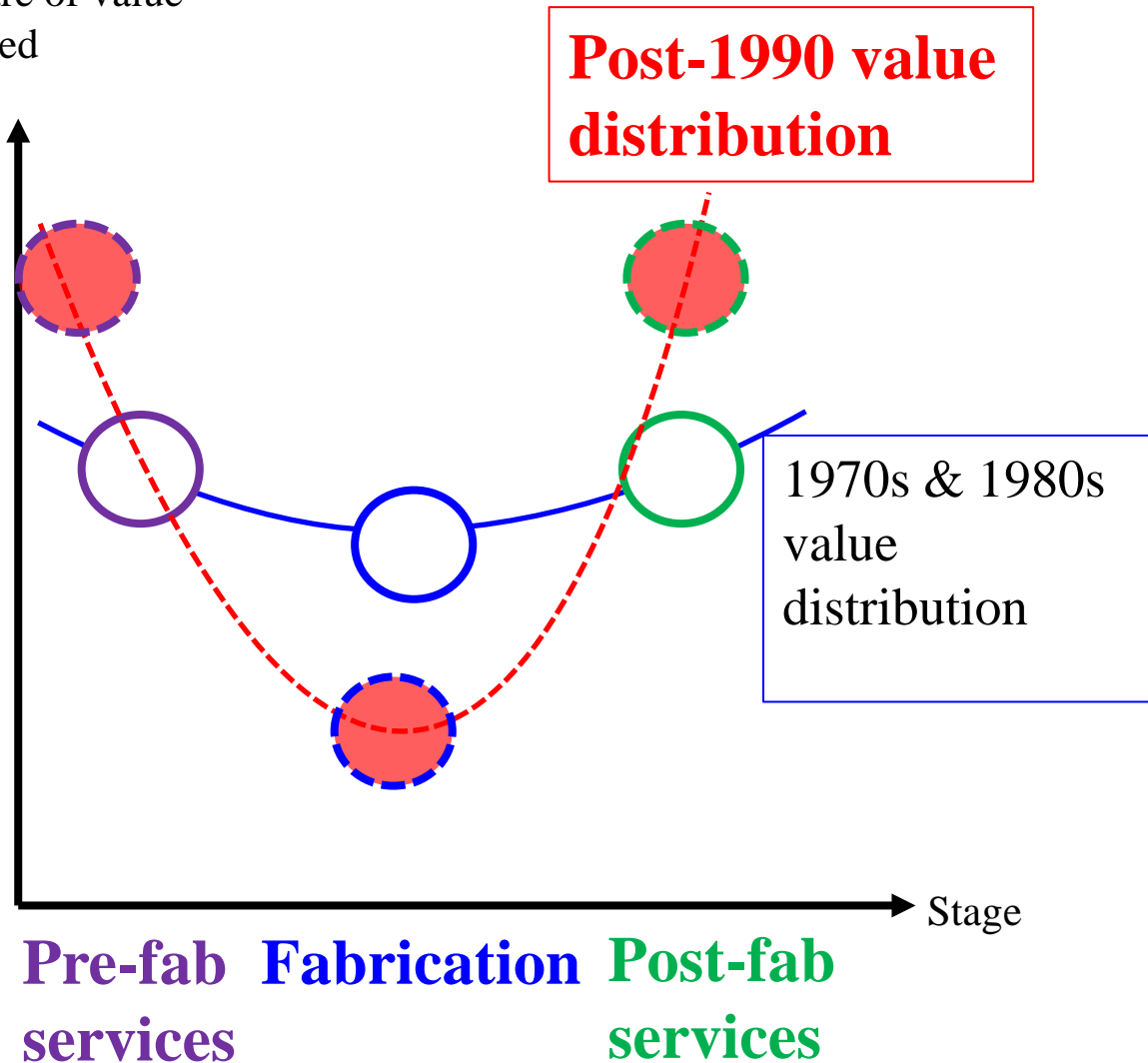


‘Smile curve’  
and the service-ification of  
manufacturing

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# 'Smile curve': Distribution of value

