The servitization of manufacturing: How do we track global developments?

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Five questions…

1. What do we know about manufacturing in the UK?

2. How is manufacturing changing?

3. Why is manufacturing changing (the driving forces)?

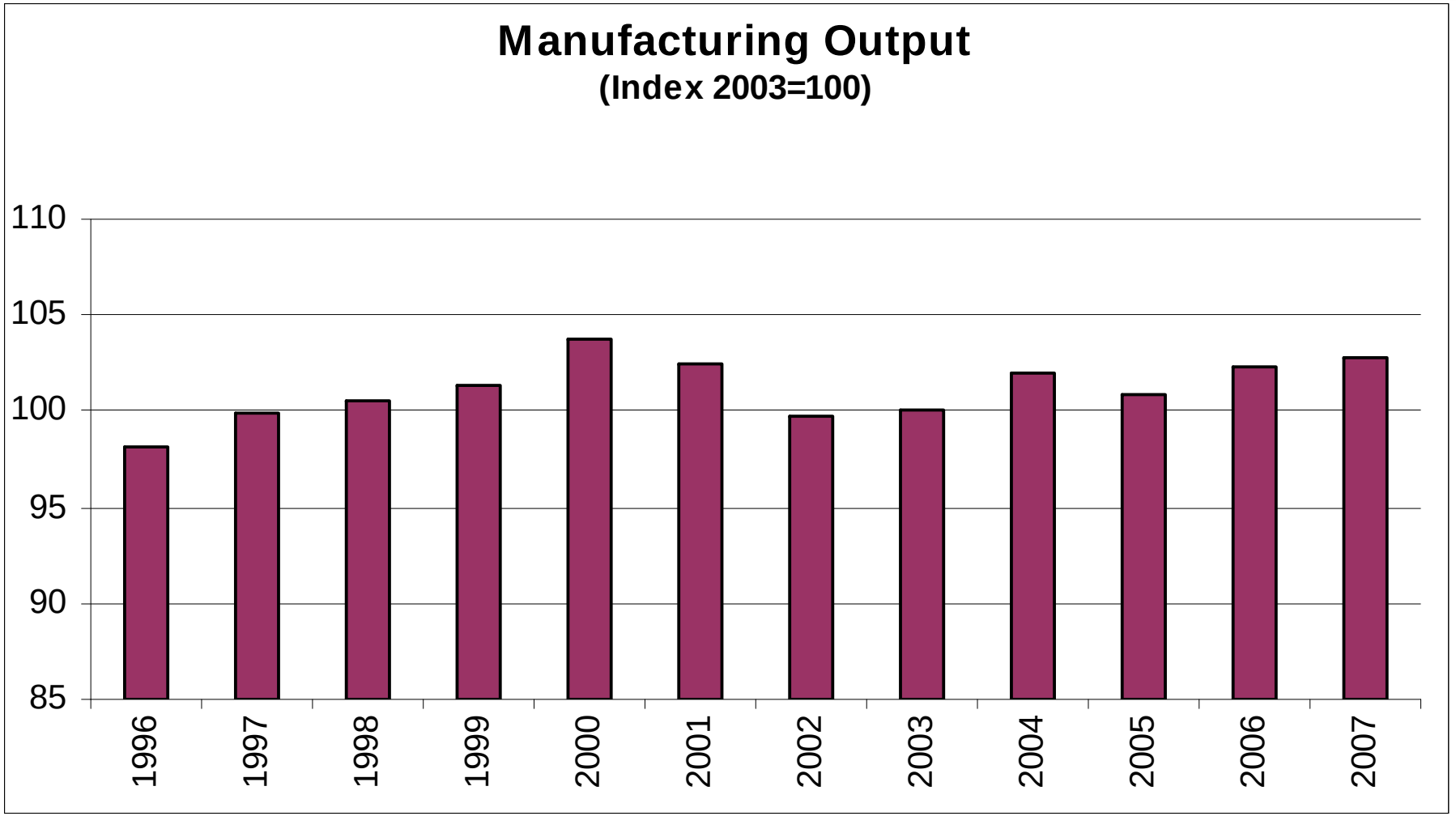
4. Data on the servitization of manufacturing (scale and impact)

