Australian Government
Australian Research Council

EI 2018 ENGAGEMENT AND IMPACT

Engagement and Impact 2018

Swinburne University of Technology

SWN14 (SS) - Impact

Overview

Title

(Title of the impact study)

Improving the quality of evidence about business performance

Unit of Assessment

14 - Economics

Additional FoR codes

(Identify up to two additional two-digit FoRs that relate to the overall content of the impact study.)

Socio-Economic Objective (SEO) Codes

(Choose from the list of two-digit SEO codes that are relevant to the impact study.)

91 - Economic Framework

Australian and New Zealand Standard Industrial Classification (ANZSIC) Codes

(Choose from the list of two-digit ANZSIC codes that are relevant to the impact study.)

69 - Professional, Scientific and Technical Services (Except Computer System Design and Related Services)

Keywords

(List up to 10 keywords related to the impact described in Part A.)

Business longitudinal database

panel data estimations

microdata

evaluation

industry economic analysis

Sensitivities

Commercially sensitive

No

Culturally sensitive

No

Sensitivities description

(Please describe any sensitivities in relation to the impact study that need to be considered, including any particular instructions for ARC staff or assessors, or for the impact study to be made publicly available after EI 2018.)

Aboriginal and Torres Strait Islander research flag

(Is this impact study associated with Aboriginal and Torres Strait Islander content?
NOTE - institutions may identify impact studies where the impact, associated research and/or approach to impact relates to Aboriginal and Torres Strait Islander peoples, nations, communities, language, place, culture and knowledges and/or is undertaken with Aboriginal and Torres Strait Islander peoples, nations, and/or communities.)

No

Science and Research Priorities

(Does this impact study fall within one or more of the Science and Research Priorities?)

No

Impact

Summary of the impact

(Briefly describe the specific impact in simple, clear English. This will enable the general community to understand the impact of the research.)

The Swinburne industrial economics team has used newly available business micro datasets to address questions related to 18 separate government policy issues. This has helped governments advocate and frame policy. Four major government agencies have benefited from this collaborative research, which is effecting a step-change in the quality of evidence-based industrial policy development. Key government programs informed by this research include R&D and business support. The Australian Bureau of Statistics claims this research has been vital in enhancing both access to and the coherence of its datasets, making them a more useable and relevant data asset.

Beneficiaries

(List up to 10 beneficiaries related to the impact study)

Victorian and Australian Governments

Australian business

Countries in which the impact occurred

(Search the list of countries and add as many as relate to the location of the impact)

Australia

Details of the impact

(Provide a narrative that clearly outlines the research impact. The narrative should explain the relationship between the associated research and the impact. It should also identify the contribution the research has made beyond academia, including:
- who or what has benefitted from the results of the research (this should identify relevant research end-users, or beneficiaries from industry, the community, government, wider public etc.)
- the nature or type of impact and how the research made a social, economic, cultural, and/or environmental impact
- the extent of the impact (with specific references to appropriate evidence, such as cost-benefit-analysis, quantity of those affected, reported benefits etc.)
- the dates and time period in which the impact occurred.

NOTE - the narrative must describe only impact that has occurred within the reference period, and must not make aspirational claims.)

The Swinburne industrial economics team, which moved from the University of Melbourne in 2015, has worked closely with four government agencies since the early 2000s to unlock the value of large administrative datasets. The team has been on the forefront of improving the quantity and quality of these large government datasets and making them available to policy-makers to effect a step-change in the quality of evidence-based industrial policy development.

AGENCIES IMPACTED
Since 2011, the Swinburne industrial economics team has addressed a total of 18 separate policy issues by collaborative research with four government entities: IP Australia (the national office for patents, trademarks, designs and plant breeder rights); the Australian Department of Industry, Innovation and Science; the Victorian Department of Economic Development, Jobs, Transport and Resources; and the Australian Bureau of Statistics. Each research project informed a specific policy need such as the Victorian trade mission program and the Federal Government's R&D Tax Incentive program (valued at $3.3 billion a year).

