# Dynamic Industrial Policy

**Michael Peneder**

Austrian Institute of Economic Research (WIFO)

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- **Competitiveness**
  - **Krugman's critique**
  - The **ice-berg** model

- **De *vs* re-industrialization**
  - Structural change
  - Induced value added chains
  - Industrial policy **paradox**

- **Dynamic industrial policy**
  - Multiple 'faces'
  - From **rationalities of failure** ...
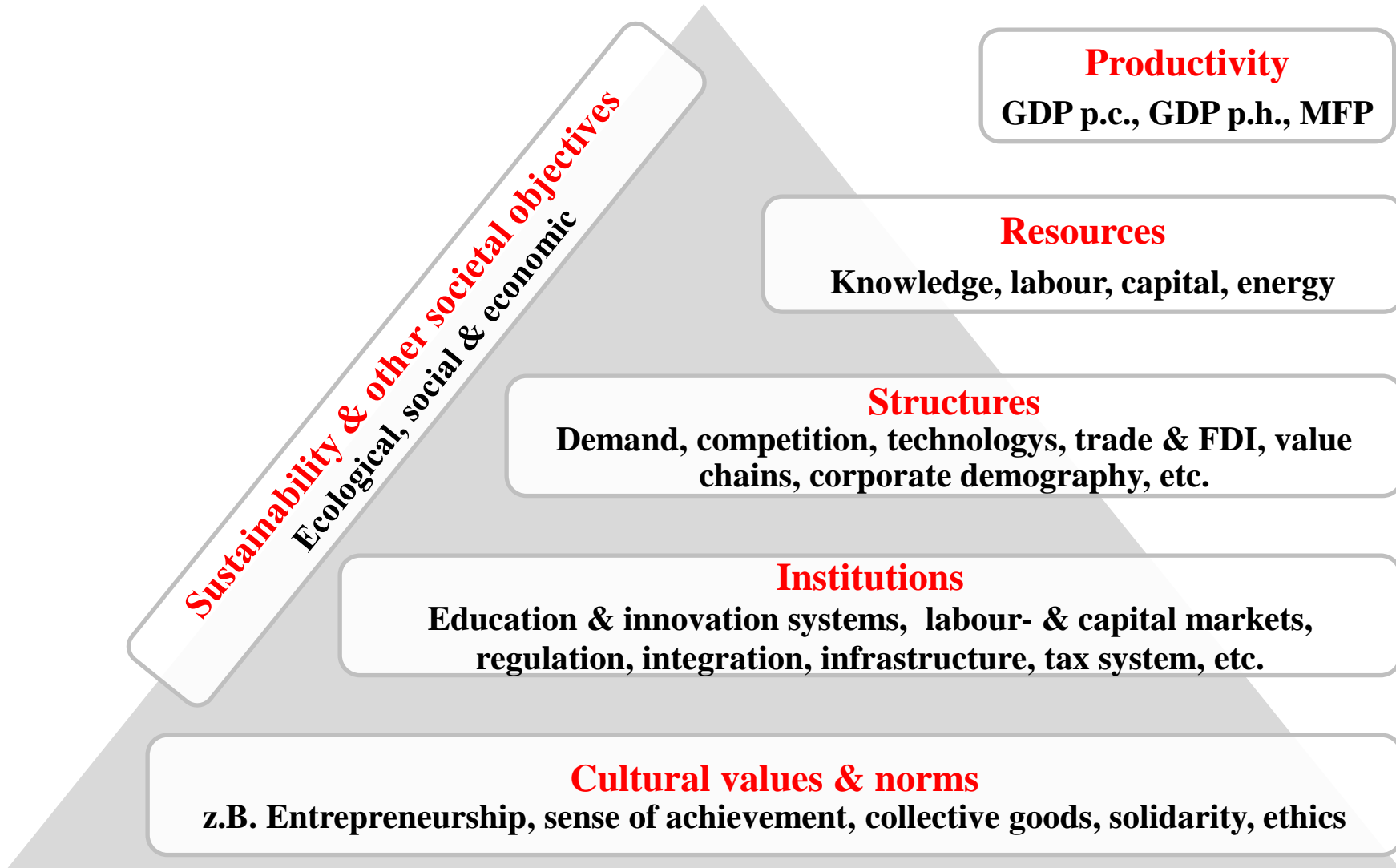  - ➤ towards the **ability to evolve!**

# I. Competitiveness

- **Paul Krugman** (MIT Press, 1996)

  - "So let's start telling the truth: competitiveness is a **meaningless** word when applied to national economies. And the obsession with competitiveness is both **wrong** and **dangerous**"

- Main arguments

  - **Illusion of conflict**, but trade is no zero-sum-game

  - **Domestic spending** has larger impact than negative terms of trade effects

  - In the long run, wages always rise with productivity ➤ **low wages** indicate low competitiveness!