5. The measurement challenge

Five questions…

1. What do we know about manufacturing in the UK?

UK manufacturing output: 1996-2007



Talk of a decline in manufacturing is overstated – in terms of output…

KPIs for Manufacturing, BERR, www.berr.gov.uk/sectors/manufacturing/ukstrategy

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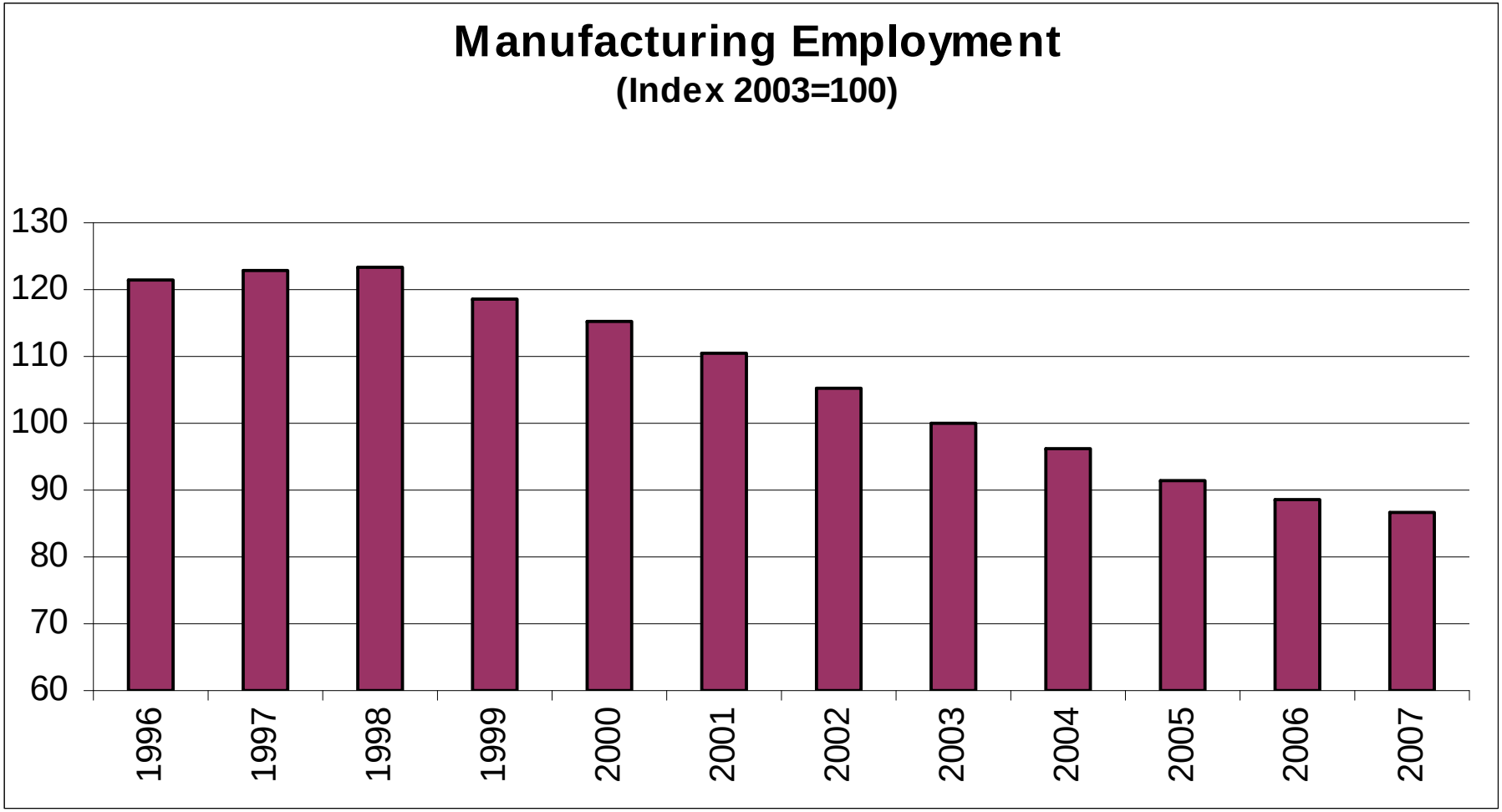
UK manufacturing employment: 1996-2007



But not overstated in terms of employment!

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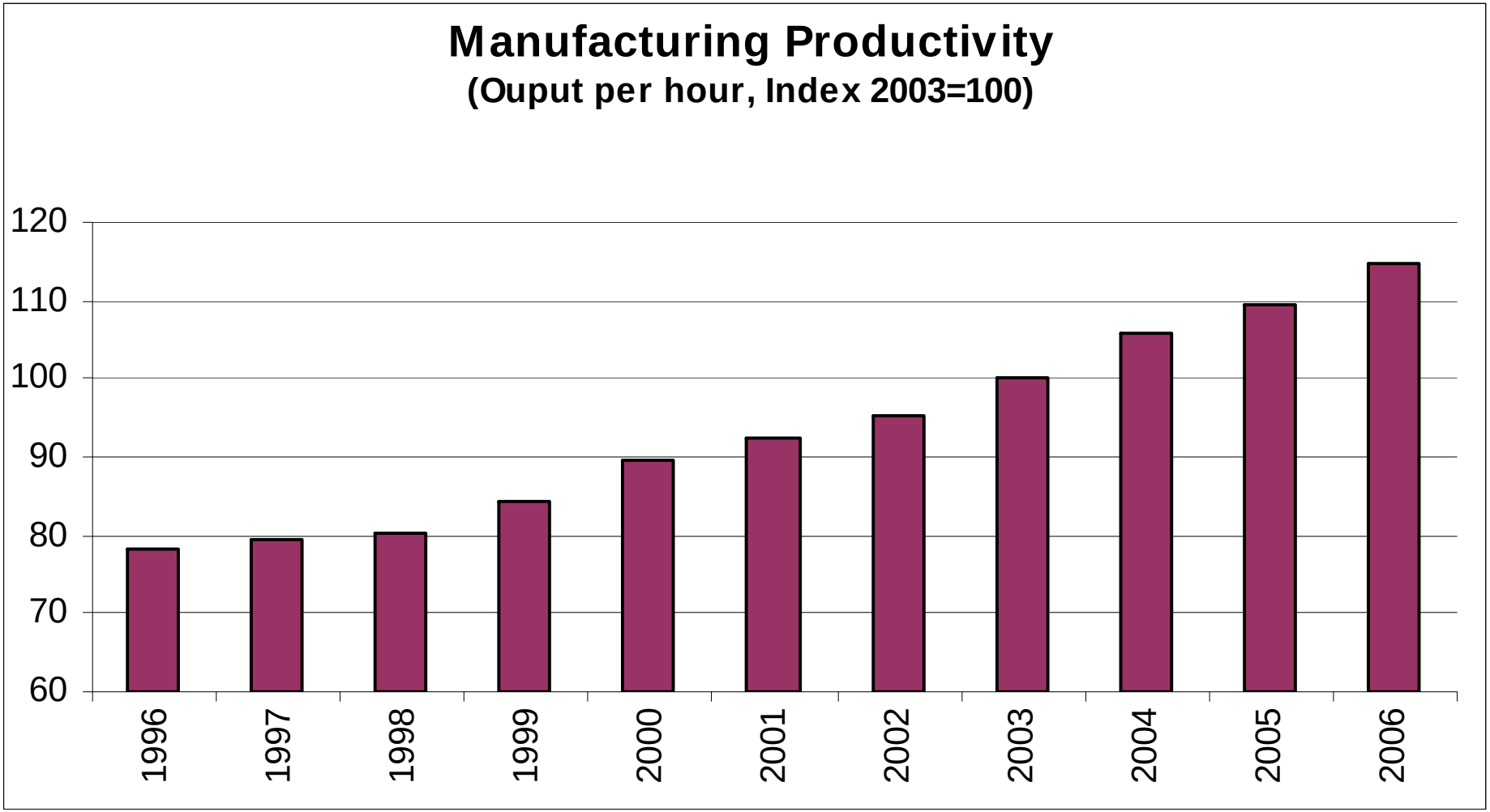
UK manufacturing productivity: 1996-2006