WHAT PERMITTED THE IMPACT?
Historically, the paucity of effective datasets has been the main limiting factor in objective policy and program evaluation. Now cheaper computing power and the design of mechanisms to de-identify confidential data for analytic purposes has made it possible to convert the large, detailed administrative datasets collected by government departments into business tools.

Since 2002, the industrial economics team has worked with government agencies to clean and link some of the datasets, including: Australian Taxation Office unit record data on business sales, employment exports and investment; registrations of patents and trademarks; data on government programs. The ABS, supported by the Federal Department of Industry, Innovation and Science, then developed the Business Longitudinal Analytic Database Environment (BLADE) that integrates data from different surveys and government programs (> 100 million records).

The Swinburne team is on the frontier of using this new 'cleaned' data infrastructure, along with robust econometric methods, to do policy-relevant research that matters to the government entities.

TYPES OF DECISION-MAKING AND POLICY AREAS IMPACTED
The multiple reports provided by the Swinburne industrial economics team has enabled government economic analysts to understand what drives business to improve performance (e.g. sales, export, productivity and launch of new products) in a more nuanced and robust way than was previously possible.

Since 2011, the Swinburne industrial economics team has addressed the following policy issues with these new business micro datasets: Does the patent system inhibit collaboration between public and private sectors? Is the international patent system biased against foreign applicants? Does participation in trade mission programs lead to higher exports? Does participation in other government business programs lead to higher sales, employment etc? Does R&D by one firm generate benefits for other firms in the same industry?

Prior to the availability of these datasets, analysts relied on aggregated or summary data, such as total numbers of businesses, total patents or total sales. Since it is difficult to disentangle cause from effect, research predominantly based on summary data had reduced credibility, as do any polices based upon them. Policy-making thus became open to intuitive guesswork and rent-seeking (the process whereby businesses and industry lobby for special privileges that improve their profits but make no contribution to wealth creation). The arrival of unit-record datasets has enabled a step-change in Australian industry policy-making, facilitated by Swinburne researchers.

EVIDENCE OF IMPACT
According to the Office of the Chief Economist from the Australian Department of Industry: 'Swinburne … has been instrumental in looking at the policy rationale of existing programs, with the aim to provide high-quality evidence. The Department of Industry, Innovation and Science … has actively used this research as important evidence for potential changes to the R&D Tax Incentive program … The work the group has undertaken on the impact of collaboration on productivity growth … is the only econometric evidence in Australia of why collaboration in SMEs is important for productivity growth.'

The Victorian Director (Outcomes, Performance and Evaluation), Department of Economics Development Technology, Jobs and Resources, said: 'Your research has contributed to both policy development and evaluation in this department … it has enabled us to move from relying on a mixture of self-reporting by grant recipients … to assessing the effectiveness of whole classes of program intervention by type of policy response … As a consequence we are now designing our business grants taking into account the findings of the grant impact evaluation … [which] has been a key factor in the changes to program design currently under consideration.'

The Program Manager, Data Integration Partnerships Branch, Australian Bureau of Statistics said: 'Swinburne [has]… played a vital role in this area. Their contribution to BLADE has been across two key areas. Firstly, they have produced policy-relevant research which has demonstrated the tremendous value of BLADE to researchers and the government. Professor Webster and her team have been proactive in communicating their work through a range of channels. This promotion of BLADE has led to significantly increased interest in ABS data and helped government researchers understand what BLADE can do.

'Second, the Swinburne team have helped the ABS improve BLADE. They have entered into a meaningful dialogue with the ABS about how to enhance the coherence of the data and also how to improve access to it. The tone of the dialogue has always been constructive and has helped BLADE become a more useable and relevant data asset.'

