

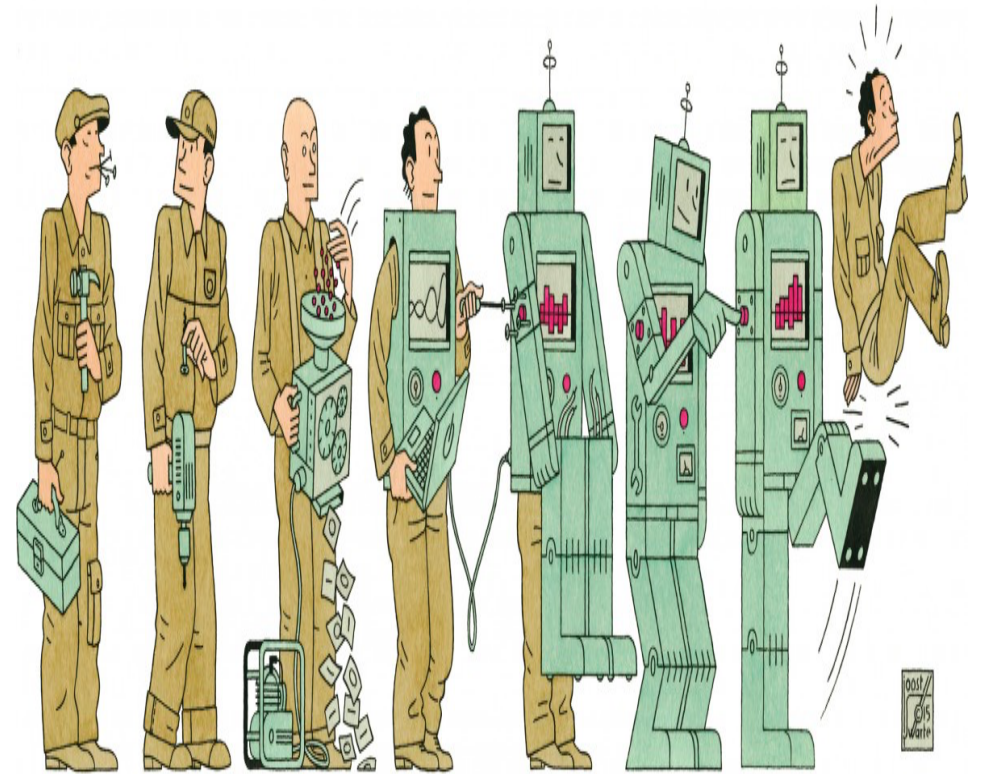
People versus Machines- Past and Future

Grace Lordan