# A natural concern

- Competition arises from **scarcity**, e.g. of
    - **Resources** (capital, labour/skills, raw materials)
    - **Access to markets** (EU integration; international trade agreements; transport)
    - **Knowledge & competences** (seeking rents from high-value production)
- Do these scarcities matter only for individual firms?
    - Sure, **enterprises are at the core**, but e.g.
    - relative abundance of inputs affect **industrial location**
    - differences in productivity and industrial structure affect aggregate income and the **standards of living!**

➢ Policy must define the preferences and constraints to account for interdependencies with other **goals of society**, e.g.

- Social cohesion

- Sustainable environment

➢ **Openness**: the very notion of "competitiveness" implies the willingness and ability to face competition, being domestic or from abroad

➢ Focus on **productivity**: the objective is to **raise real incomes**, not lower wages !

# Competitiveness
## The 'ice-berg' model



**Productivity**
GDP p.c., GDP p.h., MFP

**Resources**
Knowledge, labour, capital, energy

**Structures**
Demand, competition, technologys, trade & FDI, value chains, corporate demography, etc.

**Institutions**
Education & innovation systems, labour- & capital markets, regulation, integration, infrastructure, tax system, etc.

**Cultural values & norms**
z.B. Entrepreneurship, sense of achievement, collective goods, solidarity, ethics

**Sustainability & other societal objectives**
Ecological, social & economic

# II. De- *vs* re-industrialization

# A manufacturing imperative?

- Driver of **technological change**
    - Corporate expenditures on R&TD ca. 4x higher than value added share (EU, USA, Japan, Südkorea)

- **Productivity growth** is above average

- **Wages** are above average (for comparable level of educational attainment)

- Carrier for indirect **trade of services**
    - Share in extra-EU **Value Added Exports**: services 57% vs. manufacturing 37% (share of services in gross exports: 33%)

