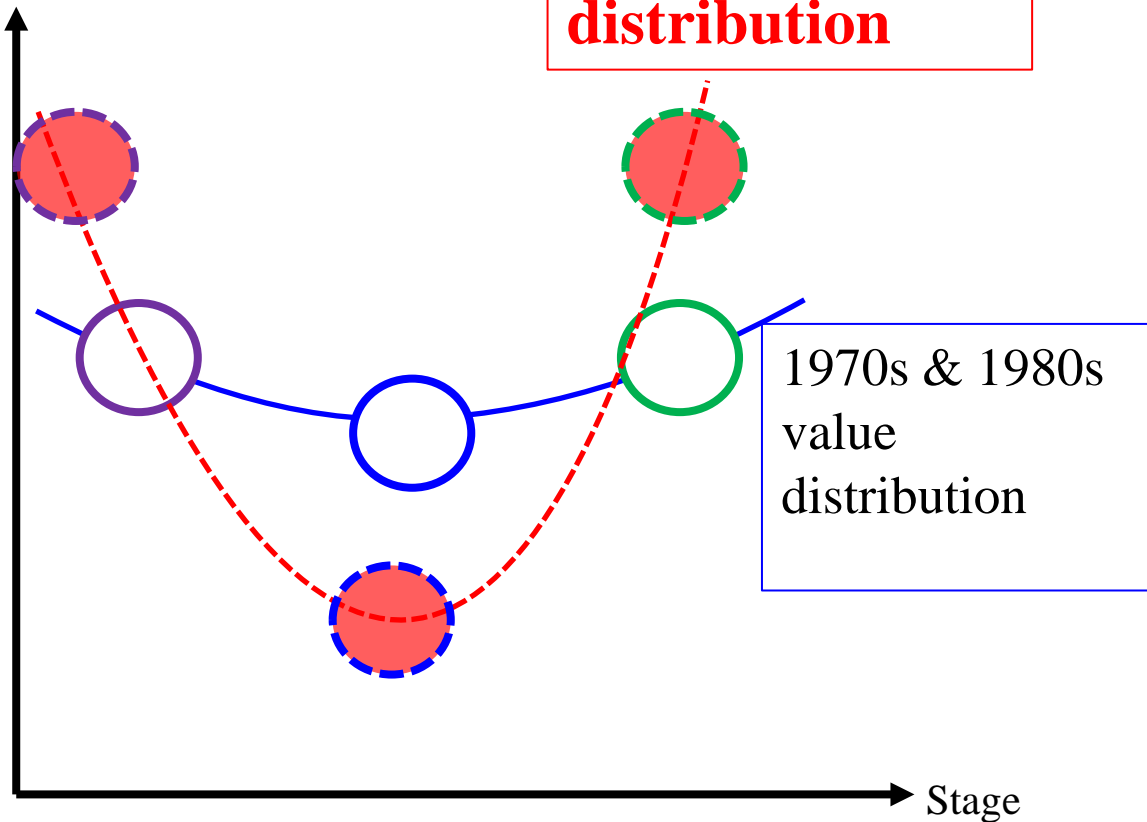


‘Smile curve’
and the service-ification of
manufacturing

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'Smile curve': Distribution of value

Share of value added



Post-1990 value distribution

1970s & 1980s value distribution

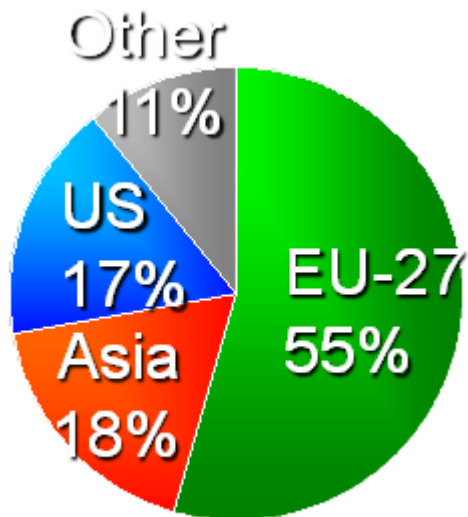
Pre-fab services **Fabrication** **Post-fab services**

Stage

#2. Transformation of manufacturing value added

Breakdown of \$749 (+tax, €547) retail price of Nokia N95 in 2007

- By production stage
- By region



Processors	€31	6%
Memories	€17	3%
O. int. circuits	€31	6%
Display	€22	6%
Camera (5 mp)	€16	3%
Other parts	€59	11%
Licenses* (3G...)	€24	4%
Nokia**	€259	47%
Includes direct & indirect in-house labor cost (as well as other work purchased as billable hours) in R&D, marketing, sales, managing, sourcing, etc. as well as pure profits. Excludes assembly (see item below)		
Assembly***	€11	2%
Distribution	€19	3%
Retailing	€31	6%