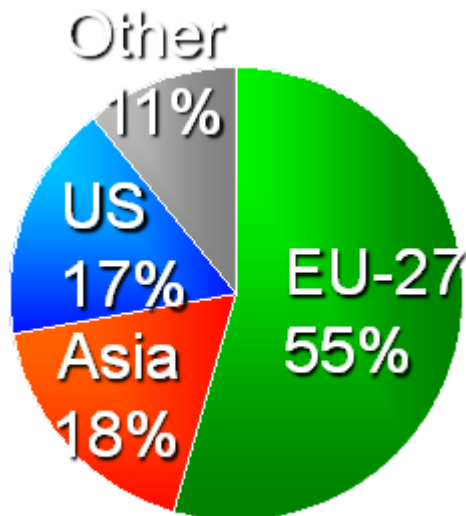
Share of value added



# #2. Transformation of manufacturing value added

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

- By production stage
- By region



|   |      |     |
|---|------|-----|
| <b>Processors</b>   | €31  | 6%  |
| <b>Memories</b>   | €17  | 3%  |
| <b>O. int. circuits</b>   | €31  | 6%  |
| <b>Display</b>  | €22  | 6%  |
| <b>Camera (5 mp)</b>  | €16  | 3%  |
| <b>Other parts</b>  | €59  | 11% |
| <b>Licenses*</b> (3G...)  | €24  | 4%  |
| <b>Nokia**</b>  | €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) |      |     |
| <b>Assembly***</b>  | €11  | 2%  |
| <b>Distribution</b>   | €19  | 3%  |
| <b>Retailing</b>  | €31  | 6%  |



# Lack of empirical evidence

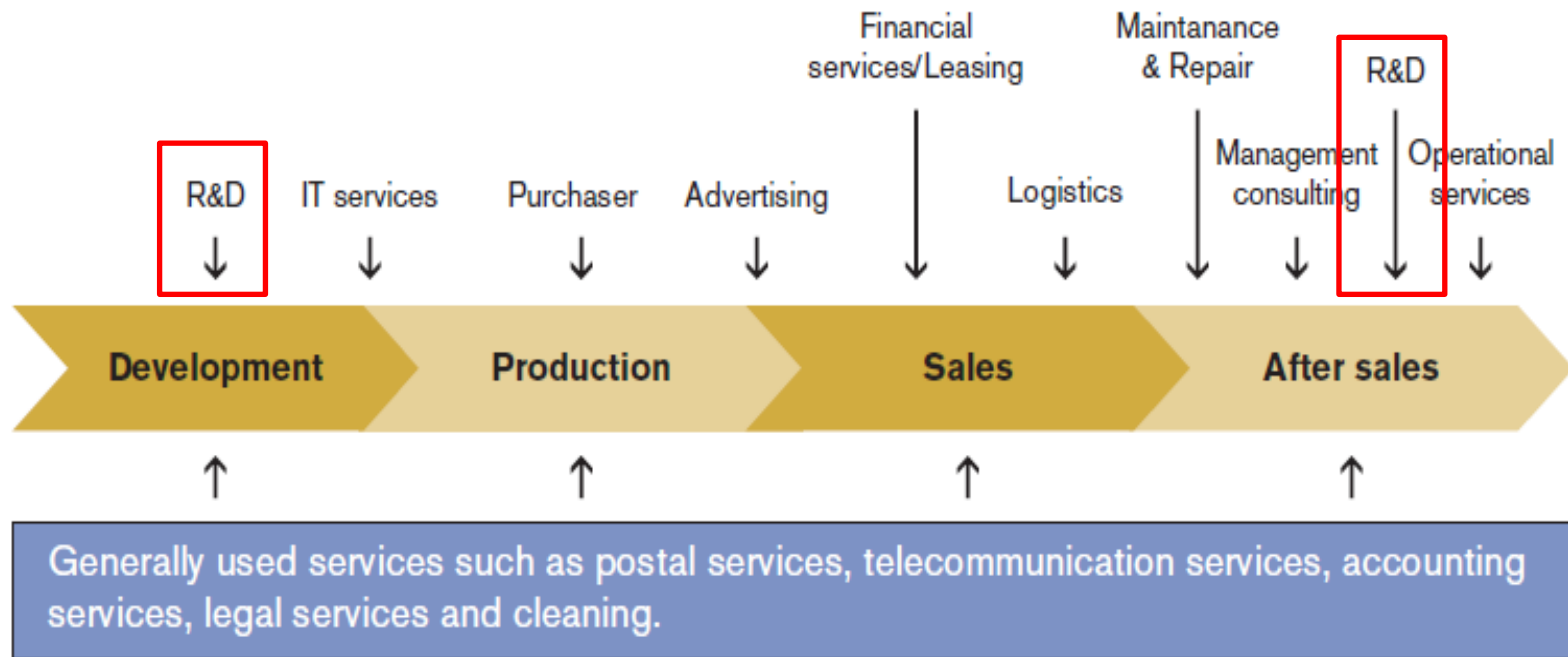
Little empirical evidence, why?

