

Data Explained

The impact of technologies on the productivity and people of Northern Ireland

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Our study explored the effects of technology investment on Northern Ireland's economy. We found that firms investing in technology experience increased employment growth and offer higher wages. However, the impact on overall productivity is minimal. The relationship between technology investment and economic outcomes varies based on firm size. Understanding these dynamics is crucial for policymakers, business owners, and the public to address the productivity puzzle and mitigate job insecurity and inequality. Our research supports the Department for the Economy's [10X vision](#) and emphasises the importance of balancing technological advancements with inclusive growth strategies.

Initial research questions

1. To explore and describe the differences across sectors and regions with regards to subsidies received, tax contributions, economic growth, inclusive growth and green growth between 2014 and 2020.
2. To assess whether the key strategic clusters in the 10x vision were growth enablers between 2014 and 2020. This was done by measuring whether companies operating in these strategic clusters differed from other organisations with regards to subsidies received, tax contributions, economic growth, inclusive growth and green growth.
3. To understand the extent to which the investments in technologies caused measurable differences in economic growth, inclusive growth and green growth.
4. To propose and promote the resulting models based on the Northern Ireland Annual Business Inquiry data. This enables them to be used for the ongoing annual assessment of the 10x vision.

Dataset and variables used

The project used the Northern Ireland Annual Business Inquiry which also incorporates variables from the Broad Economy Sales and Exports Statistics. It provides a range of variables to investigate subsidies and investment in computers and machinery and how they affect economic growth, inclusive growth and green growth. It also enables the imposition of various controls.

Data limitations encountered

- The mapping of Standard Industrial Classification (SIC) codes to the clusters, as presented in the 10x vision, cannot be reliably established.
- Within the dataset, zero values are used in place of Not Applicable (NAs), thereby creating uncertainty regarding the accurate recording of data as zeros.
- Obtaining statistics other than the mean proves challenging, often leading to misleading descriptive statistics that then cannot be sensibly shared.
- There were considerable delays in the release of outputs, impeding the effective dissemination of findings.

Necessary modifications to initial research questions or research design

In light of the inherent incompatibility between the strategic clusters and the SIC codes, as originally presented in the 10x vision, necessary modifications were made to research questions 1 and 2. This adjustment was essential due to the unavailability of a direct mapping mechanism between these classification systems. As a result, the descriptive statistics have been restructured to incorporate a comprehensive analysis encompassing various sectors and regions, specifically focusing on the investment patterns related to computers and machinery. This refined methodology aims to provide a more accurate representation of the investment landscape within these sectors and regions, considering the intricate nuances associated with their respective economic activities.

Furthermore, with regard to research question 4, it is important to note that the delayed release of outputs had an impact on the timely dissemination of insights from the project. However, it is

worth mentioning that the sharing of insights will continue beyond the scope of the project, ensuring that valuable information is disseminated in a comprehensive manner. This ongoing effort will continue past the project's conclusion, ensuring that the knowledge and findings derived from it have a lasting and meaningful impact.

Necessary modifications to the data

We would suggest not using zero values in place of NAs.

Recommendations to data owners

Same as above.

Additional data which would help to further develop the research

There is a significant benefit in collecting information that facilitates the identification of companies within the specific strategic clusters. This additional data would enable a more refined analysis and understanding of the companies operating within these clusters, providing valuable insights into their activities, performance, and contribution to the broader economic landscape. By obtaining this information, a more comprehensive picture of the strategic clusters can be developed. This will empower policymakers, researchers, and stakeholders to make informed decisions and formulate targeted strategies to support and promote the growth and development of these specific clusters.

Please include code files used in your analysis

Please contact NISRA Research Support Unit: rsu@nisra.gov.uk for code files.

Feedback on metadata, synthetic data and other documentation provided

Overall, the data was presented in a comprehensible format that facilitated ease of reading and interpretation. The provided documentation was deemed adequate, offering a sufficient level of information necessary for understanding and using the data effectively. This combination of user-friendly data presentation and comprehensive documentation contributes to a streamlined and efficient data analysis process, enabling researchers and analysts to navigate and extract valuable insights from the dataset.

Any other comments

Should you have any inquiries or require additional details, please do not hesitate to contact me via the email provided below. I am readily available to provide further information, offer clarification, or address any concerns that may arise.

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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