Lack of empirical evidence

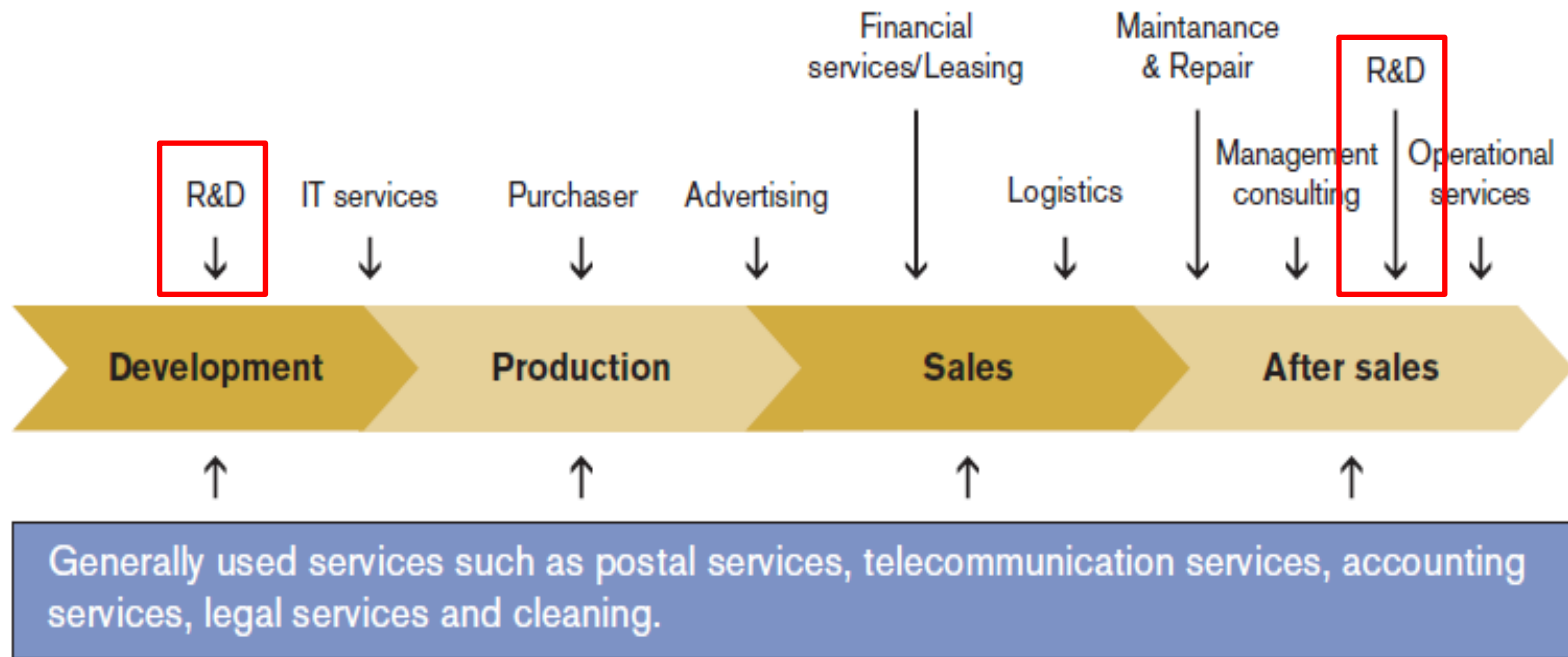
Little empirical evidence, why?

One possible reason:

Large datasets are not organised in a way that can shed light on the smile-curve as traditionally conceived in the above figure. The figure above is product/firm level smile curve.

Product-level versus economy-wide smile curve

Economy-wide data is collected by sector, not by value chain stage.



Source: “Servicification of Swedish manufacturing”, National Board of Trade, the government of Sweden

