and economic performance of businesses identified as belonging to the 10X priority sectors relative to other businesses. We also examine whether geography, Brexit and Covid-19 impacted business trading behaviour and economic performance over the period 2014–2020.

Background

This project responds to an ESRC funding call to expand the use of the Business Data for Research (Northern Ireland) database by researchers, with particular focus on informing the Department for the Economy's "[10X Economy](#)" vision. We present an exploration and review of newly available micro-business data, paying attention to its useability in evaluating Northern Irish trade.

We use the de-identified Northern Ireland Annual Business Inquiry, which is one of three datasets in the Business Data for Research (NI) database available as part of this funding call.

Until now, this data has been available on a restricted basis, but the intention is to expand its use to ADR UK researchers in approved safe settings.

What we found

Our review of the data and supporting materials highlighted several issues/limitations:

1. Coverage: Not all businesses are surveyed annually, with notable gaps in 10X coverage.
2. Reporting: It is not fully clear when data has been imputed or how weighting is applied; there are issues with zeroes and anomalies/errors that could be more effectively dealt with pre-publication; geographic consideration of the data is limited by reporting and confidentiality constraints; there are areas where the availability of supplementary data would be useful (e.g. trade by country destination, R&D); there is no delineation of 10X businesses.
3. Supporting materials: The available resources are not organised in a user-friendly manner. There is also a lack of clarity in the full data derivation process and how researchers should use the data.

Our preliminary analysis of the data, focusing especially on business performance and trade, showed:

1. The feasibility of a developing a 10X classification system – we were able to develop our own.
2. The ability to delineate and summarise indicators of trade and performance by sub-NI region, year and sector (including separate 10X sectors). See the figures that follow for a selection of examples.
3. The ability to econometrically analyse the determinants of business performance and trading behaviour and incorporating a Brexit comparison.

Our consideration of the possibility of developing a trade model for Northern Ireland highlighted:

1. The policy need given Northern Ireland's unique trading position and the importance of external/export markets.
2. The prominence of gravity modelling in considering international trade and existing studies where it has been applied in local contexts (e.g. Gudgin et al., 2017; InterTradeIreland, 2018; Lawless et al. 2019; Keogh, 2019).
3. The plausibility of applying a gravity-type model to Northern Ireland.
4. Preliminary considerations for researchers such as the need for supplementary variables beyond BESES, the choice of estimation method, and the choice of firm, sector or country-level analysis.



Why it matters

Data-driven insights can be used by researchers to provide evidence and recommendations for policymaking. However, to effectively use such datasets, researchers require reliable, understandable and timely data provision. In this respect, our project has shown that there are a range of enhancements that could be made to the provision of the NI ABI and BESES datasets to improve their useability by the research community.

Our project also underscores the potential for better use of data to measure and assess the 10X economic vision. This can be achieved by including 10X identifiers in the datasets and by utilising a wide range of descriptive, inferential, and visual statistics. Our project provides some pointers to such outcomes.

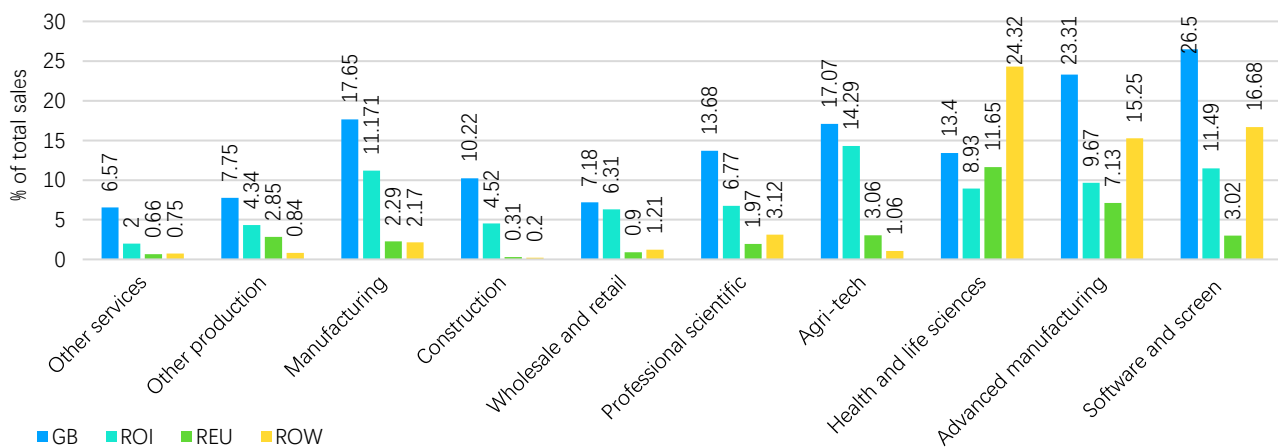
What next?