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

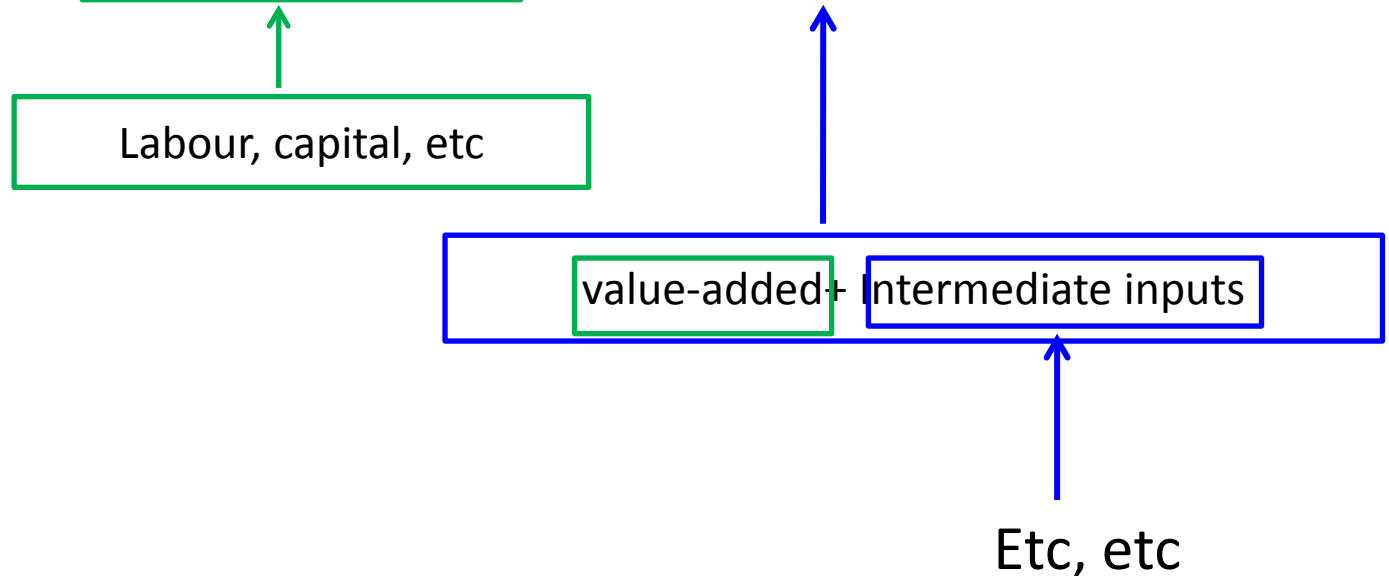
# Firm vs Economy-wide Smile Curve

- 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)