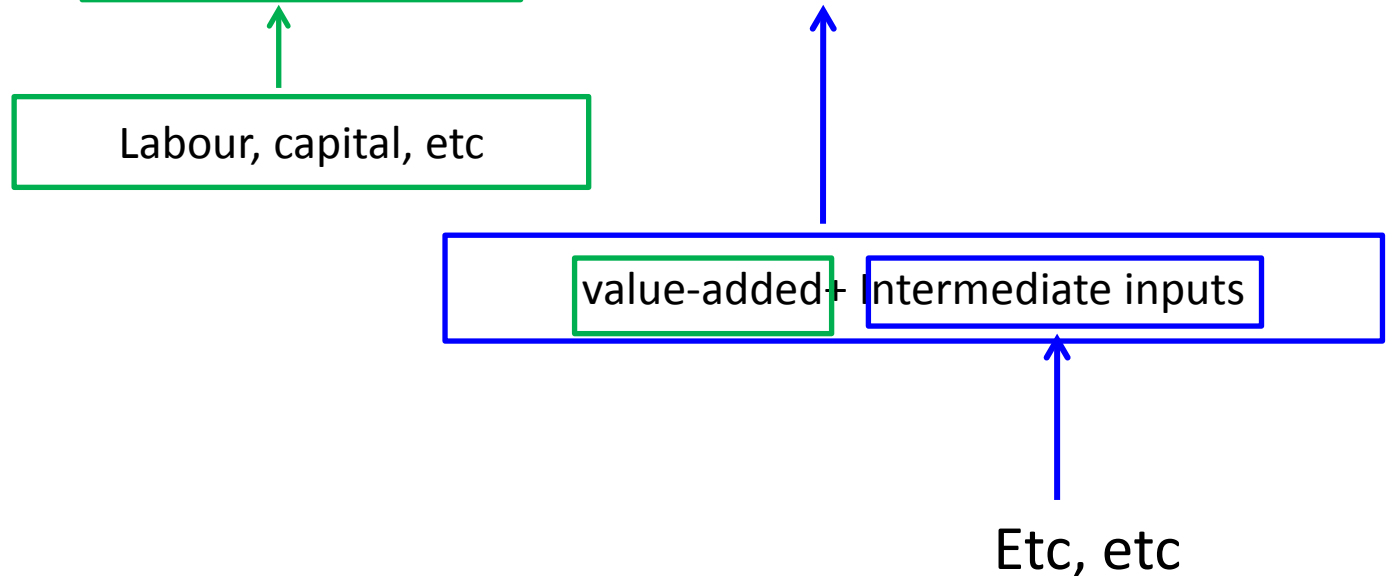
Firm vs Economy-wide Smile Curve

- Problem: Economy-wide data is collected by sector, not by value chain stage.
 - One firm's downstream is another's upstream.
- Economy-wide 'Smile curve':
- We focus on sectoral value-added from:
 - Primary sectors;
 - Manufacturing sectors
 - Service sectors.
- Focus on exports rather than production.

Value-added trade: Computation

Export value =

the cost of value-added + intermediate inputs.



Iterate to converge (or matrix algebra)

Smile curve underlying forces

- **Offshoring impact**

When a stage's cost is reduced by offshoring, its share in value added falls since a stage's value added is based on costs.

Easier to offshore manufacturing activities than service activities

Cost reduction by the commoditisation (or “Manualisation”) is easier in Manufacturing.

- **Servicification**

Shifting jobs and tasks from manufacturing firms to service firms would make it look like less of a product's total value added was coming from fabrication (when we look at it at firm level).

Data

- Asian International Input-Output Table (IDE-JETRO)
- Advantages (over WIOD & TiVa):
 1. Year coverage:

Asian IO: from 1985 vs 1995 (WIOD & TiVa)
 2. Sector coverage:

Asian IO: 76 sectors vs 35 (WIOD & TiVa)