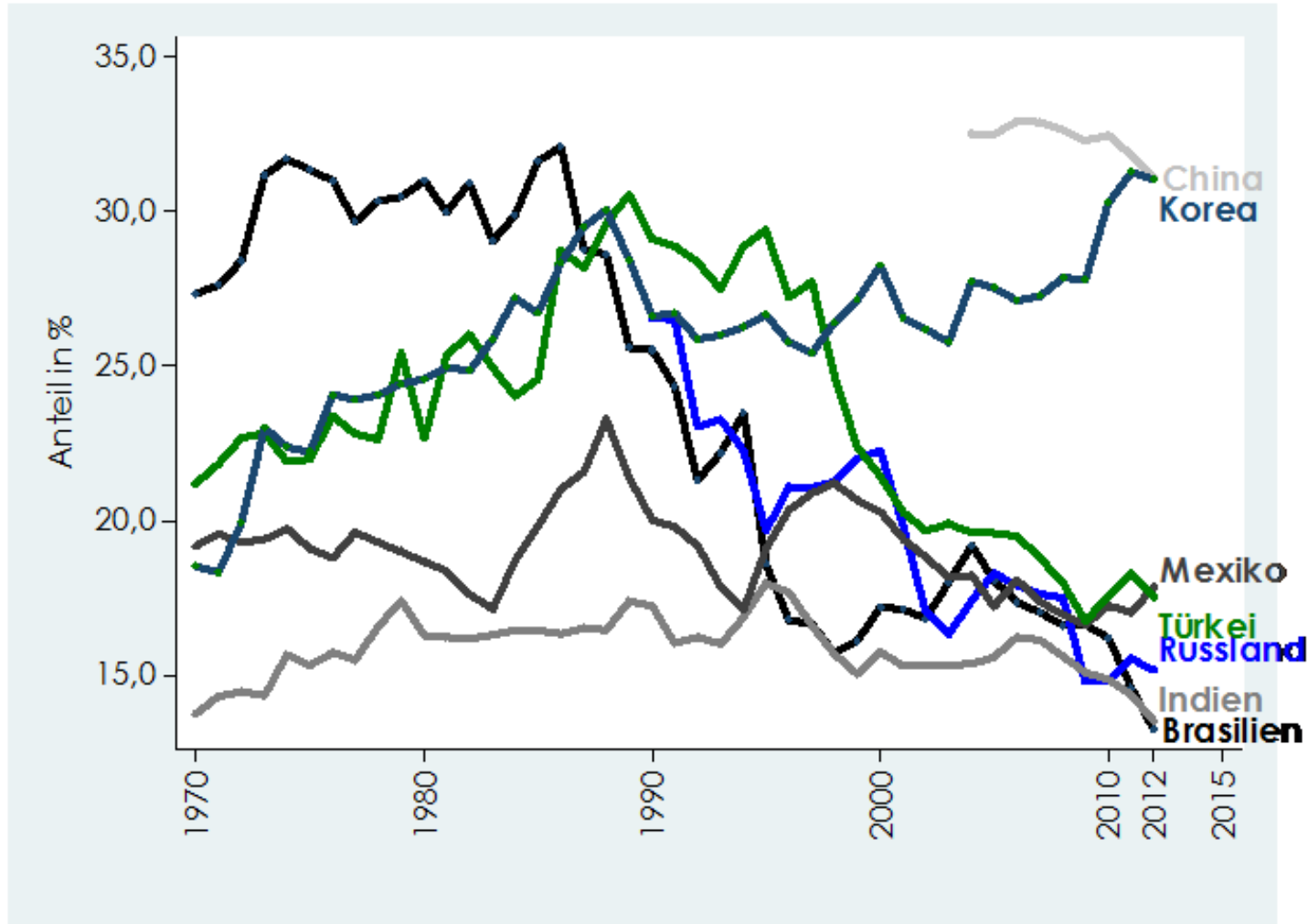    *Source*: *Stoellinger et al.* (2013)

