Technological Unemployment? We can work through it…

Dean Bubley, Disruptive Analysis

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Dean Bubley & Disruptive Analysis

- Tech/telecom analyst & strategic consulting since 1991
- Futurism, Forecasting, Anti-Forecasting, Policy
- Cross-silo, contrarian, independent
It’s all about nuance (1)

While automation will eliminate very few occupations entirely in the next decade, it will affect portions of almost all jobs”

Michael Chui, McKinsey Global Institute
Ageing population means a shrinking workforce

“UK faces 3.1m shortage of workers by 2050”

<table>
<thead>
<tr>
<th>Profession</th>
<th>Projected Shortfall (2050)</th>
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</thead>
<tbody>
<tr>
<td>Teachers</td>
<td>128,000</td>
</tr>
<tr>
<td>Construction</td>
<td>66,800</td>
</tr>
<tr>
<td>Nurses</td>
<td>61,200</td>
</tr>
<tr>
<td>Qualified Engineers</td>
<td>36,800</td>
</tr>
<tr>
<td>IT and Tech</td>
<td>33,300</td>
</tr>
<tr>
<td>Social Workers</td>
<td>10,600</td>
</tr>
<tr>
<td>Qualified Accountants</td>
<td>10,200</td>
</tr>
<tr>
<td>Solicitors/Lawyers</td>
<td>9,500</td>
</tr>
</tbody>
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Source: Randstad, 2014

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... and it becomes harder to fund pensions

[Graph showing the Old age dependency ratio (OADR), UK, 1980 to 2039.]

The rise in the OADR between 2007 and 2009 was a result of the women born in the post WW2 baby boom reaching SPA.

Source: Mid-year population estimates, 2014 and 2014-based principal population projections, ONS
Robots & AI are *needed* to fill employment gaps near-term

LGV vs Drivers

2014–2015

338,000 HGVs

278,000 Qualified drivers

2015–2016

344,000 HGVs

299,000 Qualified drivers

Ageing driver population

Source: Quarterly Labour Force Surveys, 2001-2015 (Q2 for each year)

UK shortage is 50-60000 drivers belong market need
Estimates for US driver shortage between 40,000-1 million
Also holds in other sectors, eg social care & nuclear power workers
“Technical feasibility is a necessary precondition for automation, but not a complete predictor that an activity will be automated”

Michael Chui, McKinsey Global Institute
Employment balances driven by many factors

Automation

Supply & Demand

Regulation & Policy

International Trade
“Over 60% of occupations have >30% of activities that could be automated. But <5% of current occupations could be completely automated with today’s technology”

Michael Chui, McKinsey Global Institute
Employment, tasks, jobs & sources of value are fractal
Timing matters....
Tax matters

Chart 2: Government receipts 2011-12

- Income Tax – £158 billion
- National Insurance – £101 billion
- VAT – £100 billion
- Corporation tax – £48 billion
- Excise duties – £46 billion
- Council tax – £26 billion
- Business rates – £25 billion
- Other – £85 billion

Source: Office for Budget Responsibility, 2011-12 estimates. Other receipts include capital taxes, stamp duties, vehicle excise duties and some other tax and non-tax receipts – for example, interest and dividends. Figures may not sum due to rounding.
## Taxation issues

<table>
<thead>
<tr>
<th></th>
<th>Income Tax &amp; NI</th>
<th>Consumption: VAT &amp; Duty</th>
<th>Corporation Tax &amp; Rates</th>
<th>Other Taxes (Council, CGT etc)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employed &amp; Employers</td>
<td></td>
<td></td>
<td></td>
<td>Private sector</td>
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<tr>
<td>Unemployed / low-waged</td>
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<tr>
<td>Pensioners</td>
<td></td>
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<tr>
<td>Robots, AIs &amp; owners</td>
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<td>?</td>
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</tbody>
</table>
Is automation “threat” just a means to an ideological end?
Policymaking considerations

- Treat automation forecasts with caution: other things are *not* equal
  - Demographics, demand, descriptions, timing of adoption
- Analyse how automation of basic inputs can increase demand
  - Products, services and new hybrids
- Automation-aware training & tools for career advisers
  - Need to be more active than passive, for unskilled unemployed
- Promote culture change: acceptance & mgmt of uncertainty
- Pensions policy must factor-in costs, tax, workforce & technology
- If automated companies are to pay more tax, they need profit
  - Near-impossible to tax automation *per-se*