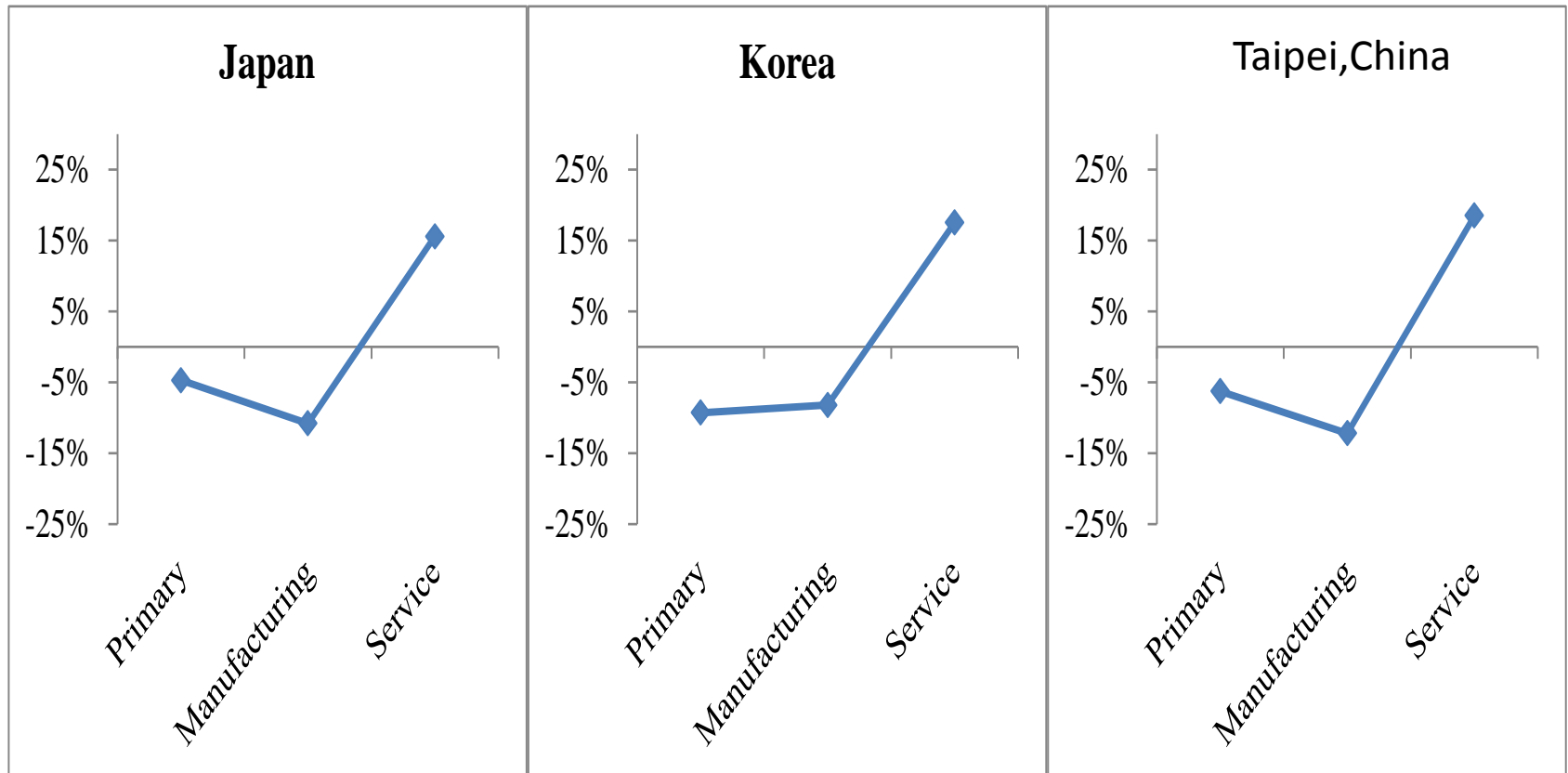
Economy-wide smile curve

For example, Japan 1985 and 2005

Source sector	1985	2005	Change
Primary	6.8%	2.1%	-4.7%
Manufacturing	80.1%	69.3%	-10.8%
Service	13.1%	28.6%	15.6%