Our project suggests several future avenues:

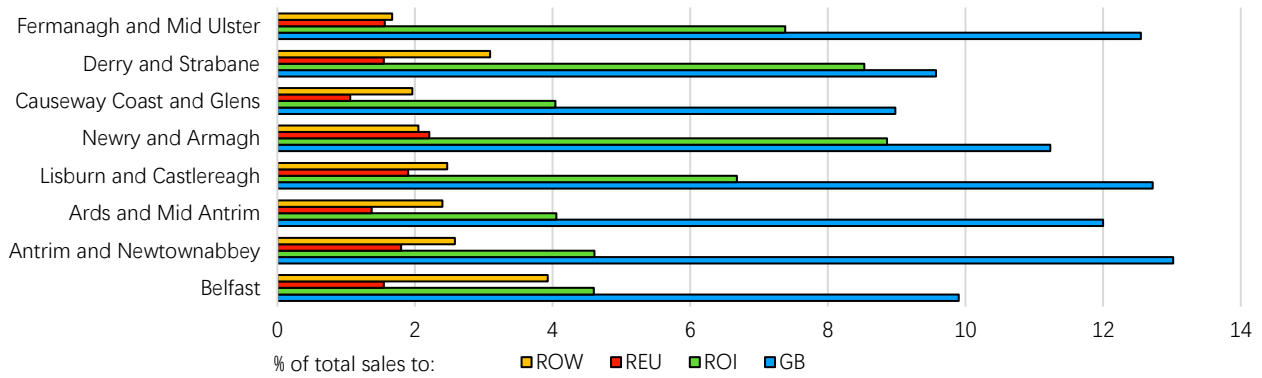
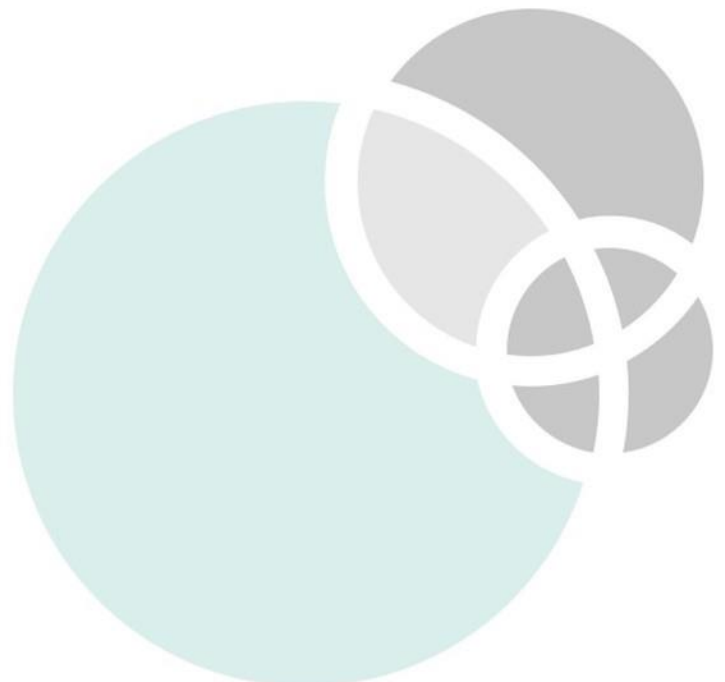
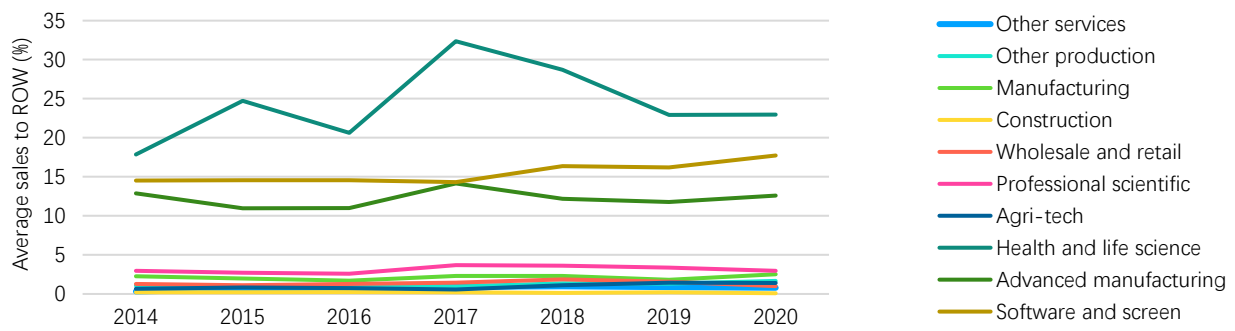
1. Data providers should: enhance the clarity of data provision so that researchers can appropriately and effectively use the datasets; consider improvements in quality control (e.g. automation) and policy relevance (e.g. 10X alignment).
2. Researchers should: generate academic publications using the datasets and associated analysis; extend the analysis to consider recent Brexit and Covid-19 impacts; link BESES data with other data to model NI trade.