Same output produced by fewer people results in higher productivity

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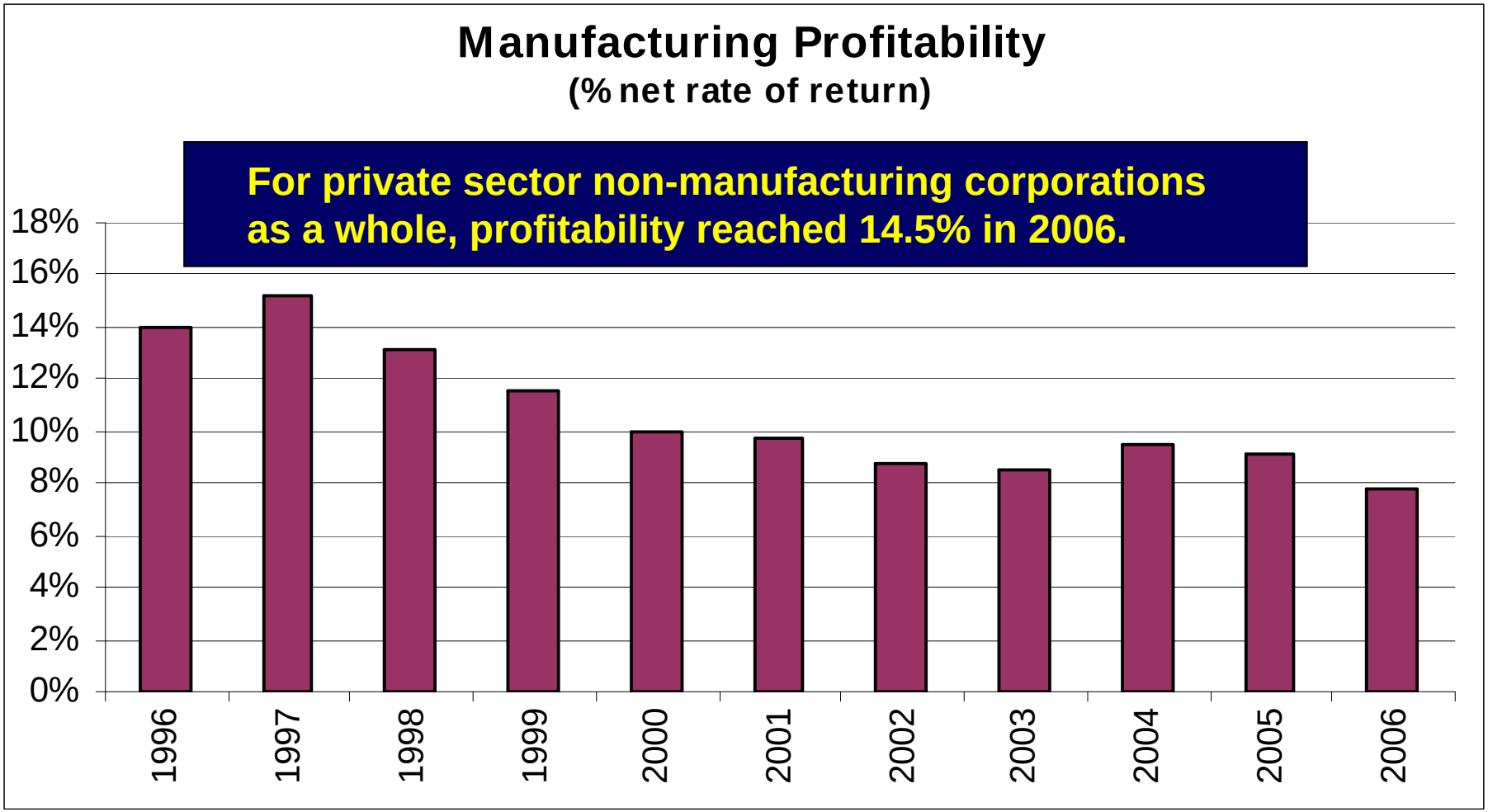
UK manufacturing profitability: 1996-2006



But not necessarily higher profitability!

KPIs for Manufacturing, BERR, www.berr.gov.uk/sectors/manufacturing/ukstrategy

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Declining profitability raises questions about the economic sustainability of business models…

Sainsbury Review: The Race to the Top (2007)…

"In 1980, less than one-tenth of manufacturing exports came from the developing world. Today it is almost one-third and in 20 years' time it is likely to be one-half".