Smile curves by nation

1985 vs 2005: Japan, Korea and Taipei

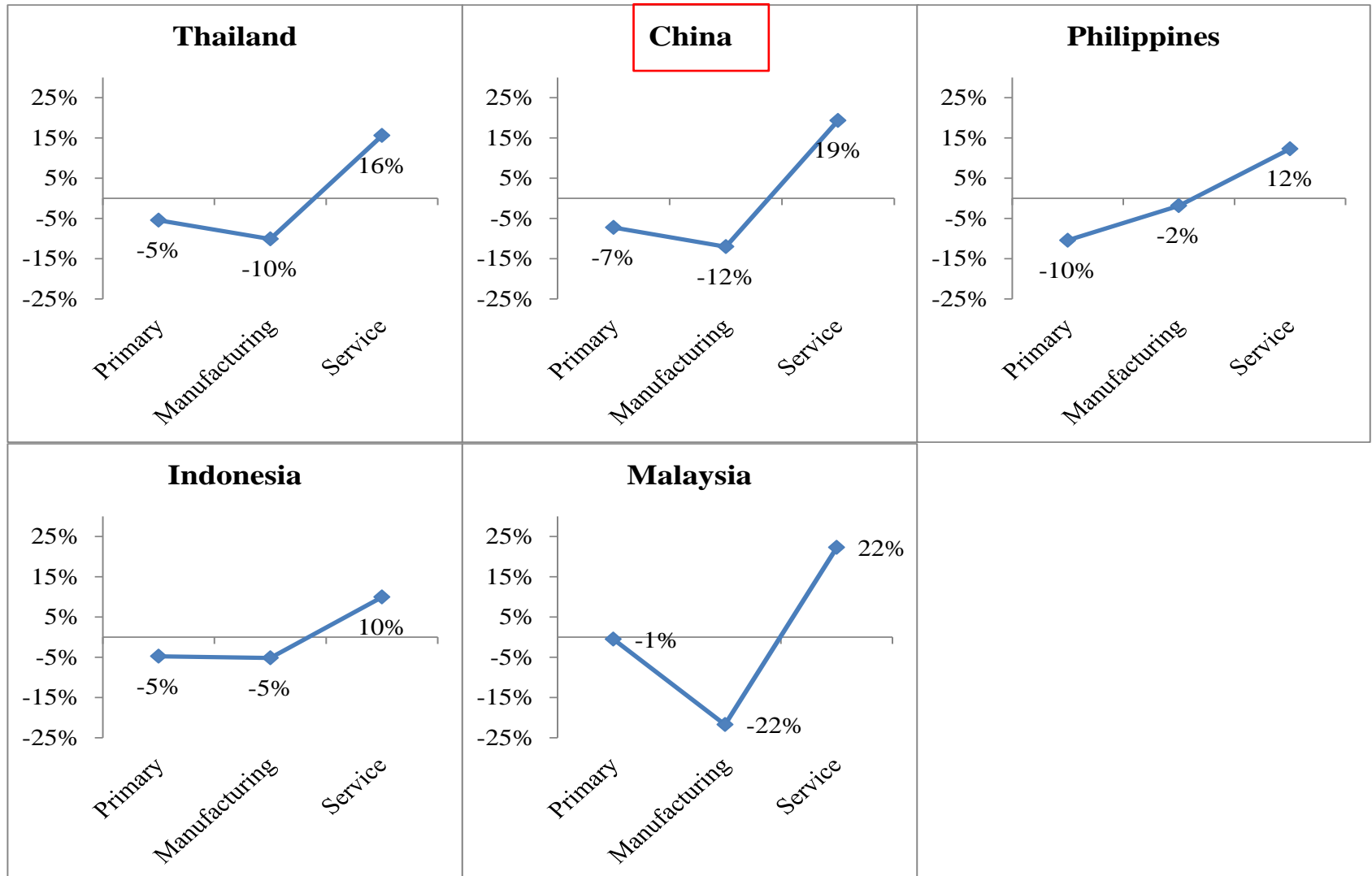


Likely determinants of the smile?

- Fabrication's relative price falls:
 - Offshoring with knowhow & Automation.
- Statistical reshuffle:
 - Manufacturing companies outsource services.
- Chenery curve shifts into services.