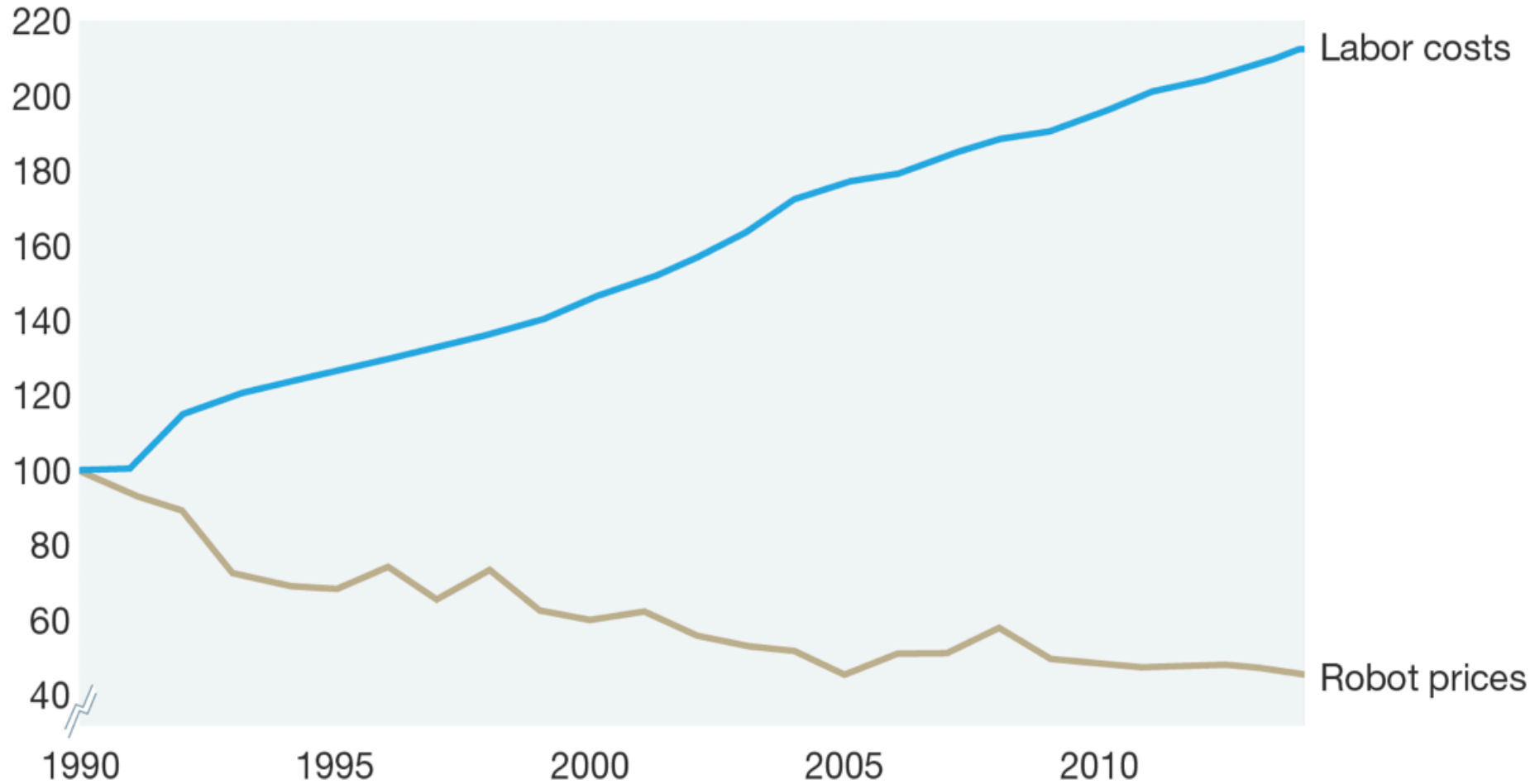
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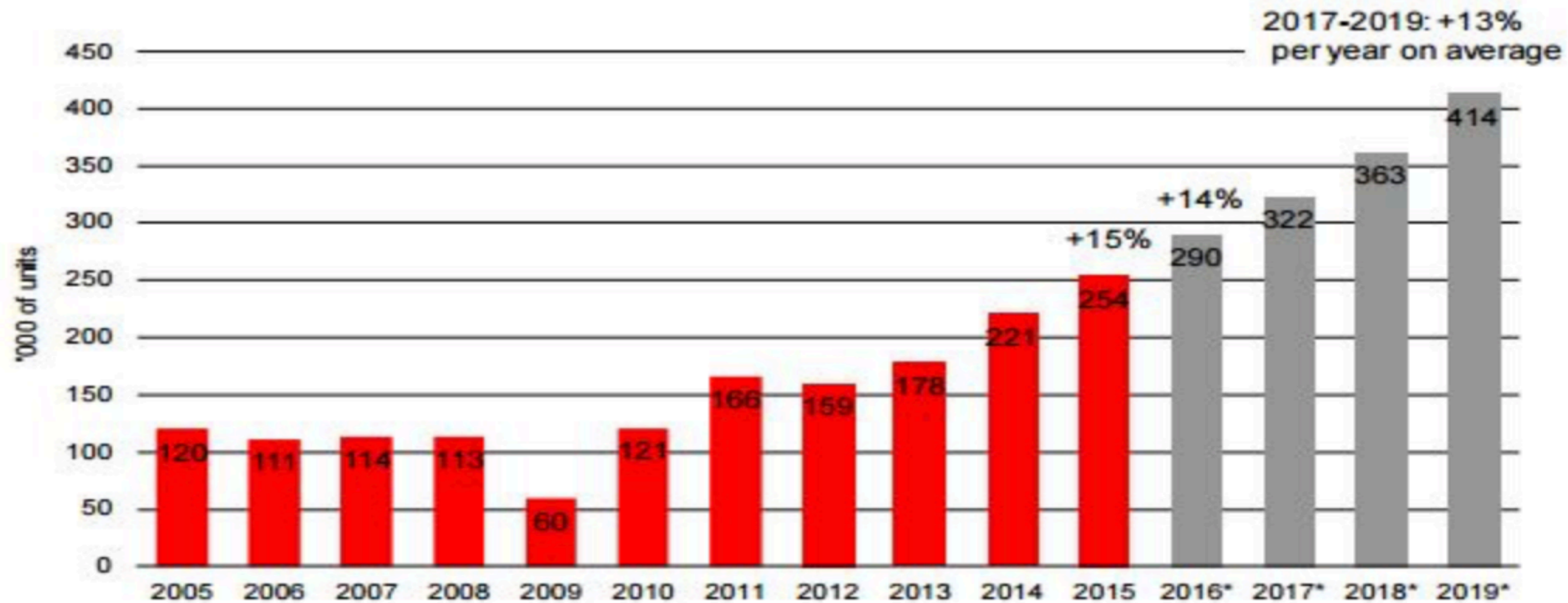