- **UK manufacturing cannot compete on the basis of cost (Innovation Review, 2003; Innovation Nation, 2008)…**

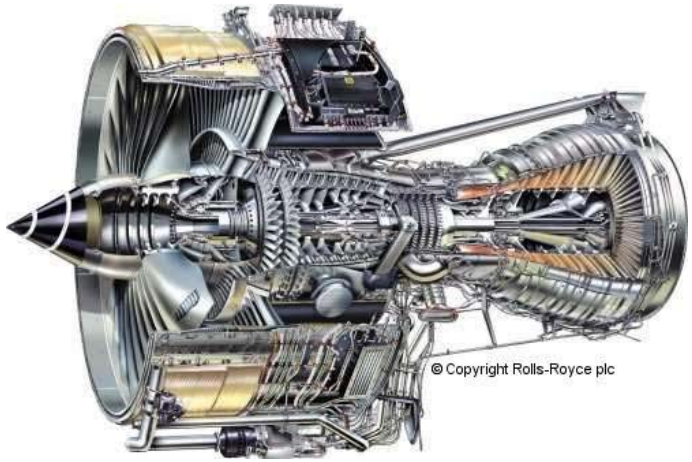
Focusing on high value production (by integrating services)…

Interest in service-based competitive strategies is not new:

- **Andersen and Narus – Capturing the Value of Supplementary Services, Harvard Business Review, 1995.**
- **Wise and Baumgartner – Go Downstream: The New Imperative in Manufacturing, Harvard Business Review, 1999.**

But we may be at a technologically enabled tipping point…

- Servitization/Servicization…
- Product-Service Systems…
- Service Science…
- Remote Product Servicing…
- Intelligent Vehicle Health Management…



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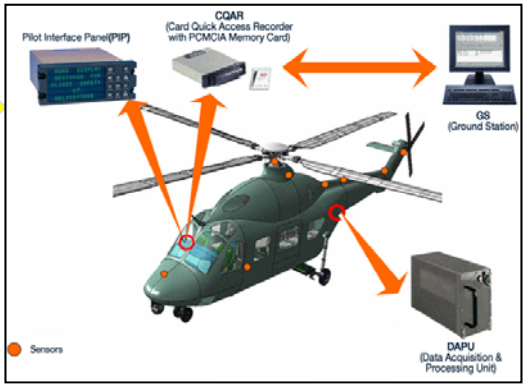
The opportunities for services

John Deere iGuide system (2007)

Uses GPS technology to automatically shift the steering pattern of the tractor to compensate for implement drift

Health and Usage Monitoring Systems

Use sensors on equipment to detect repair and overhaul requirements



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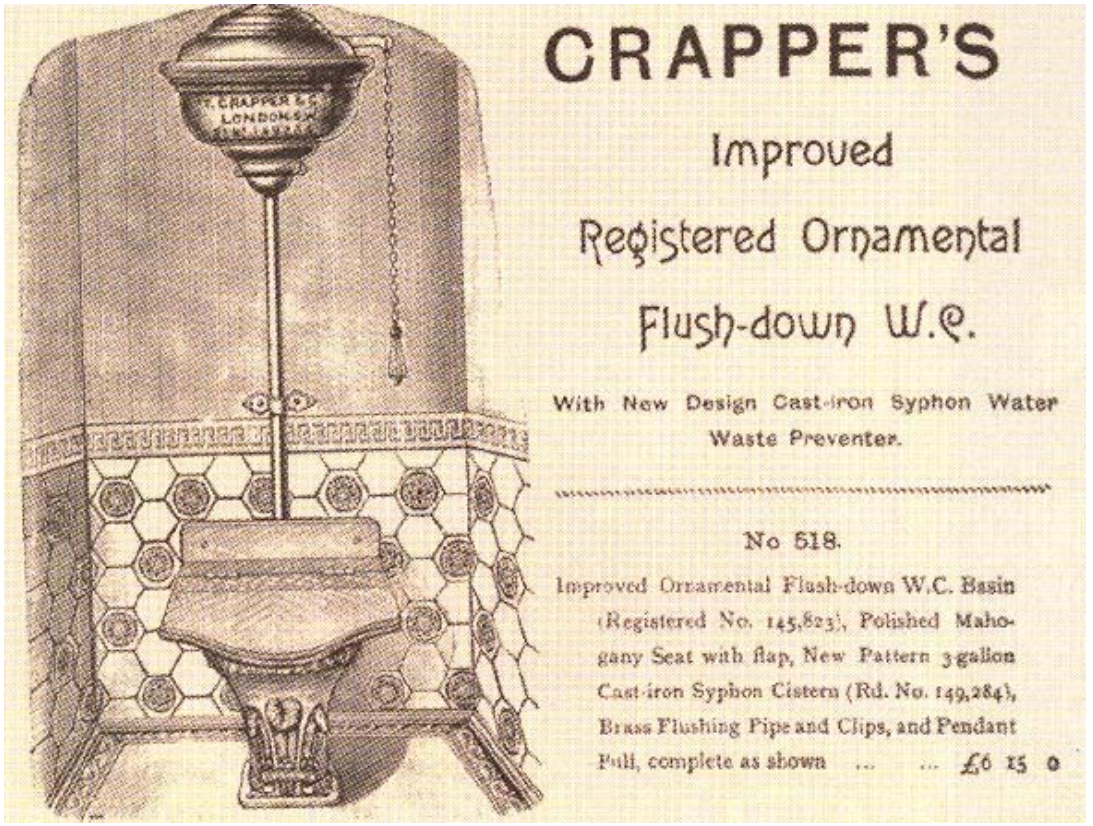
And the opportunities for services continue…

Yesterday's Technology…

Thomas Crapper (1836-1910)
Sanitary Pioneer



Footnote for Sir John Harington who is credited with inventing the first flush toilet in 1596!

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Today's toilet technology…

The intelligent toilet…

Neorest toilets…

- **Lid opens automatically as you walk up…**
- **The seat's heated…**
- **There's a catalytic air purifier to remove any "unwanted odours"…**
- **With a manual power override for those particularly unpleasant visits…**
- **There's a warm-water massage spray and a hot air dryer…**
- **The temperature and intensity of both are controlled using a LCD panel…**
- **Once you've finished and left the "sensor zone" the toilet automatically closes the lid and starts a three stage "Cyclone" flush; the strength of which depends on how long you've been busy on the toilet and previous patterns of usage.**

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What about the toilet of tomorrow?