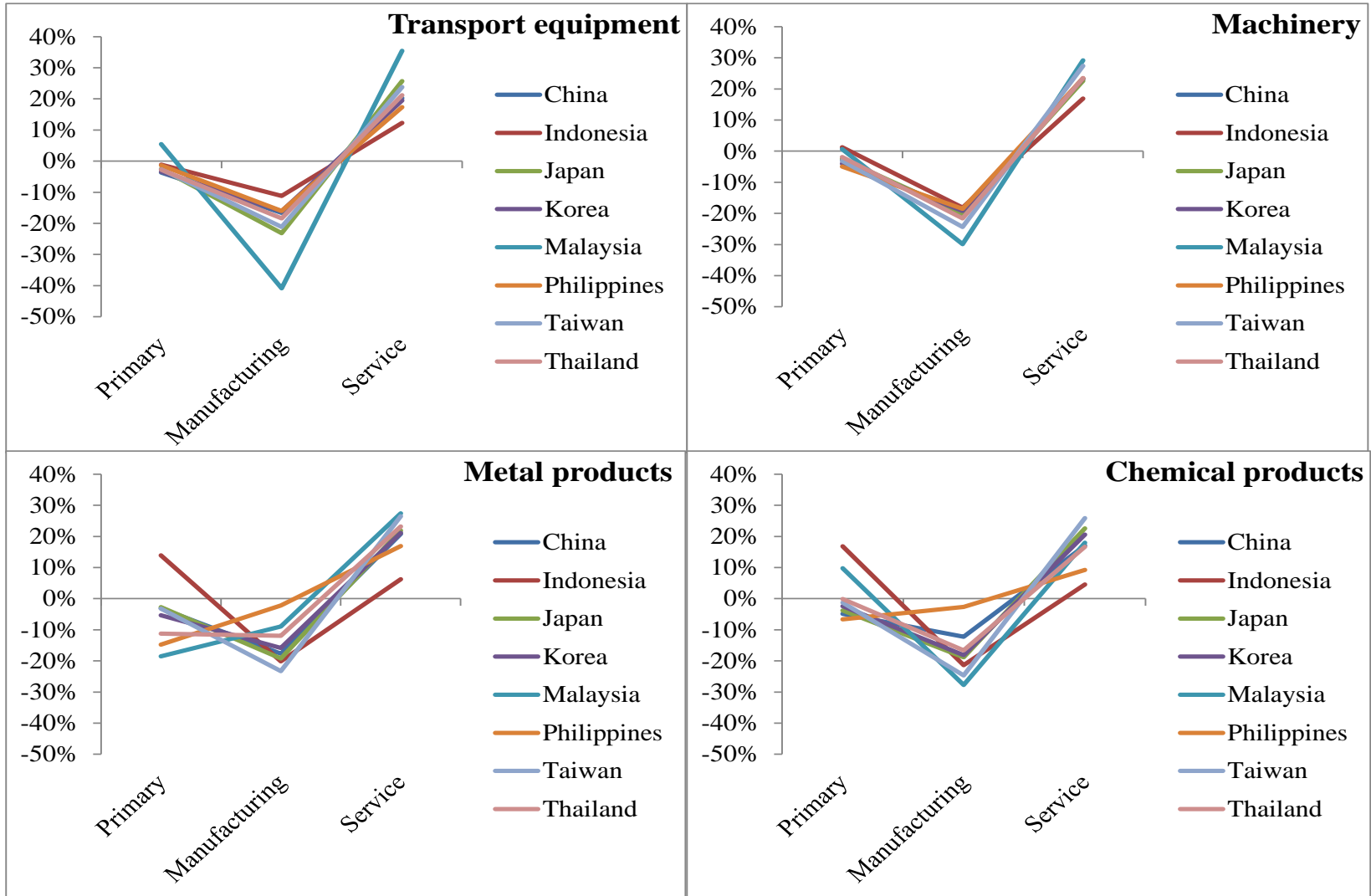
Smile curves by nation

1985 vs 2005: Developing countries

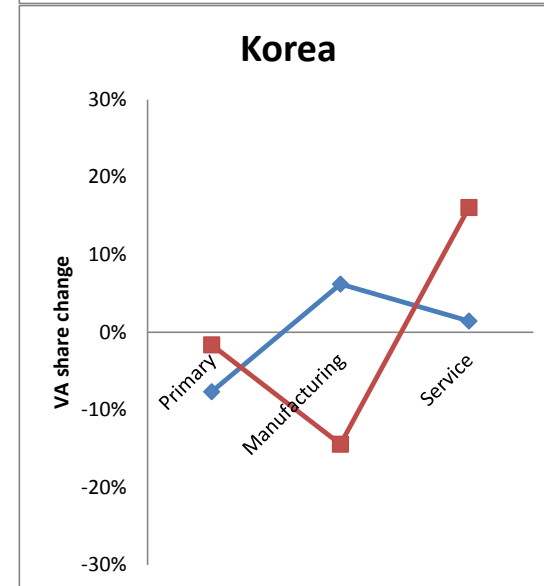
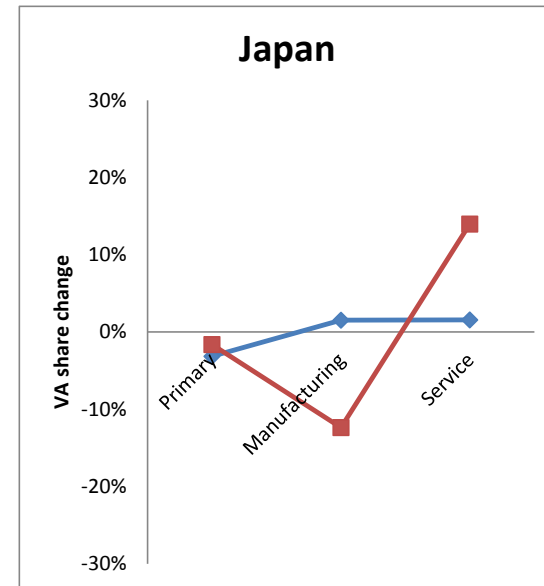
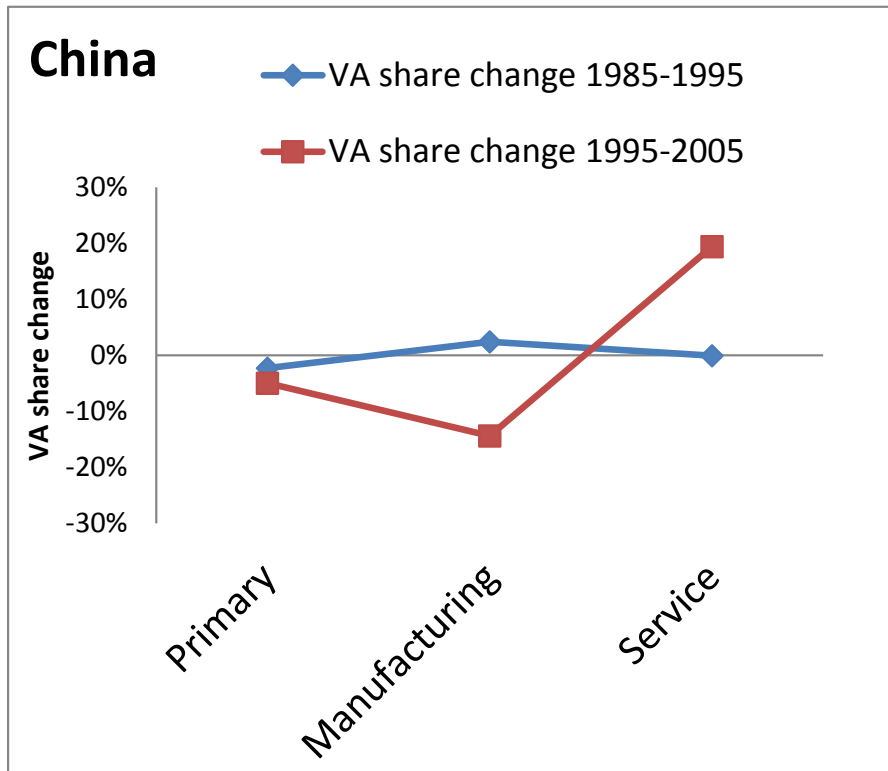