Sample graphs (trade behaviour – business-level data)

Figure 1: Average percentage of total sales to external markets by sector, pooled data, 2014–2020



GB = Great Britain
 ROI = Republic of Ireland
 REU = Rest of the EU
 ROW = Rest of the World

Figure 2: Average percentage of total sales to external markets by location, pooled data, 2014–2020

Figure 3: Average percentage of total sales to the rest of the world by sector, 2014–2020


Acknowledgements

Administrative Data Research Northern Ireland (ADR NI) takes privacy protection very seriously. All information that directly identifies individuals will be removed from the datasets by trusted third parties, before researchers get to see it. All researchers are trained and accredited to use sensitive data safely and ethically, they will only access the data via a secure environment, and all of their findings will be vetted to ensure they adhere to the strictest confidentiality standards. The help provided by the staff of Administrative Data Research Centre Northern Ireland (ADRC NI) and the Northern Ireland Statistics and Research Agency (NISRA) Research Support Unit is acknowledged. ADR NI is funded by the Economic and Research Council (ESRC). The authors alone are responsible for the interpretation of the data and any views or opinions presented are solely those of the author and do not necessarily represent those of the ADR NI. NISRA's data has been supplied for the sole purpose of this project.

About ADR UK

ADR UK (Administrative Data Research UK) is a partnership transforming the way researchers access the UK's wealth of public sector data, to enable better informed policy decisions that improve people's lives. By linking together data held by different parts of government and facilitating safe and secure access for accredited researchers to these newly joined-up and de-identified data sets, ADR UK is creating a sustainable body of knowledge about how our society and economy function – tailored to give decision makers the answers they need to solve important policy questions. ADR UK is funded by the Economic and Social Research Council (ESRC), part of UK Research and Innovation.

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References

1. Gudgin, G., Coutts, K., Gibson, N. and Buchanan, J. (2017) The role of gravity models in estimating the economic impact of Brexit. Centre for Business Research, University of Cambridge, Working Paper No. 490. Available from: https://www.ulster.ac.uk/_data/assets/pdf_file/0015/181500/CBR_Gravity-models.pdf.
2. InterTradeIreland (2018) Export participation and performance of firms on the island of Ireland. Newry: InterTradeIreland. Available from: <https://intertradeireland.com/assets/news/Export-Participation-and-Performance-of-Firms-on-the-Island-of-Ireland-Web-version-September-2018-1.pdf>.
3. Keogh, G. (2019) A gravity model analysis of Irish merchandise goods exports under Brexit. Journal of the Statistical and Social Inquiry Society of Ireland, 48 (2018-19), 41-70.
4. Lawless, M., Neary, J. P., and Studnicka, Z. (2019) South-North trade in Ireland: Gravity and firms from the Good Friday Agreement to Brexit. The Economic and Social Review, 50 (4), 751-766.