Put simply…

The servitization of manufacturing = adding services to products…

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Why is manufacturing servitizing?

Economic rationale	1. **Manufacturing firms in developed economies cannot compete on the basis of cost (technological developments are enabling them to add innovative services)…** 2. **The installed base argument (e.g. for every new car sold there are already 13 in operation, 15 to 1 for civil aircraft and 22 to 1 for trains)…** 3. **Stability of revenues – services vs. products…**
Strategic rationale	1. **Lock in customers (sell the original equipment at cost, make money on spares & suppliers - razor, printers)…** 2. **Lock out competitors…** 3. **Increase the level of differentiation (e.g. equipment provider offers to take customer's risk and give predictable maintenance costs)…** 4. **Customers demand it (e.g. contracting for capability)…**
Environmental rationale	1. **Environmental rationale (change notions of ownership and resource use – e.g. Mobility cars)…**

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So what can we find out about servitization?

	2007 dataset	2009 dataset
Source of data	OSIRIS database	OSIRIS database
Nos. companies	44,000 publicly listed firms	55,000 publicly listed firms
Nos. manufacturing firms (US SIC codes 10-39)	22,952 firms	27,670 firms
Nos. manufacturing firms with over 100 employees	12,521 firms	13,259 firms
Nos. firms with no business description	1,478 firms	706 firms
Nos. firms declaring bankruptcy	216 firms	222 firms
Useable sample	10,827 firms	12,331 firms

Coding – identifying which firms have servitized

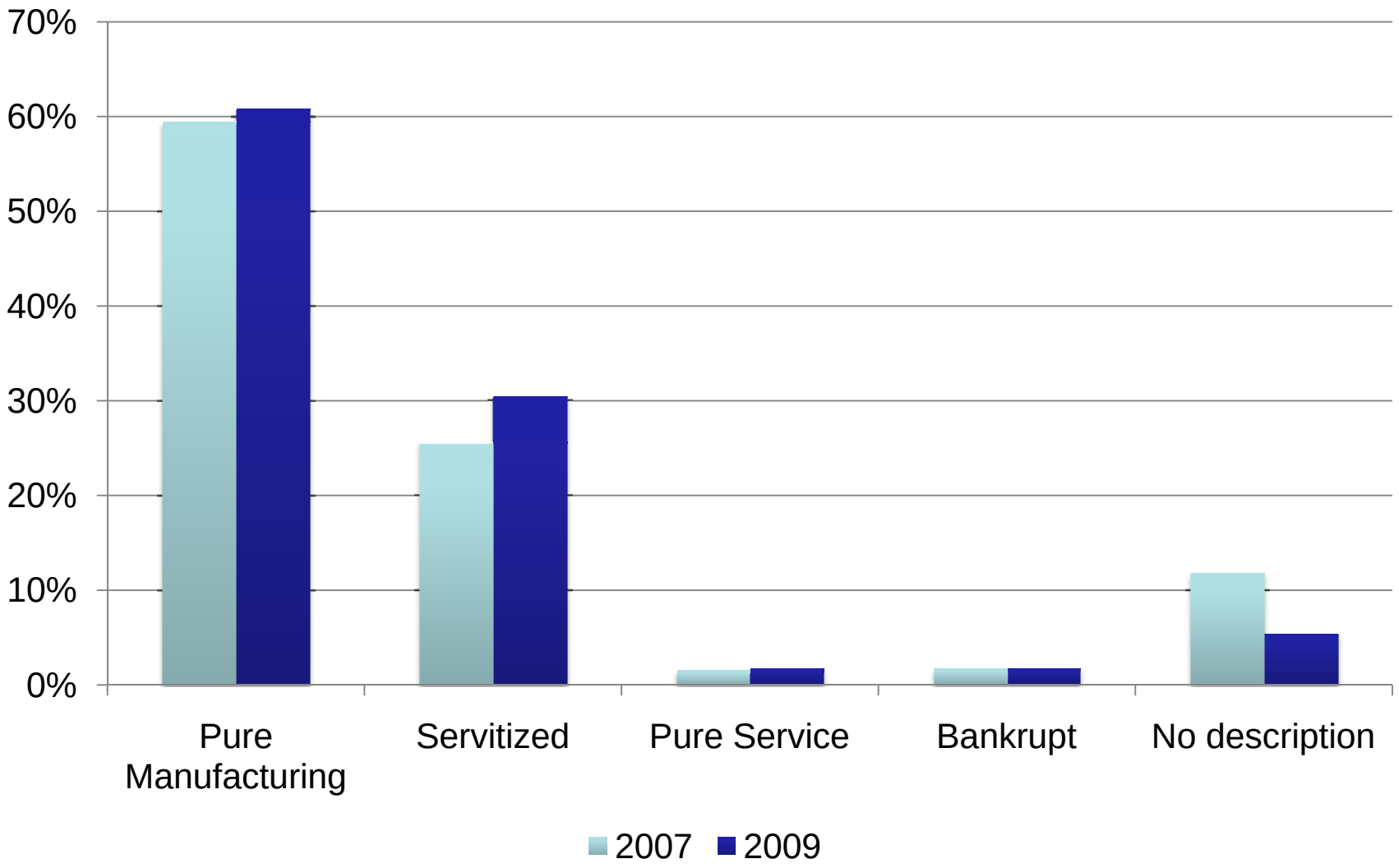
Coding – using business descriptions to identify whether firms classified as manufacturing offer:

- Pure manufacturing, e.g. PetroChina principally engaged in a broad range of petroleum and natural gas-related activities.

