

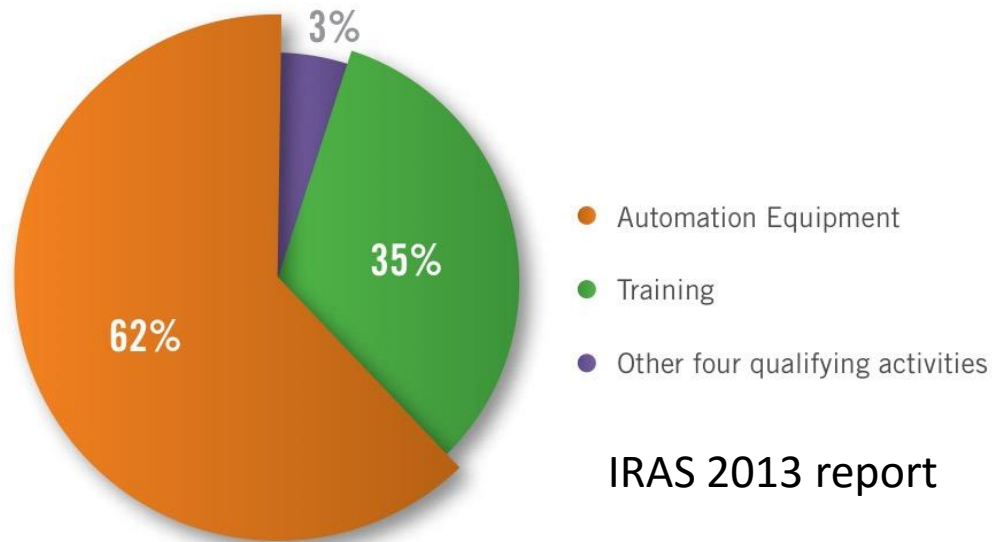
Economic Society of Singapore Post-Budget Forum 2016

