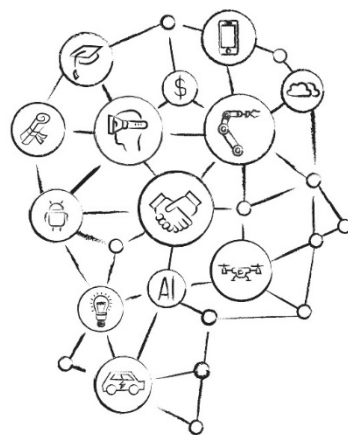


Benchmarking New Zealand's frontier firms

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Stats NZ disclaimer

These results are not official statistics. They have been created for research purposes from the Integrated Data Infrastructure (IDI) and Longitudinal Business Database (LBD) which are carefully managed by Stats NZ. For more information about the [IDI and/or LBD] please visit

<https://www.stats.govt.nz/integrated-data/>.

Introduction

In 2020/2021 we undertook an inquiry into the economic contribution of New Zealand's most productive "frontier" firms.

Objectives of this study:

- *Present stylised facts on average productivity levels and growth rates for NZ in comparison to SAEs,*
- *Provide an analytical framework for evaluating diffusion and the extent of productivity convergence for NZ relative to SAEs,*
- *Review the allocation of capital and labour across the productivity distribution in NZ and SAEs*

Data

7th vintage CompNet data:

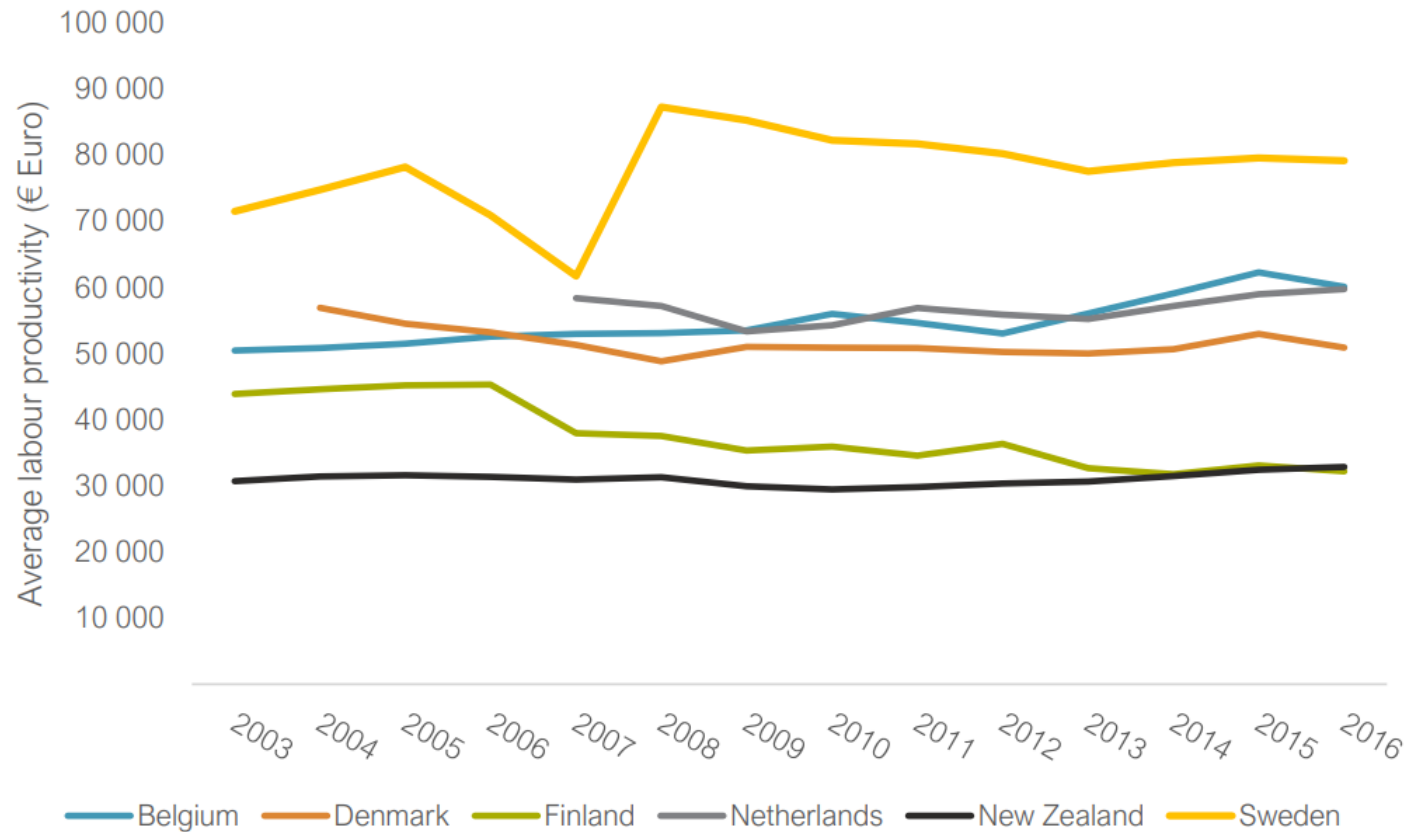
- Micro-aggregated productivity indicators at the national and macro-sector level
- NZ's data was not in the 7th vintage version
- Instead we applied the CompNet data Stata programme to firm-level information sourced from the Stats NZ LBD and IDI
- Sample excludes financial, agricultural and mining sectors
- We compare NZ to a number of SAEs: *Belgium, Denmark, Finland, Netherlands and Sweden*