- Some combination of manufacturing and service, e.g. Siemens - predominantly electronics and electrical engineering, but provides a wide variety of consulting, maintenance and other services.

- Pure service, e.g. The Brink's Company, conducts business in the security industry. The services offered by the Company include armoured-car transportation, automated teller machine (ATM) servicing, currency and deposit processing, coin sorting and wrapping, and arranging the secure air transportation of valuables.

Despite having manufacturing SIC codes…



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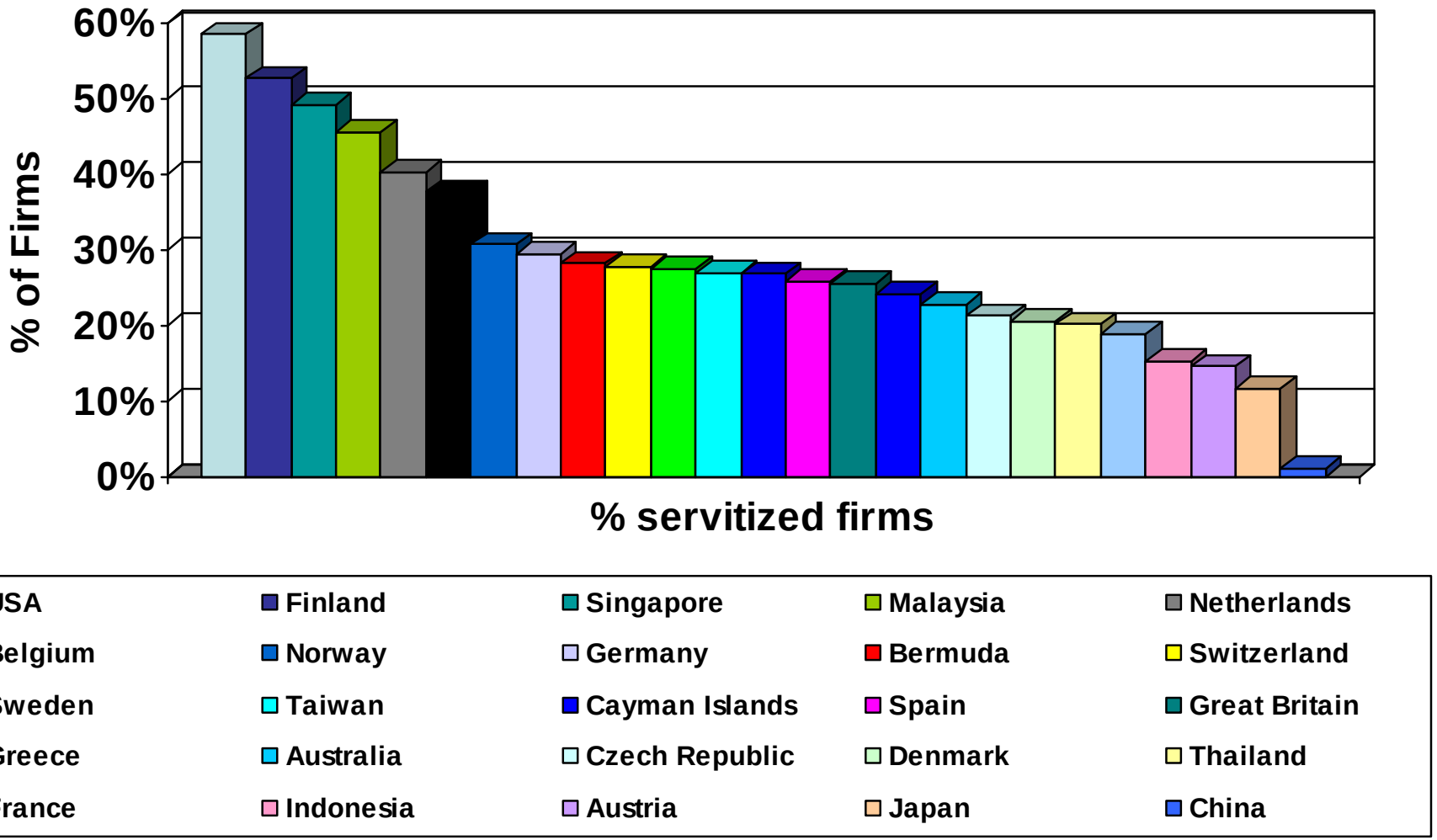
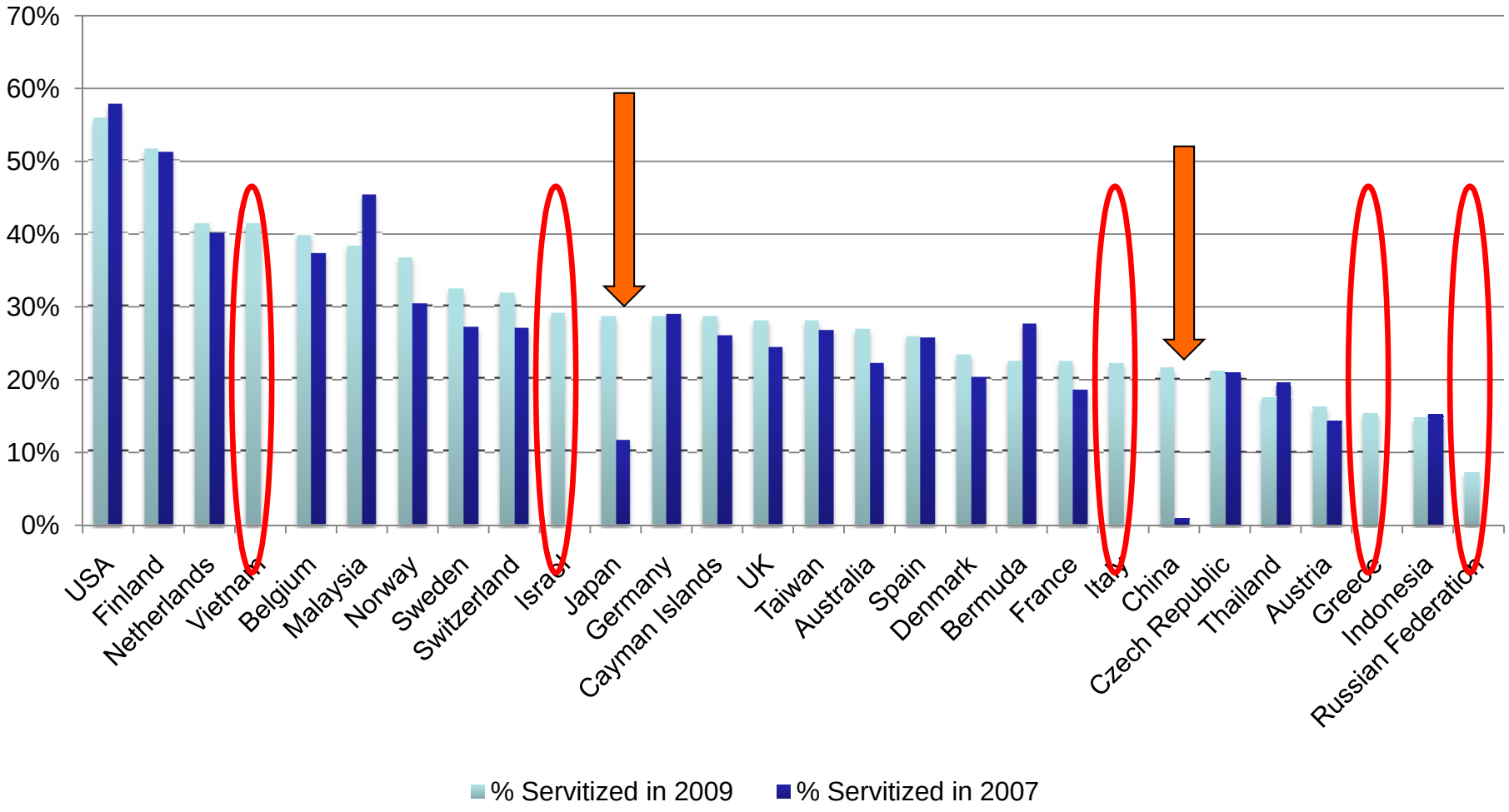
In which countries have firms servitized (2006)?