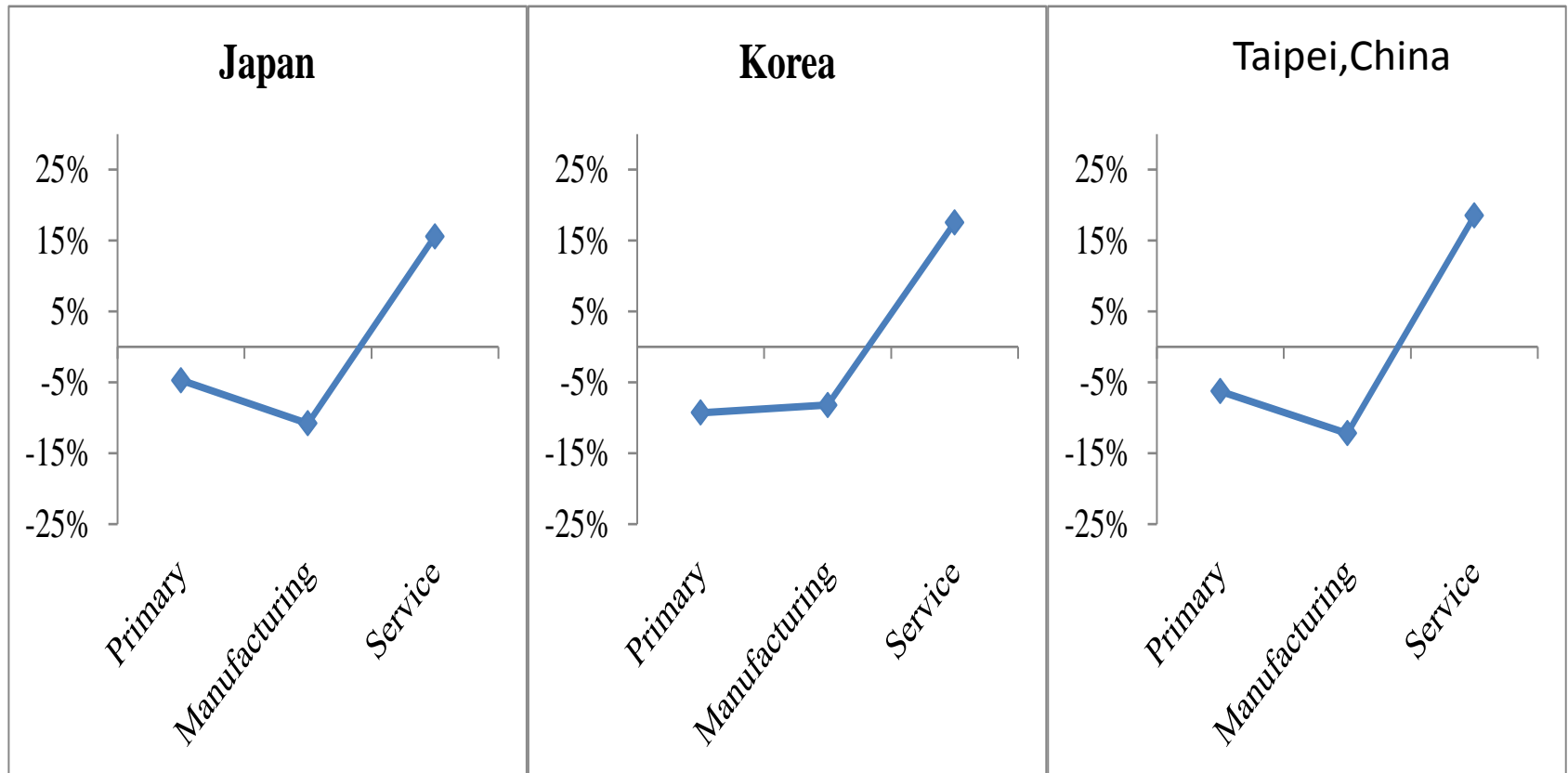
# Economy-wide smile curve

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

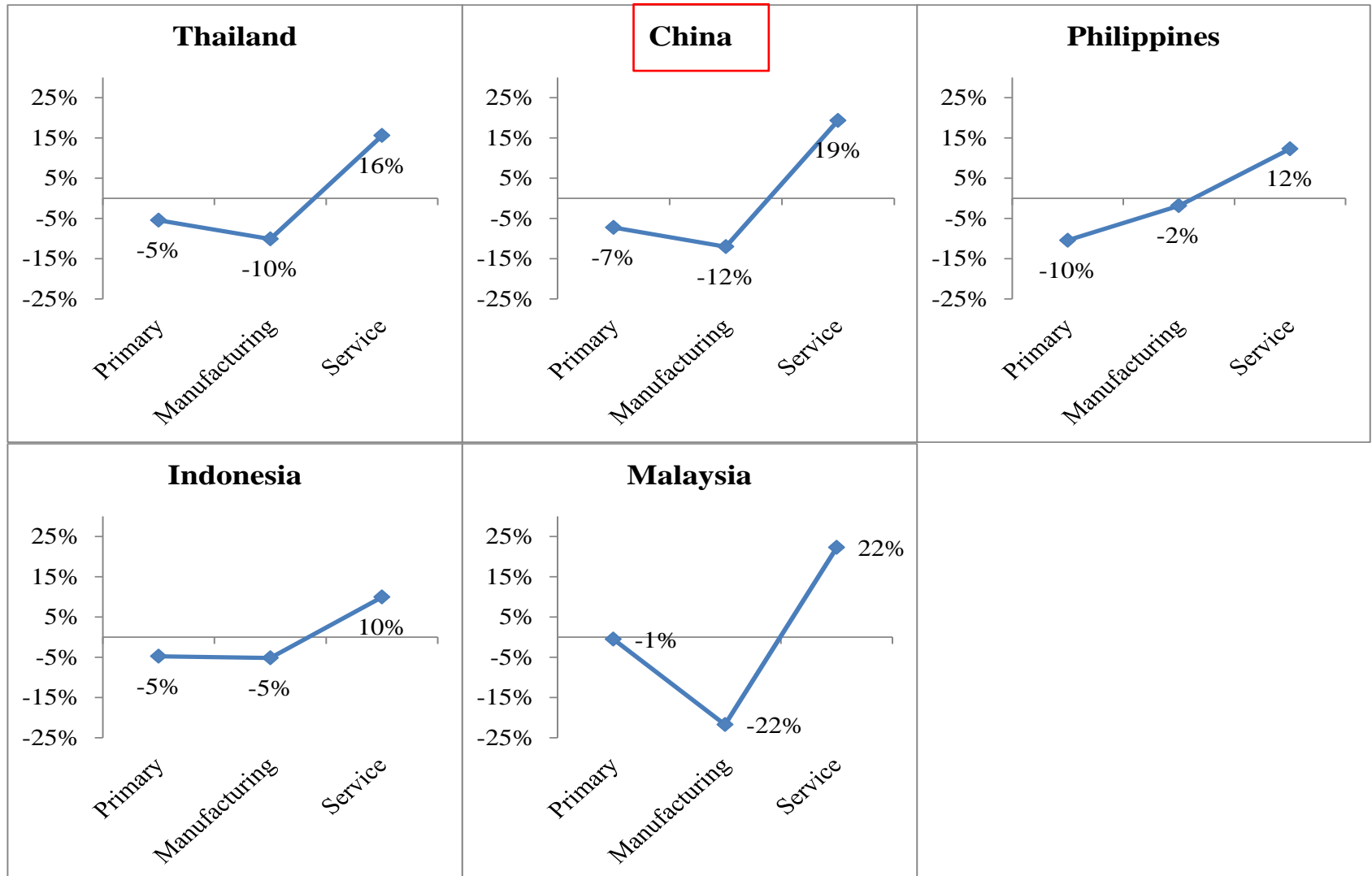