Key definitions

Variable	Definition
Laggard Firms	Firms situated at or below 10 th percentile of labour productivity distribution in an industry within a country
Median Firms	Firms situated between the 40 th and 60 th percentile
Frontier Firms	Firms situated at or above the 90 th percentile
National Frontier	The weighted average of a country's nine macro-sector frontiers.

Descriptives

Average labour productivity levels across SAEs



Source: Authors' calculations using CompNet.

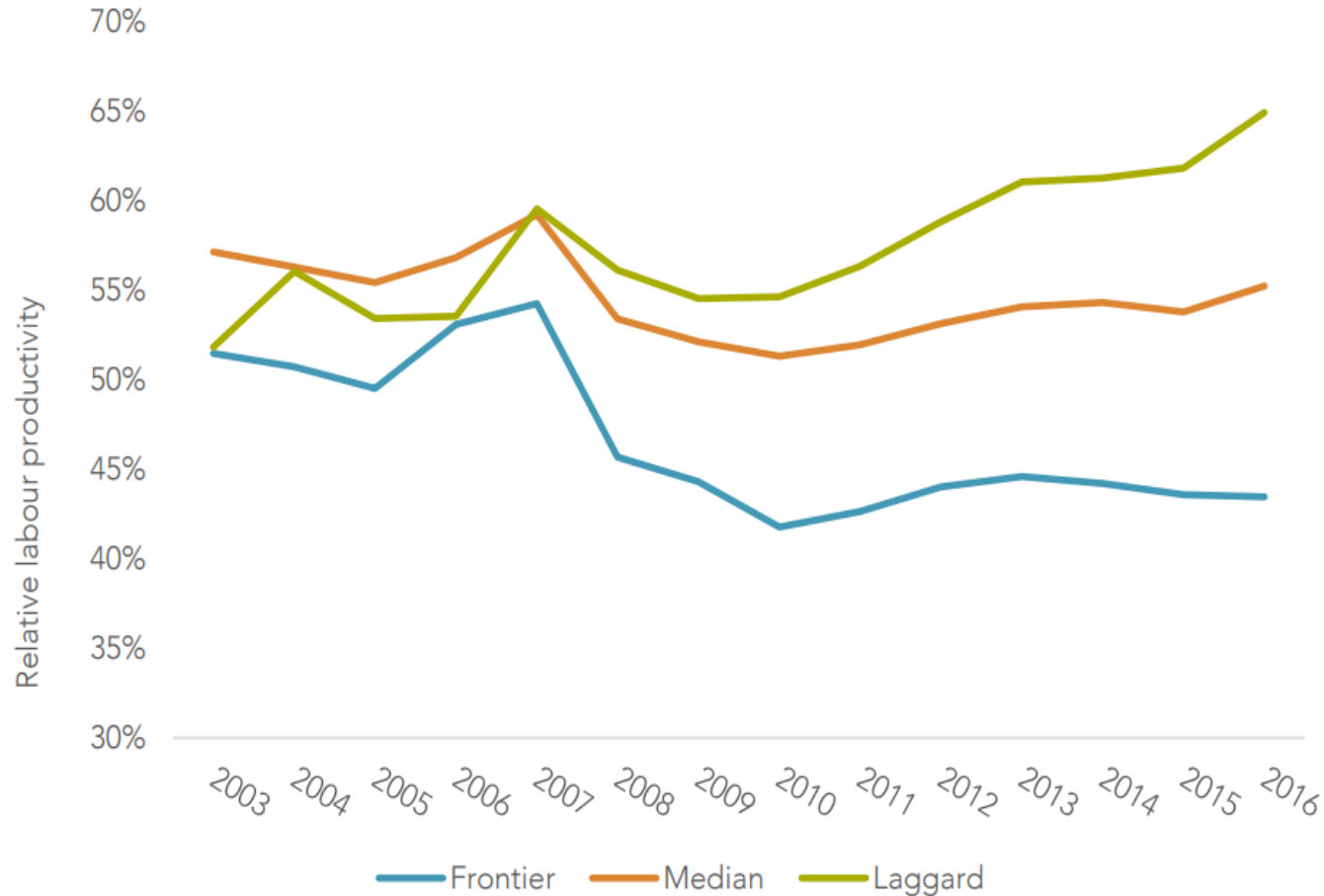
Descriptives

Relative labour productivity by macro-sector



Source: Authors' calculations using CompNet.

Benchmarking laggard, median and frontier firms



Source: Authors' calculations using CompNet.

More key definitions

Variable	Definition
Industry SAE Frontier	Average of the industry frontiers of the three countries with the highest average labour productivity over the sample period

For example: In manufacturing, top 3 are Belgium, Sweden and Netherlands

Variable	Definition
SAE Frontier	The weighted average of the Industry SAE frontiers.

Productivity convergence

A simplified framework of technology diffusion



Productivity convergence model:

$$\Delta LP_{cipt} = \alpha_1 \Delta frontier_{it}^{SAE} + \alpha_2 \Delta frontier_{cit}^{country} + \beta_1 Gap_{c ipt-1}^{SAE-country} + \beta_2 Gap_{c ipt-1}^{country} + \varepsilon_{c ipt}$$