Where has the growth in servitization come from?



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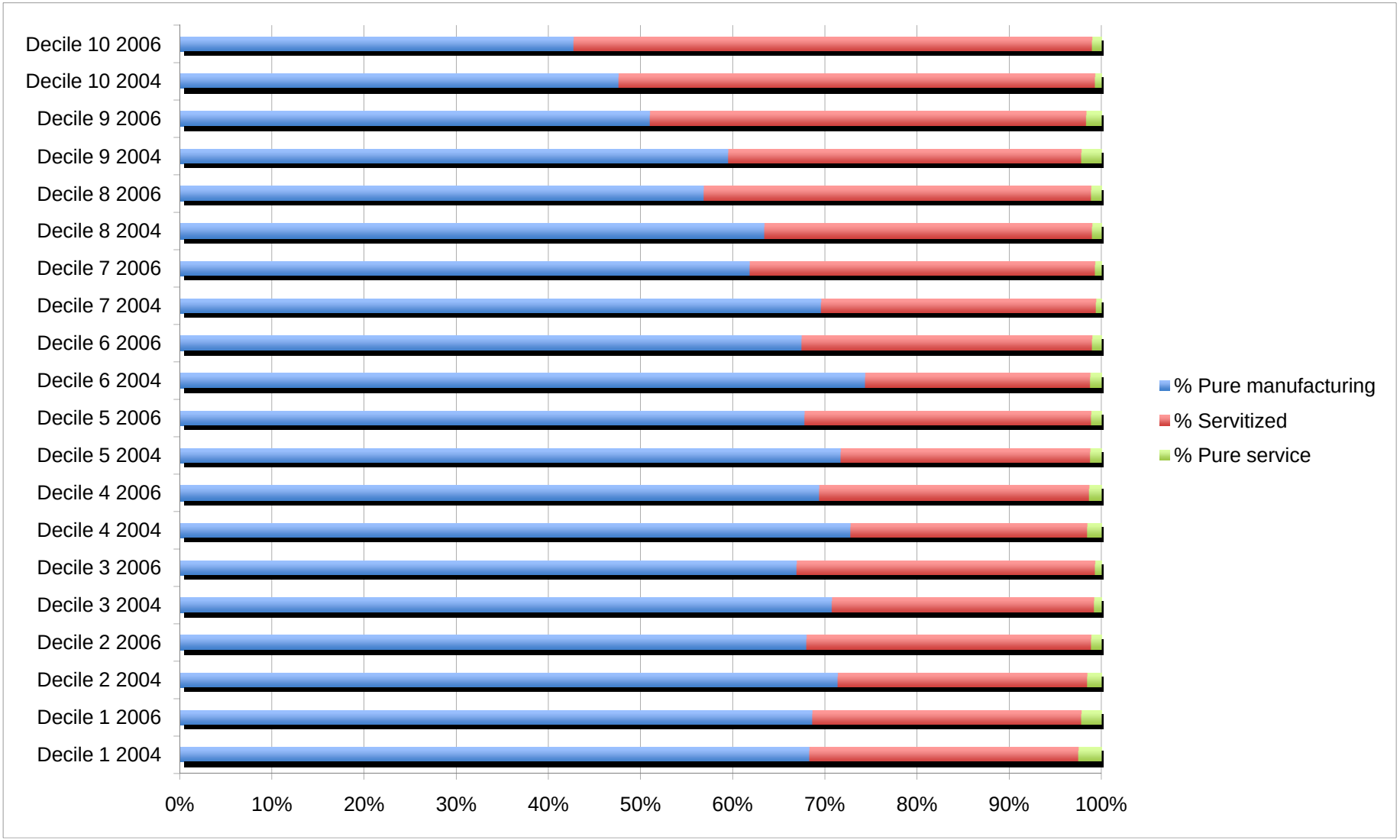
Where has the growth in servitization come from? Deciles of turnover