Associated research

(Briefly describe the research that led to the impact presented for the UoA. The research must meet the definition of research in Section 1.9 of the EI 2018 Submission Guidelines. The description should include details of:
- what was researched
- when the research occurred
- who conducted the research and what is the association with the institution)

Swinburne researchers across many different disciplines have long entwined education research within their focused fields, particularly around innovative delivery methods for STEM education and industry-based learning. The University has published widely in these areas, across disciplines such as ICT (coding and software engineering), astronomy, chemistry, creative arts/gaming, and design engineering. The researchers in these fields have been involved in developing and delivering immersive and interactive learning experiences and workshops for KIOSC.

Research is ongoing and has been undertaken from the 1990s. It both informs and is informed by the experience teaching STEM and ICT to young people. A selection of this research is given below in section A7.

Examples include research focusing on the use of technology and computers in schools for teaching and learning purposes, robotics in education (the use of robotics to understand coding), how to convey the love of STEM to girls, how to combine advanced technology with learning about STEM and sustainability, educational approaches in astronomy, use of mobile computing devices in schools, and ICT leadership in schools.

Of particular note, Swinburne research was the precursor for robotics workshops to be introduced at KIOSC, which made KIOSC an early adopter of robots in the STEM education sector.

FoR of associated research

(Up to three two-digit FoRs that best describe the associated research)

14 - Economics

References (up to 10 references, 350 characters per reference)

(This section should include a list of up to 10 of the most relevant research outputs associated with the impact)

Buddelmeyer, H, Jensen, PH & Webster, E 2010, 'Innovation and the Determinants of Company Survival', Oxford Economic Papers, vol. 62, no. 2, pp. 261-285.

Leahy, A, Palangkaraya, A & Yong, J 2010, 'Geographical Agglomeration in Australian Manufacturing', Regional Studies, vol. 44, no. 3, pp. 299-314.

Palangkaraya, A, Webster, E & Jensen, P 2011, 'Misclassification in Patent Offices: evidence from a matched sample of patent applications', Review of Economics and Statistics, vol. 93, no. 3, pp. 1063-1075.

Palangkaraya, A & Yong, J 2011, 'Trade liberalisation, exit, and output and employment adjustments of Australian manufacturing establishments', The World Economy, vol. 34, no.1, pp. 1-22.

Palangkaraya, A, Webster, E & Cherastidtham, I 2012, Evidence-based policy: Data needed for robust evaluation of industry policies, A Report for the Australian Dep. of Industry, Innovation, Science, Research and Tertiary Education, Intellectual Property Research Institute of Australia, Melbourne Institute of Applied Economic & Social

Research, UoM.

Thomson, R & Jensen, PH 2013, 'The effects of public subsidies on R&D employment: Evidence from OECD countries', National Tax Journal, vol. 66, no.2, pp. 281-310.

Webster, E, Palangkaraya, A & Jensen, P 2014, 'Patent Examination Outcomes and the National Treatment Principle', RAND Journal of Economics, vol. 45, no. 2, pp. 449–469.

Doran, P & Thomson, R 2016, Economic Impact Analysis – Victorian Medical Technologies & Pharmaceuticals Sector, Centre for Transformative Innovation, Swinburne University of Technology.

Milic, J, Palangkaraya, A & Webster, E 2016, Impact of Victoria Trade Missions Program 2010-12 on Export Revenue, A Report for the State of Victoria Department of Economic Development, Jobs, Transport and Resources (public release version online in 2017).

Thomson, R & Skali, A 2016, The Additionality of R&D Tax Policy in Australia Centre for Transformative Innovation, Centre for Transformative Innovation, Swinburne University of Technology.

Additional impact indicator information

Additional impact indicator information

(Provide information about any indicators not captured above that are relevant to the impact study, for example return on investment, jobs created, improvements in quality of life years (QALYs). Additional indicators should be quantitative in nature and include:
- name of indicator (100 characters)
- data for indicator (200 characters)
- brief description of indicator and how it is calculated (300 characters).)