**WIFO** ■
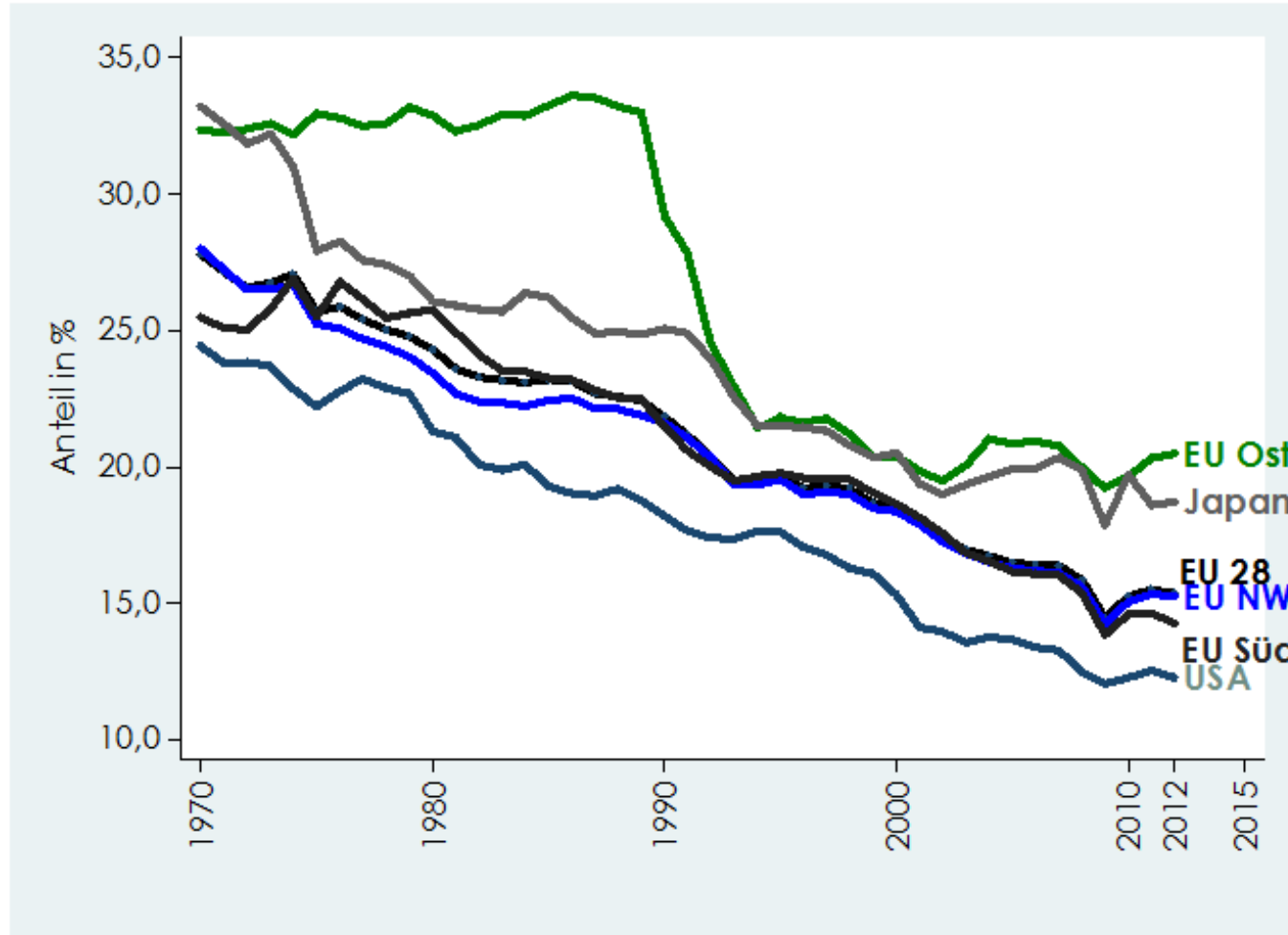


*Source*: UN National Accounts Main Aggregates Database

*NB*: EU 28: Aggregate without LUX, CYP, MLT; EU North West: AUT, BEL, GER, DEN, FIN, FRA, GBR, IRE, NDL, SWE; EU East: BGR, CZE, EST, HUN, LTU, LVA ,POL, ROM, SVN, SVK; EU South: HRV, ESP, GRC, PRT, ITA