Results

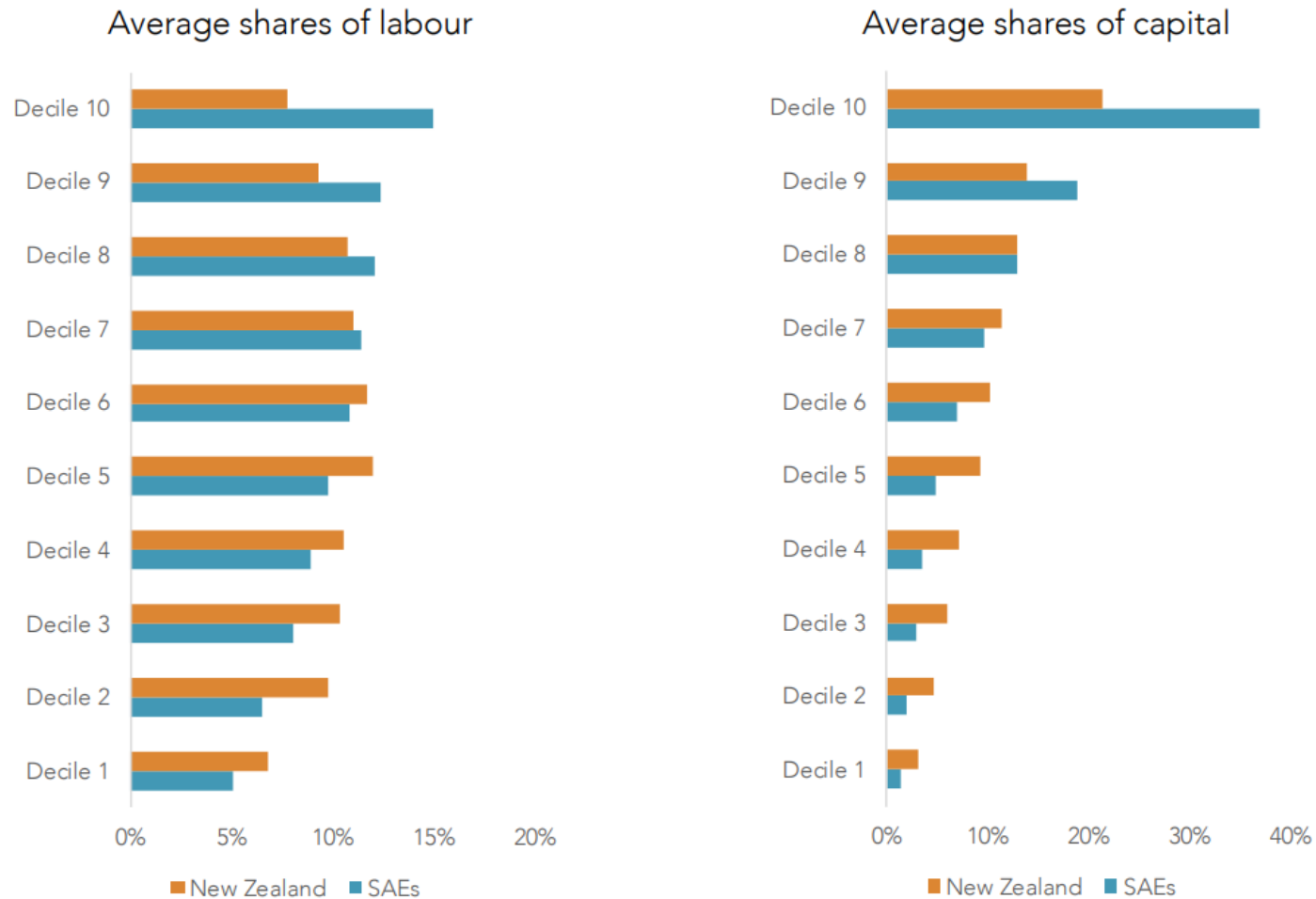
Variables	All	New Zealand	Other SAEs
β_1 : cross-country diffusion	0.047*** (0.007)	0.000 (0.007)	0.062*** (0.008)
β_2 : within-country diffusion	0.175*** (0.019)	0.233*** (0.053)	0.168*** (0.020)
Observations	3004	583	2421
R squared	0.725	0.622	0.729