Smile curves by industry and nation

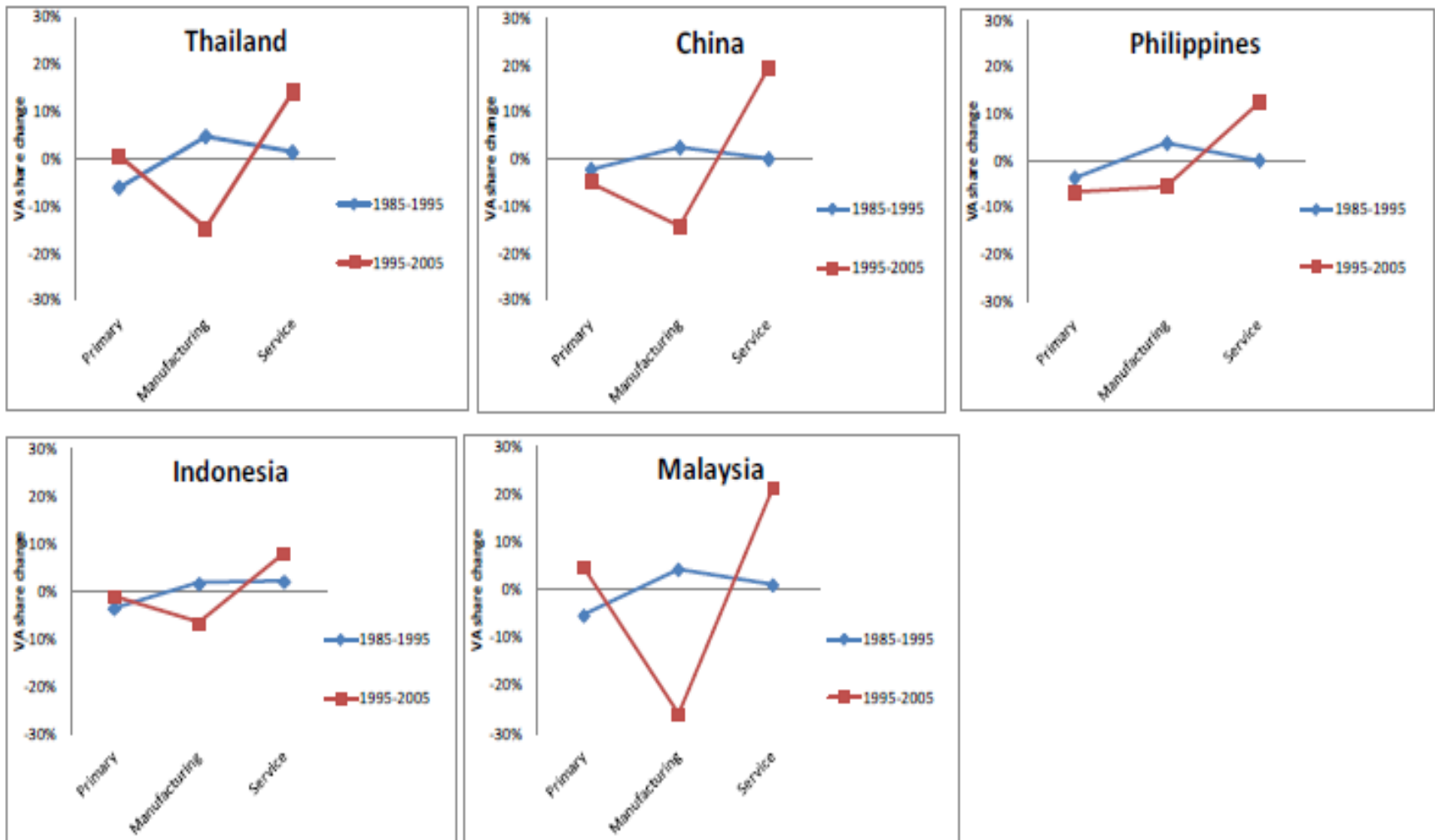
1985 vs 2005



Smile curves: 1985 to 1995 vs 1995 to 2005



Smile curves 1985-1995 and 1995-2005

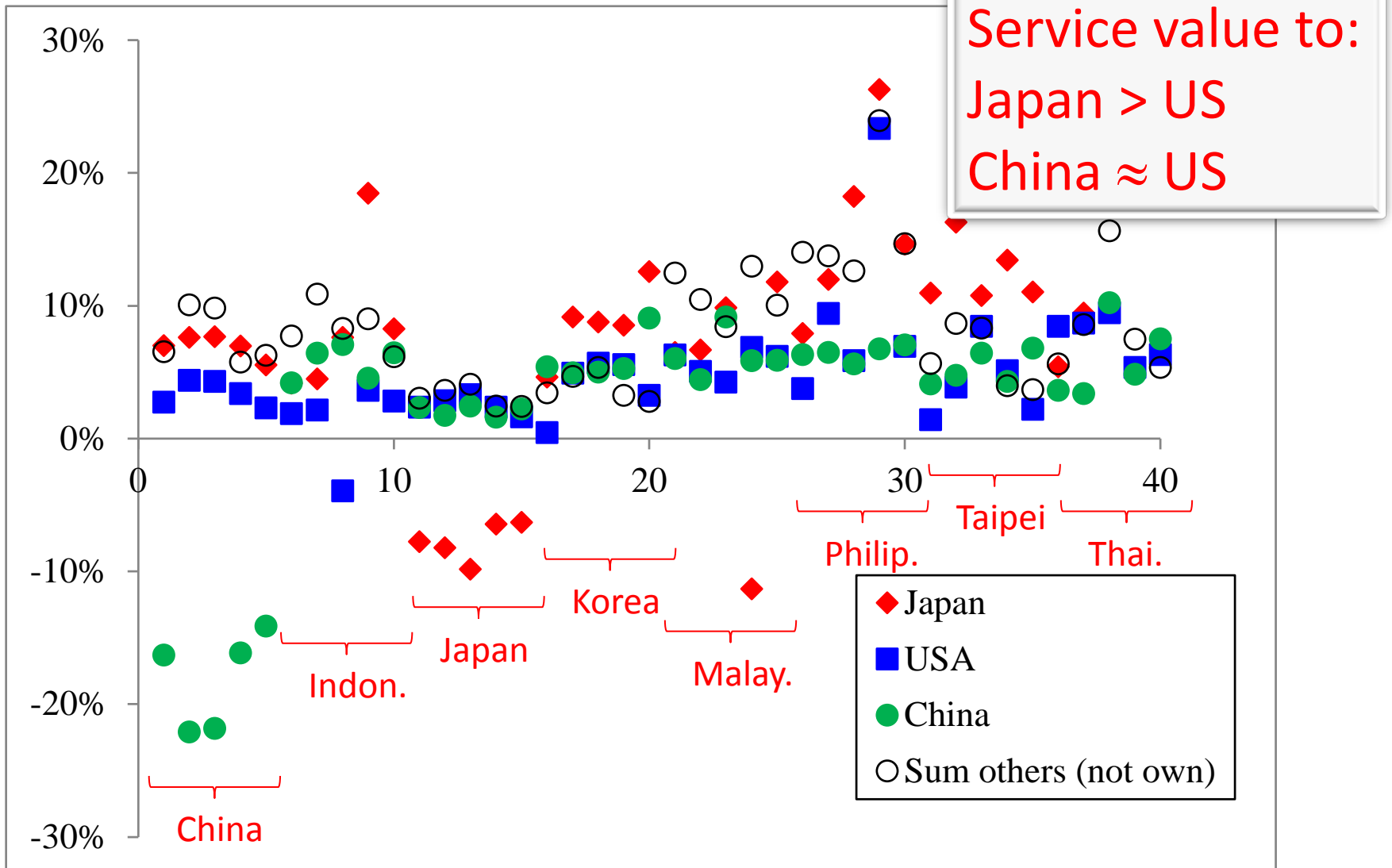


Smile curves is the phenomenon for 1995-2005 not for 1985-1995

Service value-added to whom?

Service sector input by nation of origin					
		Service VA source			
exporter	export sector	China	Japan	US	RoW
China	Transport equipment	-16%	7%	3%	2%
China	Textile, leather	-16%	7%	3%	2%
China	Metal products	-14%	6%	2%	3%
China	Machinery	-22%	8%	4%	6%
China	Chemical products	-22%	8%	4%	7%

8 nations, 5 industries



Conclusion & future research

- ✓ Smile (smirk) curve seems to be 'real' at economy-wide level.
 - ✓ NB: 'Manufacturing jobs' are disappearing everywhere.
 - ✓ Seems 'good (i.e. service)' jobs going to (or staying in) advanced economies.
- ✓ The smile curve occurred 1995-2005; opposite of 1985-1995
- ✓ Need e'metrics to sort out the causes:
 - ✓ GVCs vs general statistical effect.
 - ✓ GVC varies radically across industries, time & nations.

END

- Thank you for listening.

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