# Likely determinants of the smile?

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

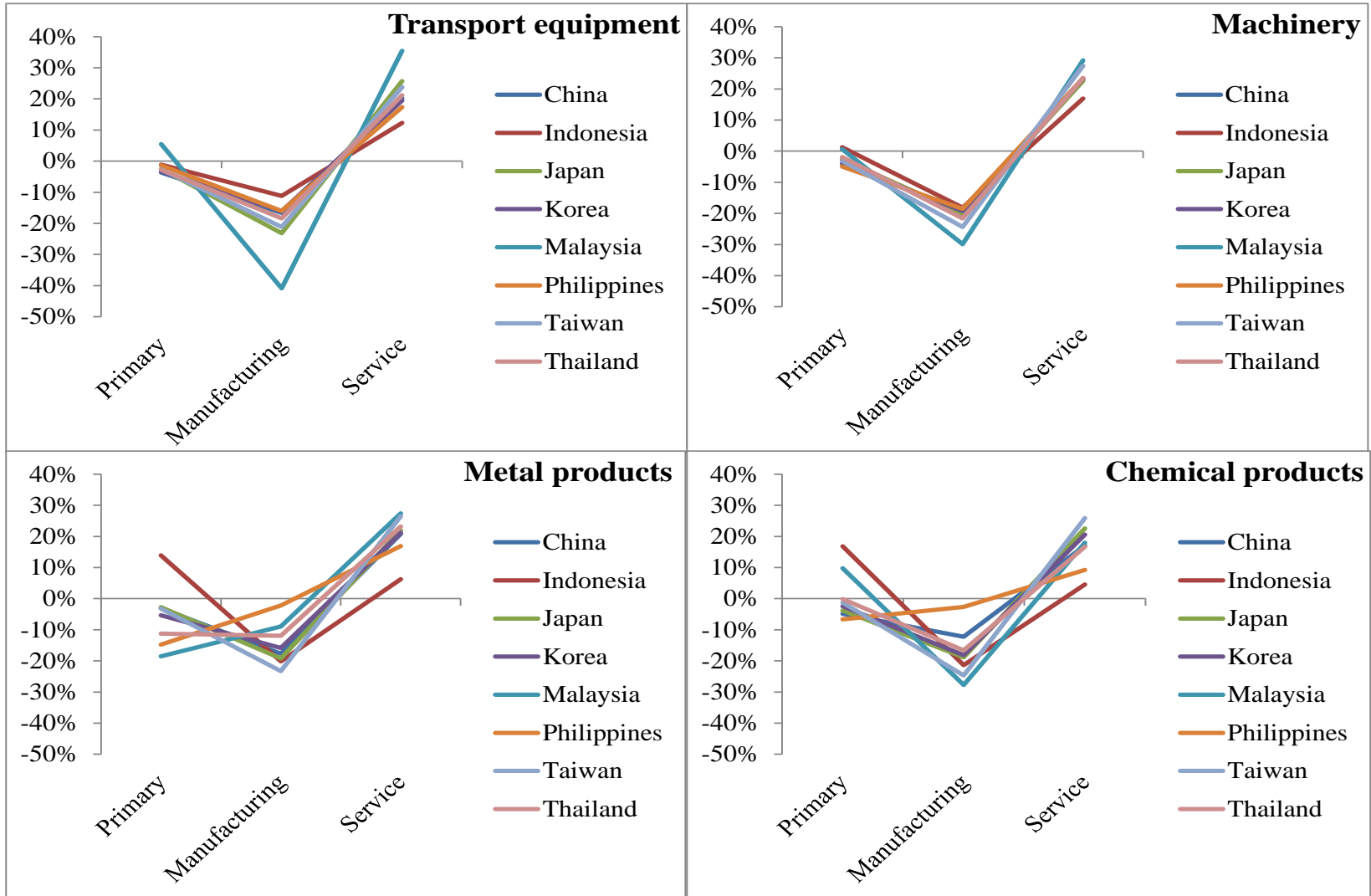
# Smile curves by nation