Key findings by macro-sector

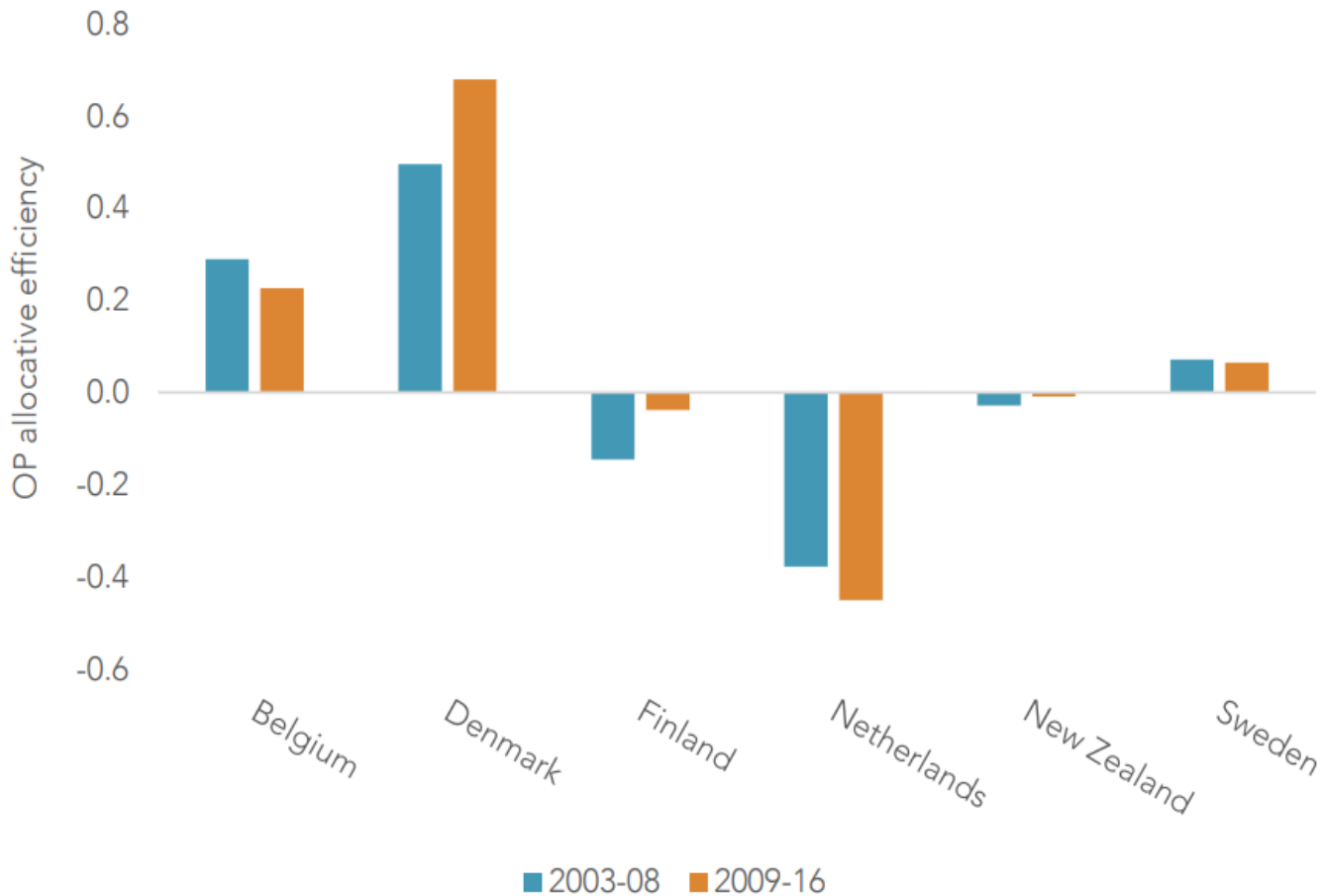
- Regardless of macro-sector: within-country diffusion usually greater than cross-country diffusion
- Within-country diffusion estimates are stronger for NZ than other SAEs in most macro-sectors
- There is evidence of within-country diffusion across all macro-sectors except Accommodation & food

