

Disruptive technology as a public sector driver of change

Aim

This Summer Research Scholarship was dedicated to analysing what the public sector *could* look like in 2035, in order for the IRD and related agencies to plan and prepare.

Process

To identify what the public sector *could* look like in 2035, things that had the capacity to change the public landscape (i.e. **drivers of change**) were identified and researched. Nine key drivers were analysed. The most significant driver and topic of this poster was Disruptive Technology. Two questions were asked of the research: Firstly, **what** is happening with this driver? And more specifically, **so what** does this mean for the IRD and its roles of Tax collection, Information distribution and Transfers?

Focus

Disruptive Technology *could* have widespread impacts on the public sector and general life. Of most relevance to the New Zealand public landscape and IRD was technology's ability to catalyse the production of laboratory grown meat and its capacity to automate jobs.

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Laboratory Grown Meat



What is significant?

Price factor

Since the first laboratory grown meat burger was eaten in 2013 at a price of US \$1.2million per pound of meat, its price has reduced to a much more affordable US \$11.36 per pound. US companies such as Memphis Meats plan to reach cost parity with traditional meat by 2021.¹

Environmental Impact

Agriculture makes up around half of New Zealand's greenhouse gas emissions. Comparatively, laboratory grown meat uses 99% less land and 96% less water, generating up to 96% lower greenhouse gas emissions than conventional meat production.²

The big question

The production and cost parity of laboratory grown meat is largely an inevitability. What is pivotal is the question of consumption. Socially, adoption into every day diet largely depends on whether people find laboratory based meat unnatural and repugnant or support it. Only time will tell, however both sides of opinion are evident; laboratory grown meat has been referred to by some as 'Frankenmeat' but ethically appealing by others.

So what

for the Public sector and the IRD?

Agriculture makes up 5% of New Zealand's GDP. With the potential of conventional meat production being replaced by laboratory grown meat, the economic impacts are proportionately large.³



Domestically, a loss of jobs related to conventional agriculture results in less taxable income and larger demand for welfare support for the newly unemployed. Subsequent transfers-related impacts centre on lessened KiwiSaver contributions from less overall income, and potentially slower student loan repayments.



Globally, less exports of conventional meat (and subsequent taxes) could threaten GDP and tariff income, while also hindering New Zealand's economic reputation as a stable, agricultural country.

However, if laboratory grown meat is not widely accepted socially then New Zealand's agricultural industry could be boosted as a confirmed consumable preference worldwide.

References: ¹ Paul Cuatrecasas "Laboratory-grown meat is coming, but are farmers ready?" (26 July 2017) Stuff <https://www.stuff.co.nz/business/farming/agribusiness/95109989/laboratory-grown-meat-is-coming-but-are-farmers-ready>. ² University of Oxford "Lab-grown meat would 'cut emissions and save energy'" (21 June 2011) University of Oxford: News and Events <http://www.ox.ac.uk/news/2011-06-21-lab-grown-meat-would-cut-emissions-and-save-energy>. ³ Stats NZ "Economic performance of the agricultural industry" (21 October 2015) New Zealand's Environmental Reporting Series <http://archive.stats.govt.nz/browse_for_stats/environmental-reporting-series/environmental-indicators/Home/Land/economic-performance-agriculture.aspx>. ⁴ McKinsey Global Institute "A Future That Works: Automation, Employment, and Productivity" (January 2017) <https://www.mckinsey.com/-/media/McKinsey/Global%20Themes/Digital%20Disruption/Harnessing%20Automation%20for%20a%20future%20that%20works/MGI-A-future-that-works-Executive-summary.ashx>. ⁵ Andrea Loubier "How Will The Future Of Work Affect Women?" (7 June 2017) Forbes <https://www.forbes.com/sites/andrealoubier/2017/06/07/how-will-the-future-of-work-affect-women/#6a220e34c26e>. ⁶ Sarah Kessler "The optimist's guide to the robot apocalypse" (9 March 2017) Quartz <https://qz.com/904285/the-optimists-guide-to-the-robot-apocalypse/>. ⁷ Loubier "How Will The Future Of Work Affect Women?" 2017. ⁸ Rachel Thomas "Robots could threaten up to half New Zealand's jobs in next 20 years" (20 June 2016) Stuff <https://www.stuff.co.nz/business/81237965/robots-could-threaten-up-to-half-new-zealands-jobs-in-next-20-years>. ⁹ Arian Marshall "Tesla bears some blame for self-driving crash death, Feds say" (13 September 2017) Wired <https://www.wired.com/story/tesla-robot-crash-death/>.



Automation of Jobs



What is significant?

Today's world is experiencing the Fourth Industrial Revolution, which has increased the use of Augmented Intelligence and catalysed the concept of Autonomous Intelligence for the future – that is, machines having the capacity to act on their own.

What is automatable?

Skills that cannot be as easily replaced by technology are those that involve problem-solving, leadership, and creativity. Predictable physical activities and data processing are most at risk, with the former being 81% automatable. In the US these account for 51% of activities in the economy accounting for almost US \$2.7 Trillion in wages.⁴

Social Problem - Automation can disproportionately affect minorities who have typically physical or lower skilled jobs.⁵

Predictions and History

By the numbers:

500 years ago Queen Elizabeth I refused a patent for an automated knitting contraption fearing the automation of many jobs that poor women relied on.⁶

2 Billion jobs predicted to disappear by 2030.⁷

46% of New Zealand jobs were at risk of automation over the next two decades. That's **885,000** jobs, in all sectors.⁸

So what

for the Public sector and the IRD?



Global Competition

Automation will certainly make the world economy move faster. Increased productivity levels allow a wider tax revenue on exportable goods, however this productivity increase is likely to be capitalised on by factory heavy economies such as the United States, China and Japan who can reduce labour costs immediately.



The Unknown

Technology automating jobs will result in less taxable income from workers whose jobs have been automated, **BUT** there is uncertainty as to what new jobs the technology will create. Similarly, there is uncertainty around how many jobs 'at risk' will actually be automated, which will subsequently affect how many welfare payments such as Working for Families are dispersed.



Demographic Impact

The automation of dangerous tasks would lengthen life spans and increase the working age population. In the US 94% of the annual 35,000 road deaths are due to human error which automation would solve.⁹



The Inequality Question

With minorities holding majority of jobs at risk of automation, how does the government intervene to stop the widening gap between rich and poor? How can capital be fairly taxed? Should a Universal Basic Income be considered?