Current Landscape (1)



Current Landscape (2)

**Worldwide annual supply of industrial robots
2001 - 2019***



*forecast

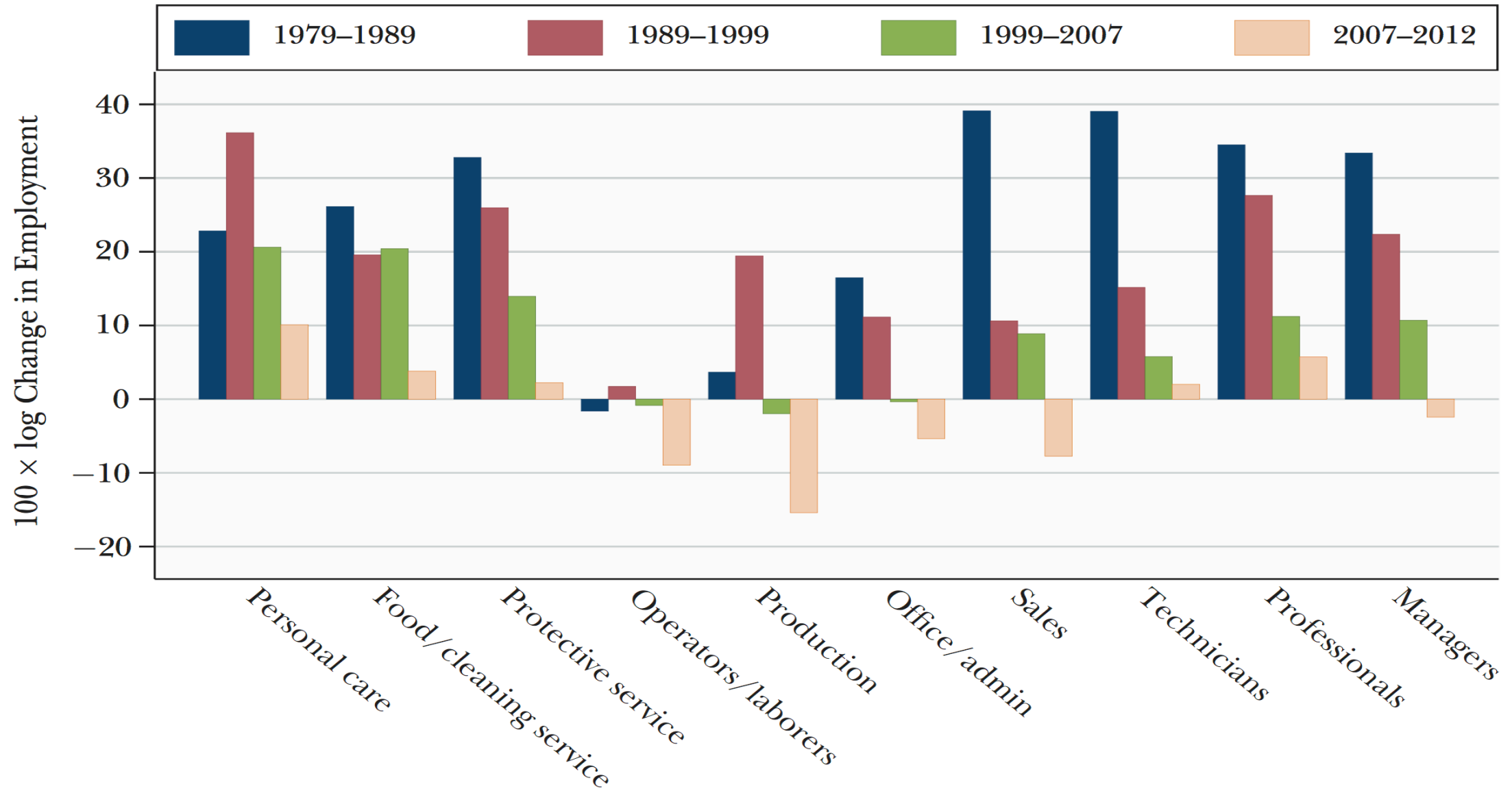
Source: IFR World Robotics 2016

Other Factors Contributing to Landscape

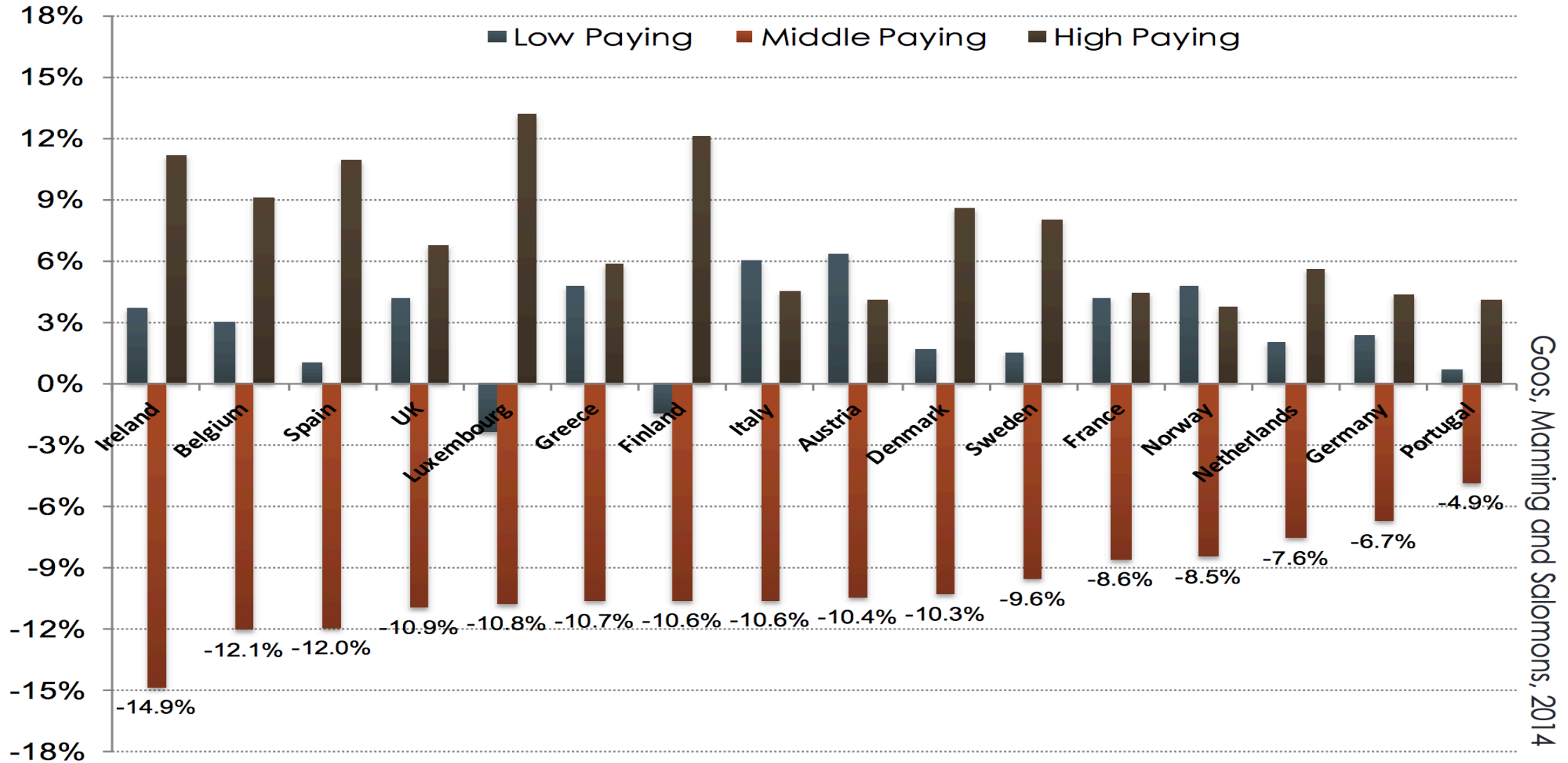
- More supply of skills to create, troubleshoot and maintain robotics as part of a production process.
- Robotics are gaining capabilities
- Well accepted definitions of automatable work by Autor and Dorn (2013) are very useful for a retrospective analysis.