# Manufacturing share in GDP
## Emerging countries, 1970-2012



*Source*: UN National Accounts Main Aggregates Database

# Manufacturing share in GDP
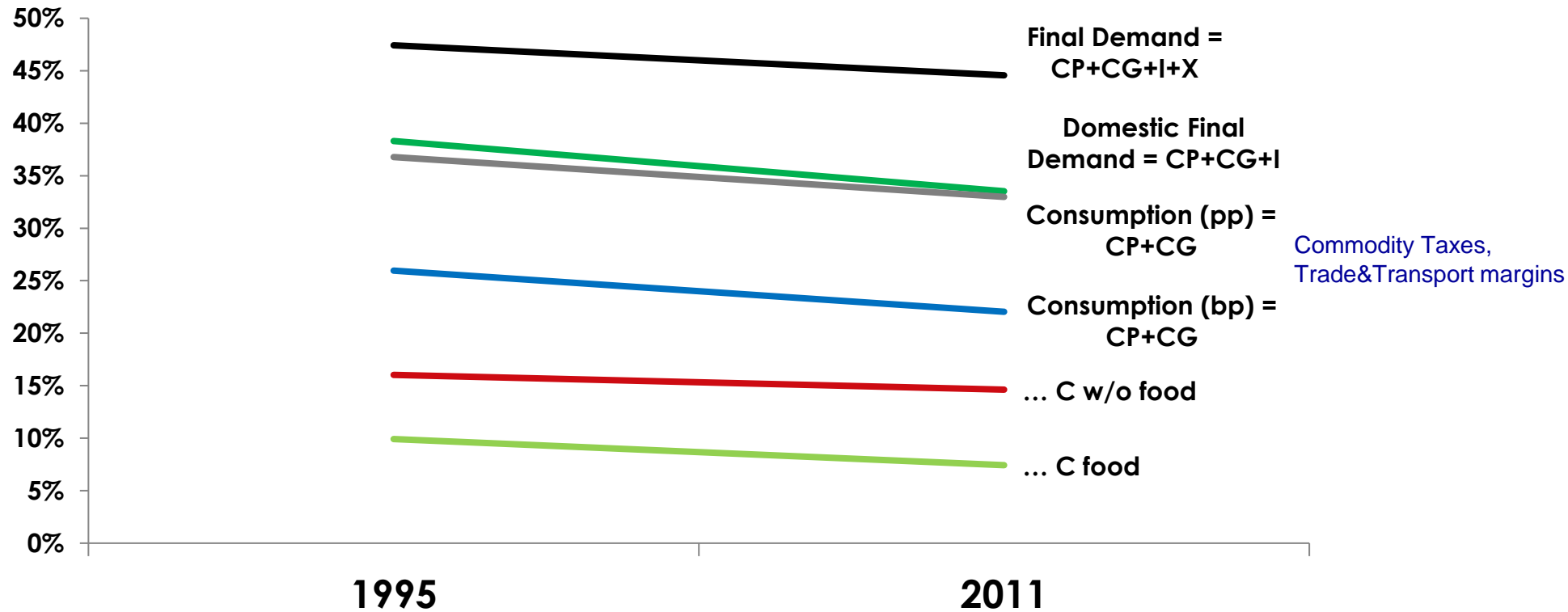
| Year | USA | EU28 | Germany | UK | Japan |
|------|------|------|---------|-----|-------|
| 2000 | 15,3% | 18,5% | | | |
| 2012 | 12,3% | 15,4% | | | |