Asst Prof. Giovanni Ko, NTU

29 March 2016

From broad productivity to automation

- PIC expires in 2018: most expenditure on automation

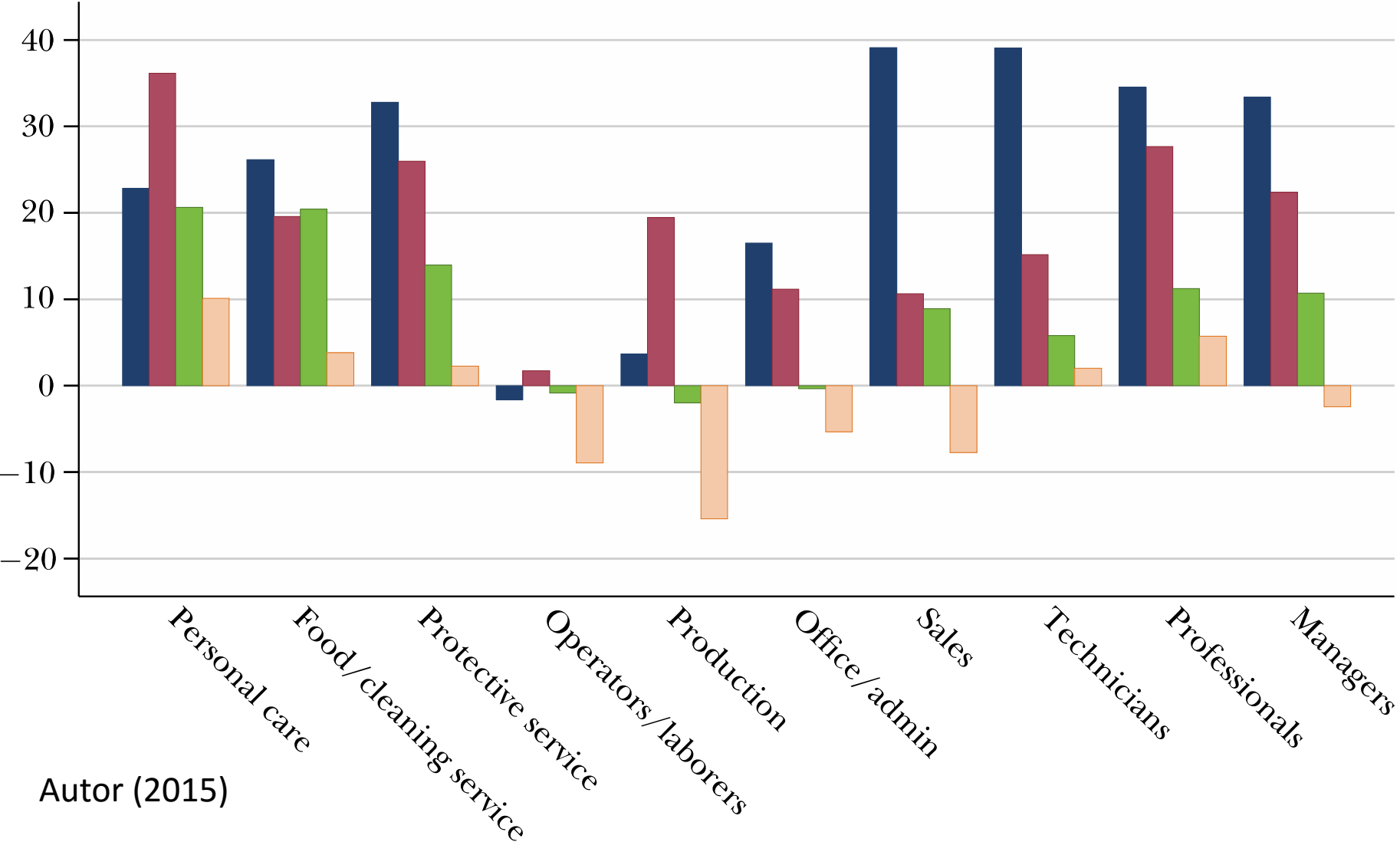


- *Automation Support Package, \$400m over 3 years*
 - Why subsidise private investment?
- *National Robotics Programme, \$450m over 3 years*
 - Announced in 2015, few details yet

Automation and jobs

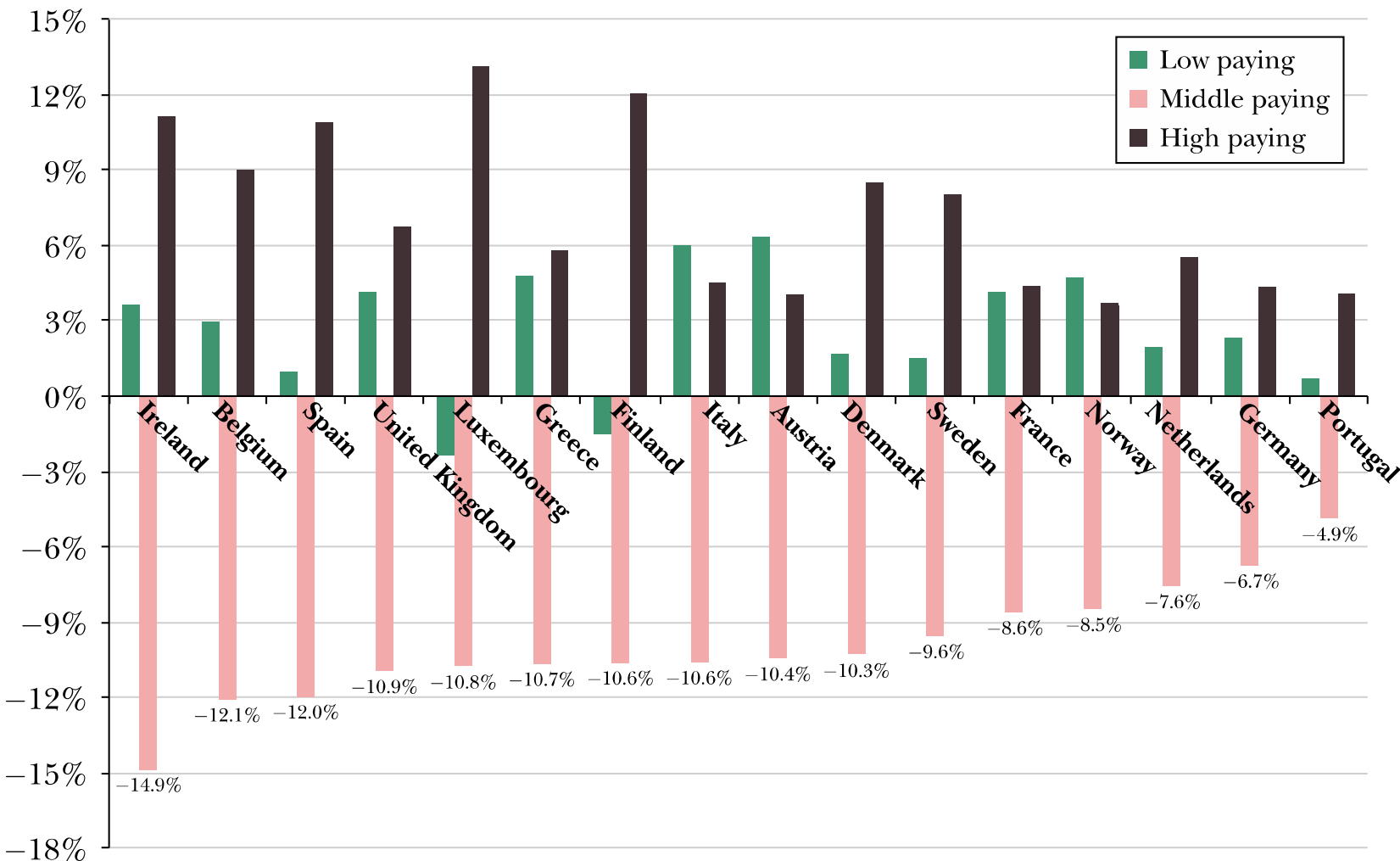
- Classification of tasks/jobs:
 - **abstract**: mid- to high-end PMET – automation highly complementary
 - **routine**: low-end PMET – easy to automate
 - **manual**: non-PMET – difficult to automate
 - flexibility, judgment, and common sense (Polanyi's paradox), e.g., nursing
 - sensory-motor skills, physical flexibility, e.g., construction
- Automation will have negative consequences for the lower end of PMET
- Automation may not greatly lessen dependence on non-PMET foreign labour