Employment Polarization in the U.S: Changes in Employment by Major Occupation, 1979–2012



Employment Polarization in Sixteen European Union Countries, 1993 - 2010

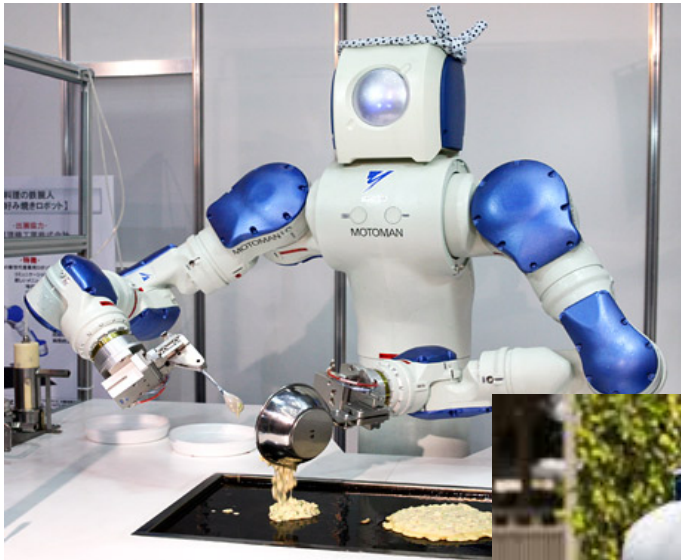


Goos, Manning and Salomons, 2014

Going Forward

- **BUT** we also expect that the definition of automatable work to change.
- Seismic change is on the horizon with respect to the jobs that will be automated in the near future.
- Current project aims to inform the level of vulnerability for each EU country to these changes.

Robot Workers are Taking on New Jobs



So

- We have re-classified jobs for the low skilled distribution & are now working on the entire distribution.
- Going forward: will fitting this new distribution to European Labor Force Data so countries can see the extent to which they hold jobs that are automatable and identify groups that are the most vulnerable.
- For now: Will give an overview of what we know from the re classification so far & give examples of some jobs that are re-classified as automatable.

Three types of jobs with respect to automation potential.

1. Occupations where empathy and other soft skills are valued and a person cares about who carries out the work.
2. The second are occupations where in some cases a person may care who carries out the service, whereas in others they do not, and people skills will be of great value for the jobs that remain.
3. Jobs where there is no added value whether the work is carried out by a robot or a human.

Important Conclusions from Re-Classification (1)

- Jobs where inter-personal skills are required in order to gauge the specific tasks that are needed are unlikely to be automated.
- Examples: Childcare and high level management require engagement with people in unpredictable sequences which are not easily replicated by machines and cannot be easily aided by the customer.

Important Conclusions from Re-Classification (2)

- A lot of R&D into technology for other jobs that historically require interpersonal interaction but there is a predictable sequence of events. These jobs including waiting tables and law.
- These developments will progress to a polarization.

Important Conclusions from Re-Classification (3)

- Third, there is a lot of R&D in areas that customers may care less about whether the job is done by a robot or a human.
- These include delivery driver and brick layer.
- So, the value to the customer of having a human carry out these roles is almost zero.
- In both these areas there have been significant developments to the extent we may expect a cull of jobs in the next decade accelerated by relatively high minimum wages.

Incoming Jobs

- New jobs should also be created as there is an ongoing need for workers to troubleshoot and maintain the new technology, as well as to carry out aspects of the task that the robot cannot
- Soft skills and empathy will be of value in many of the low skilled jobs that are not threatened by automation.
- Replacement jobs that emerge will also involve interacting with the new technology
- Don't rely on trends of the past to predict what will happen in the future.

The Future?