## 1985 vs 2005: Developing countries

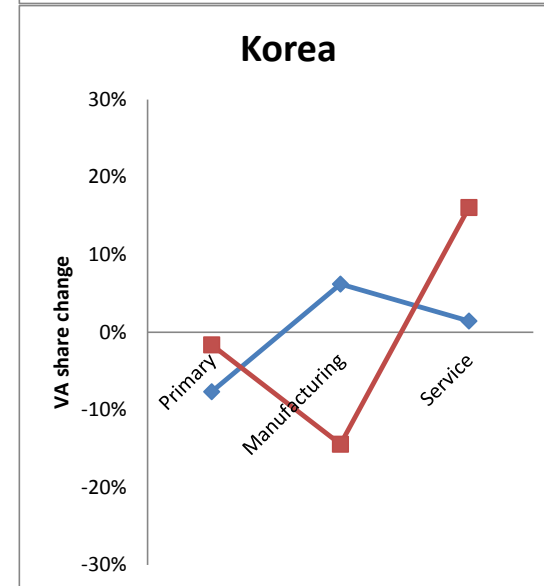
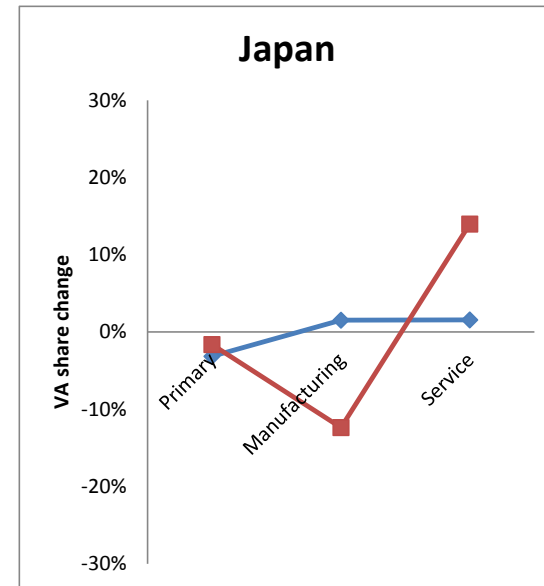
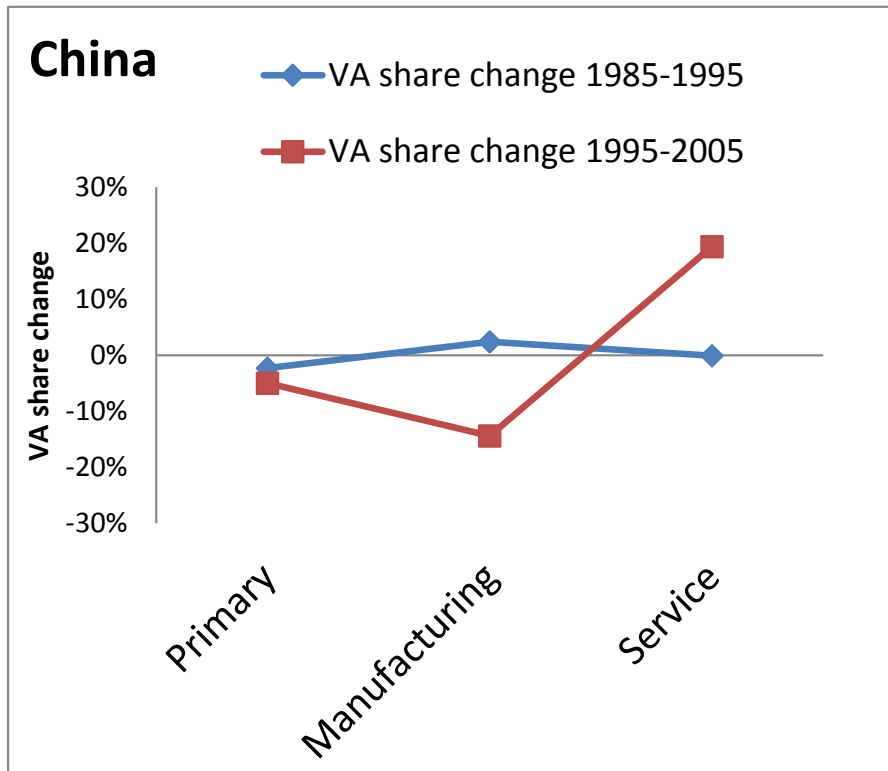