Resource allocation

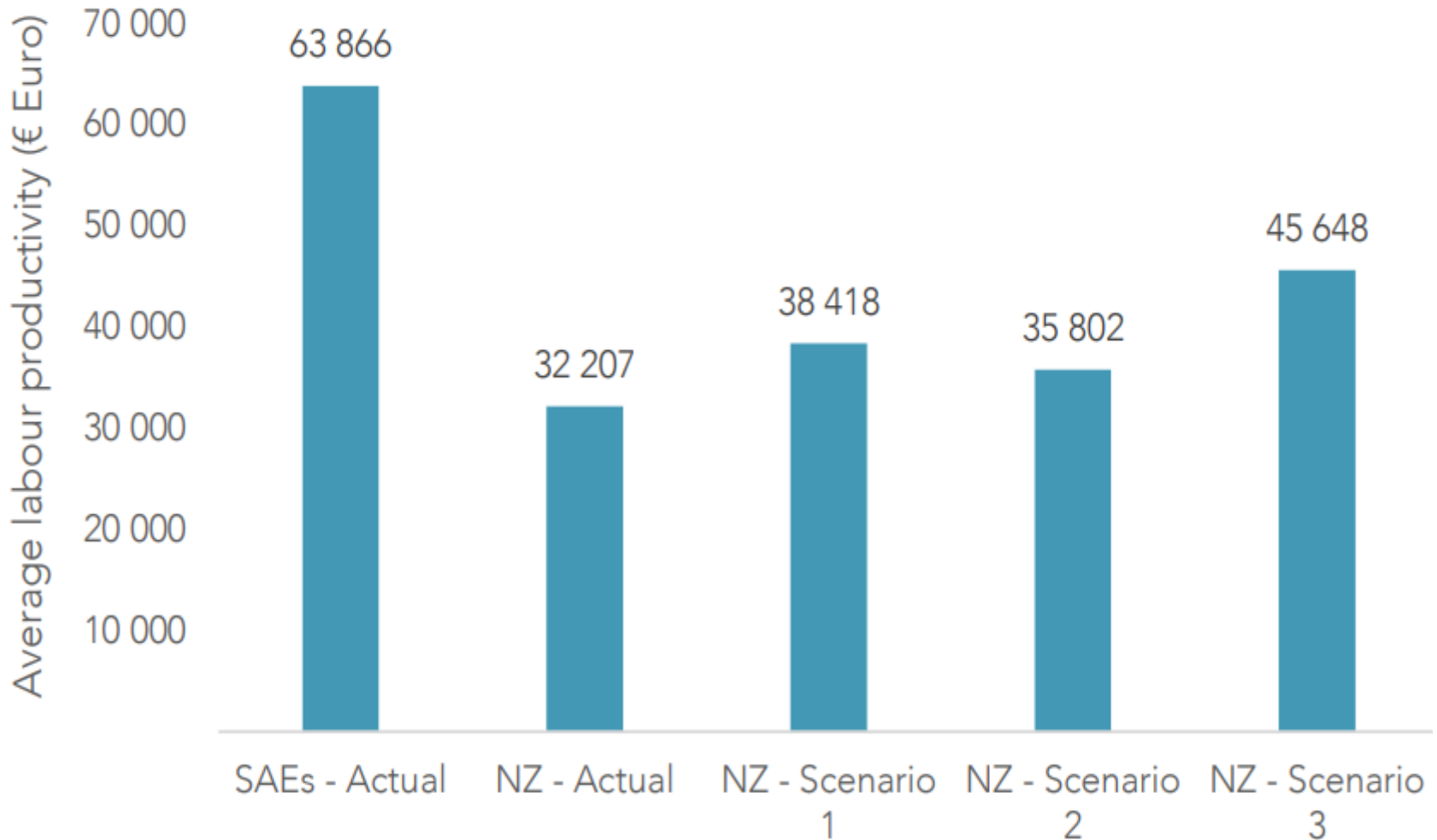
Average shares of labour and capital by labour productivity deciles, 2003-16



Allocative efficiency



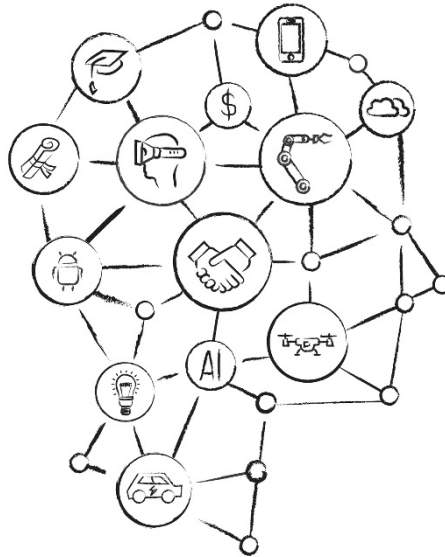
Counterfactual productivity gains



Conclusion

- NZ's average firm labour productivity is around 53% of the average of the other SAEs
- Information & Communication – stand out sector
- Productivity gaps between NZs and other SAEs frontier firms are increasing
- Within-country diffusion is at a similar level to other SAEs, but evidence of poor diffusion at cross-country level
- Evidence of misallocation of labour
- Counterfactual analysis: potential 42% productivity gain

Questions?



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Supplementary slides if required

Macro-sector Composition

Category	Belgium	Denmark	Finland	Netherlands	NZ	Sweden
Manufacturing	8.7%	8.0%	11.2%	12.4%	12.9%	10.9%
Construction	15.0%	15.6%	19.1%	11.7%	21.0%	14.1%
Wholesale & retail trade	30.0%	22.6%	21.9%	32.3%	16.0%	25.8%
Transport & Storage	4.1%	5.7%	10.4%	5.0%	5.6%	5.4%
Accommodation & food	9.5%	6.6%	5.5%	4.9%	13.4%	5.7%
Information & communication	4.7%	6.2%	4.0%	7.0%	1.4%	5.6%
Real estate & rental services	5.7%	12.6%	6.5%	-	7.2%	6.0%
Scientific & technical services	16.4%	15.0%	15.3%	19.5%	16.2%	21.2%
Admin & support services	5.8%	7.6%	6.1%	7.3%	6.2%	5.2%