Change in Employment by Major Occupational Category in the US, 1979–2012



Autor (2015)

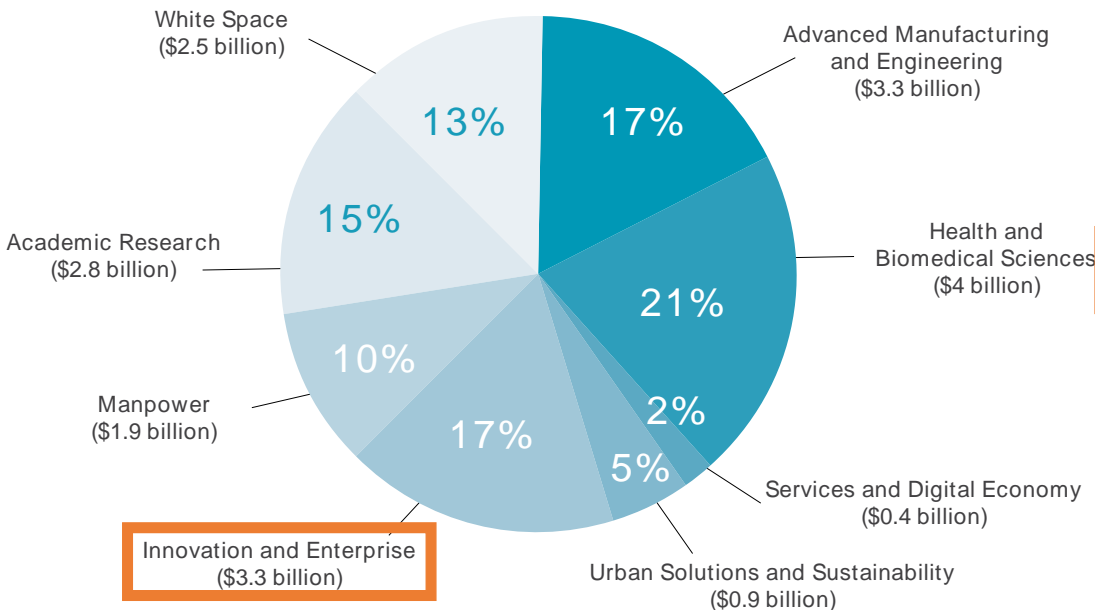
Change in Occupational Employment Shares in Low, Middle, and High-Wage Occupations in 16 EU Countries, 1993–2010



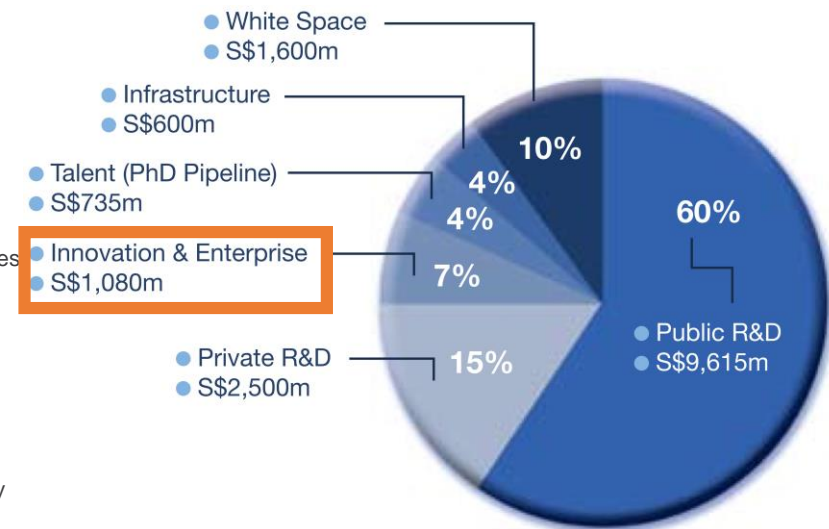
More targeted R&D

- Up to \$4bn out of \$19bn of RIE 2020 dedicated to industry-research collaboration

RIE2020



RIE2015



Benefits of R&D for Singapore

- Assumption: more R&D good for Singapore
- Clear direct economic benefits of R&D ecosystem (jobs) but are **spillovers** from R&D investment captured **locally**?
- International mobility of labour in R&D sector is extremely high
 - Singapore successful at attracting established researchers
 - Just stepping stone for young researchers?
- Very little is known!

Thank you!