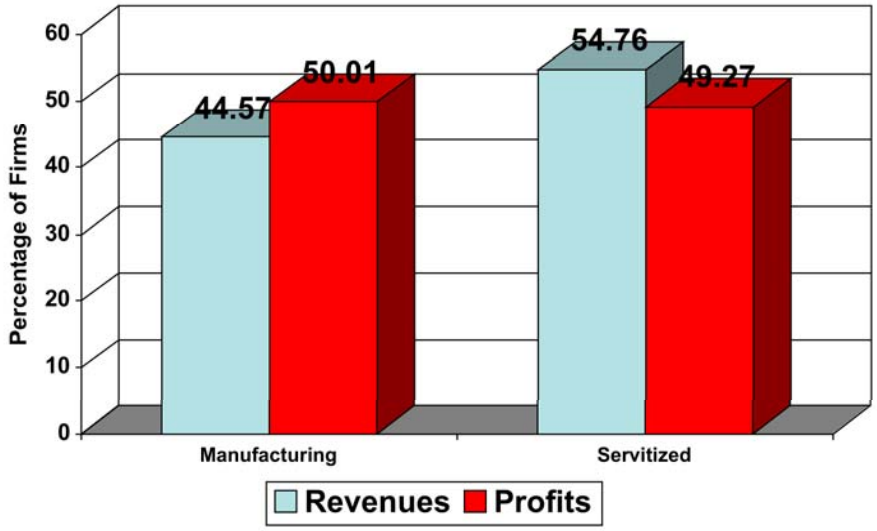


What types of services are offered?

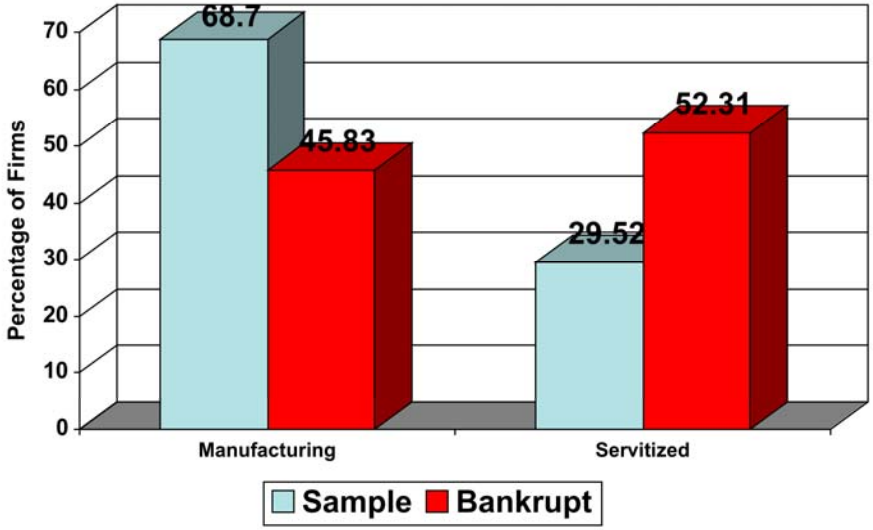
Service Offered?	% of Firms Offering Service in 2009	% of Firms Offering Service in 2007
Design and Development Services	23.21%	21.92%
Systems and Solutions	15.92%	15.70%
Maintenance and Support Services	12.33%	11.94%
Retail and Distribution Services	12.14%	12.18%
Installation and Implementation Services	5.35%	5.10%
Property and Real Estate	4.89%	3.83%
Financial Services	3.80%	3.89%
Consulting Services	3.37%	2.69%
Leasing Services	2.06%	1.07%
Outsourcing and Operating Services	1.46%	1.68%
Procurement Services	1.18%	1.15%
Transportation and Trucking Services	0.19%	0.20%

The transition to services is not straightforward!

Servitized firms account for a greater proportion of revenues, but a lower proportion of profit



A greater proportion of servitized firms went bankrupt than might be expected



While the shift to services is clear the transition to services is not straightforward – the latest research suggests that servitized manufacturers achieve lower profit margins and are more likely to go bankrupt than pure manufacturers (in the short-term).

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The story so far… a services paradox

1. Widespread efforts to servitize…
   58% of US firms with manufacturing SIC codes offer services.

2. Although the extent of servitization differs markedly by country…
   Less than 2% of Chinese manufacturing firms had servitized by 2007 (Neely, 2009).

3. While services are thought to deliver higher margins, there is mixed evidence on the impact of servitization…
   (Gebauer et al, 2005; Neely, 2009; Visnjic and Van Looy, 2009).

4. With increasing evidence that the relationship is non-linear…
   (Fang et al, 2008; Suarez et al, 2008).

5. And that servitizing can be high risk…
   Firms that servitize appear more likely to suffer bankruptcy (Neely, 2009).

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The measurement challenges

1. SIC codes are not particularly helpful – what matters is the activities that firms undertake.

2. Often these activities are hidden – in aggregate data.

3. Even when the activities can be unpacked linking revenues to activity is challenging because many manufacturing firms do not separate out their service activities.

4. There are some exceptions – some manufacturing firms report their service revenues separately – often because of decisions they have made about their internal structures.

5. Is this distinction between manufacturing and service a useful one?

6. Is the category of economic activity – service – a useful one?