# Smile curves by industry and nation

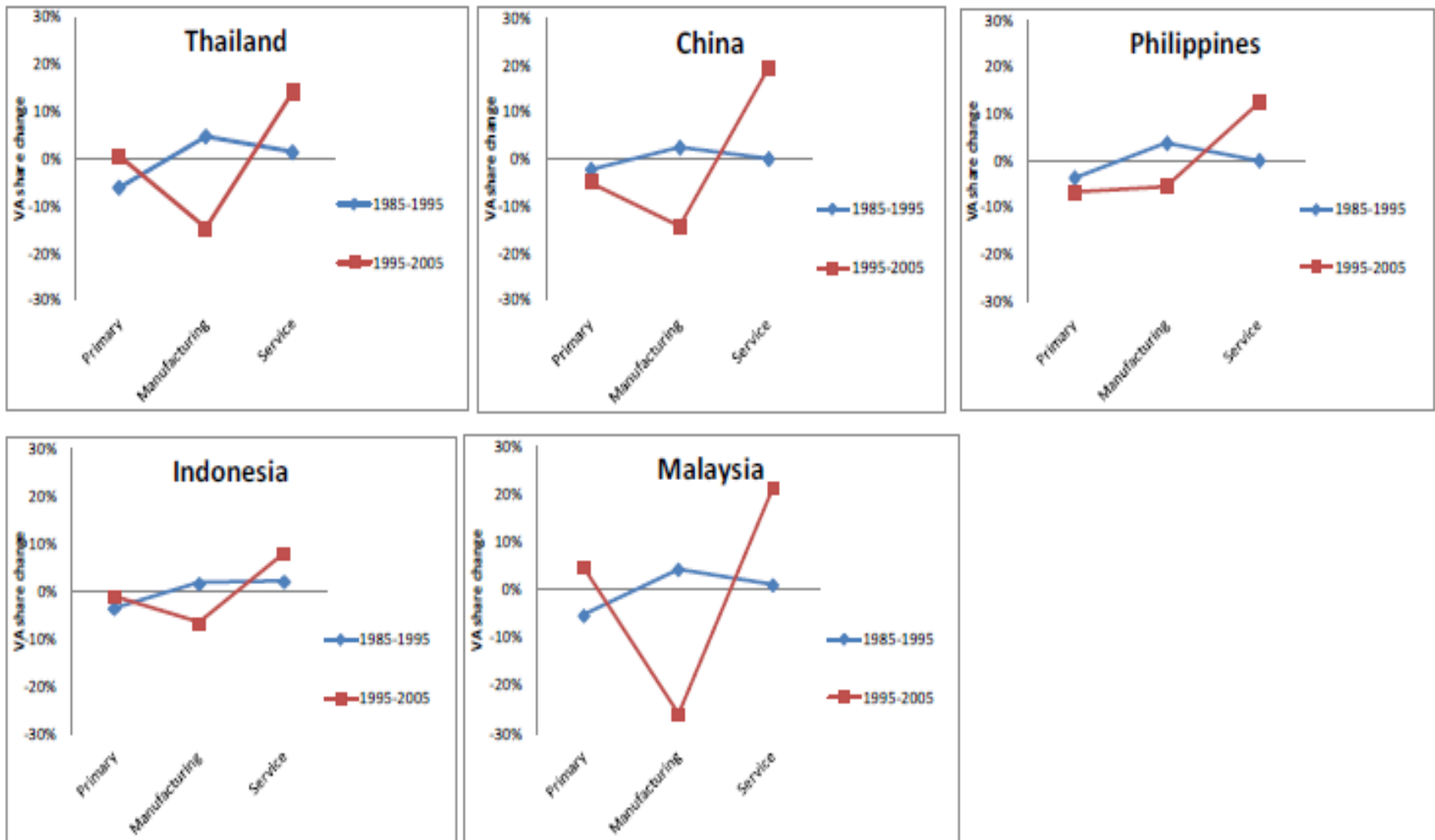
## 1985 vs 2005



# Smile curves: 1985 to 1995 vs 1995 to 2005



# Smile curves 1985-1995 and 1995-2005



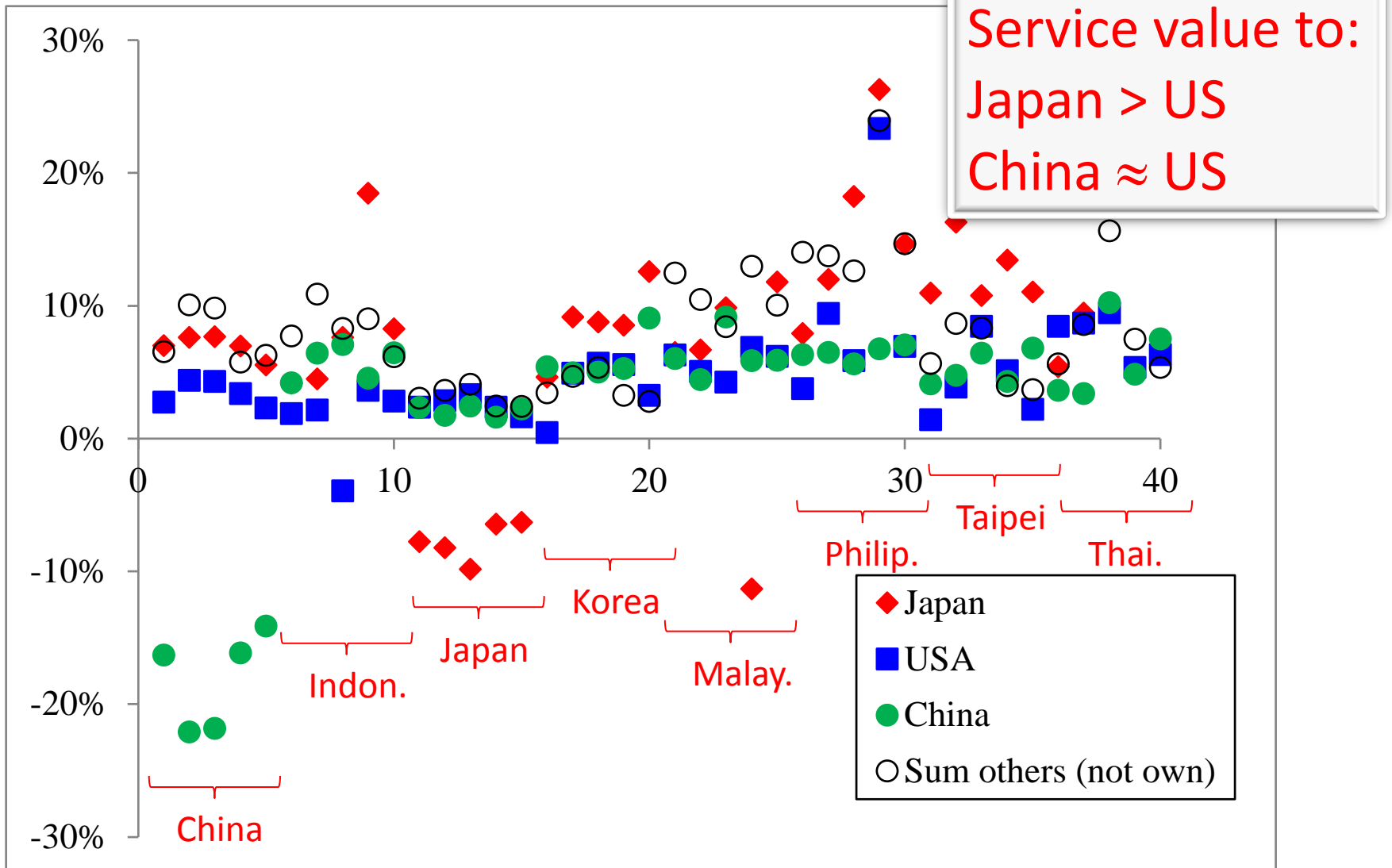
Smile curves is the phenomenon for 1995-2005 not for 1985-1995



# 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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