| Year | China | South Korea | India | Mexico | Bresil |
|------|-------|-------------|-------|--------|--------|
| 2000 | | | | | |
| 2012 | | | | | |

- **Income elasticity of demand**

- **Differential productivity growth**

- **Competitive advantage**

  ▪ Comparative advantage & dynamic specialisation (economies of scale, learning, clusters, etc.)

  ▪ Global value chains

  ▪ Ambivalent impact of **rising incomes**

    – Increased wage pressure on labour intensive production

    – Better support of knowledge-intensive, complex production (demand, education, complementary services and institutions, etc.)
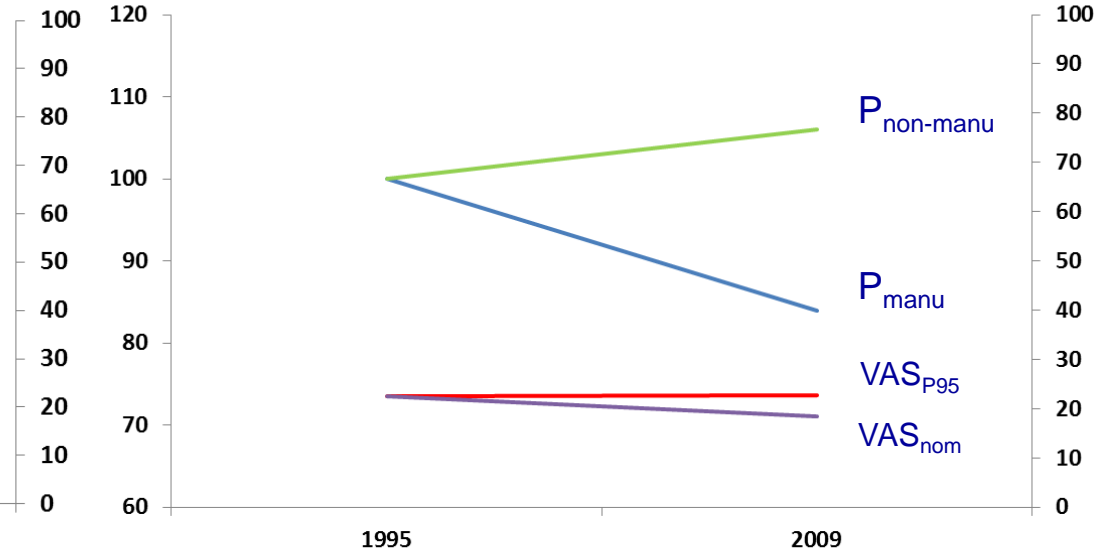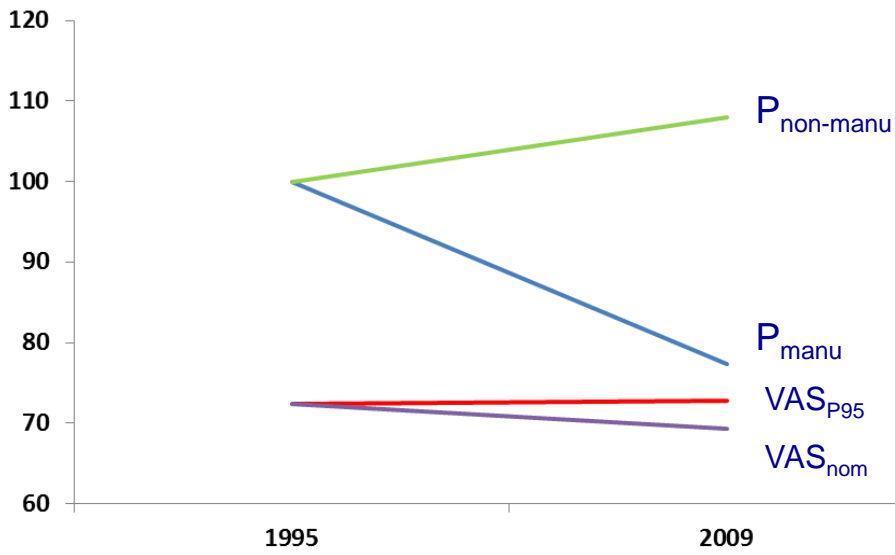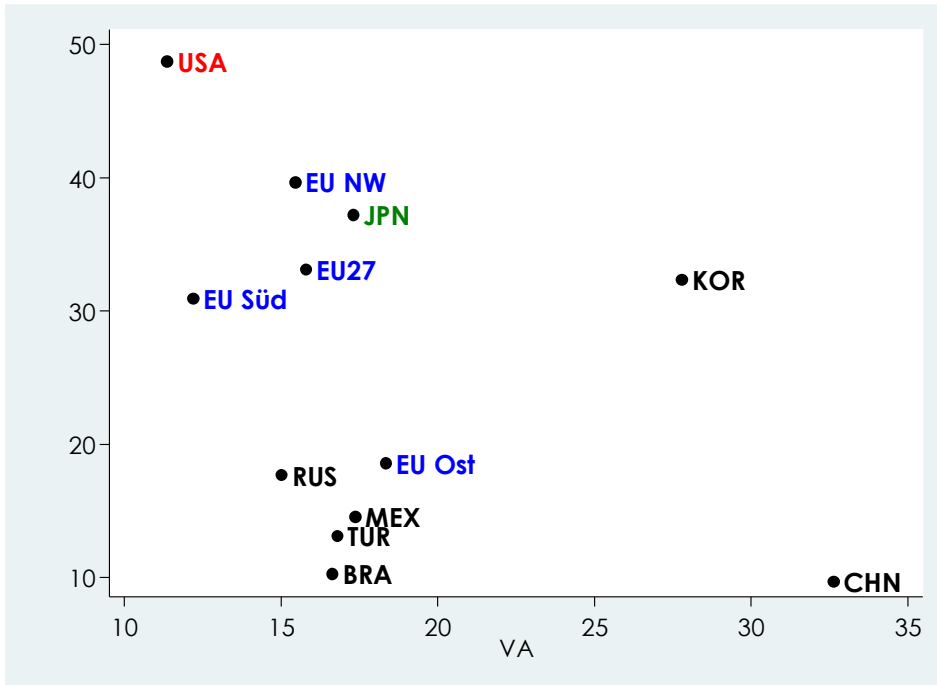
# EU – share of manufacturing in …

Final Demand = CP+CG+I+X

Domestic Final Demand = CP+CG+I

Consumption (pp) = CP+CG

Commodity Taxes, Trade&Transport margins

Consumption (bp) = CP+CG

… C w/o food

… C food

*Source*: WIOD, WIFO calculations

# Ratio of indices (manuf & non-manuf / total)



Source: WIOD, WIFO calculations

# Share of manufacturing 2011

**Value Added (Industries)**

**Domestic Final Demand (Goods)**
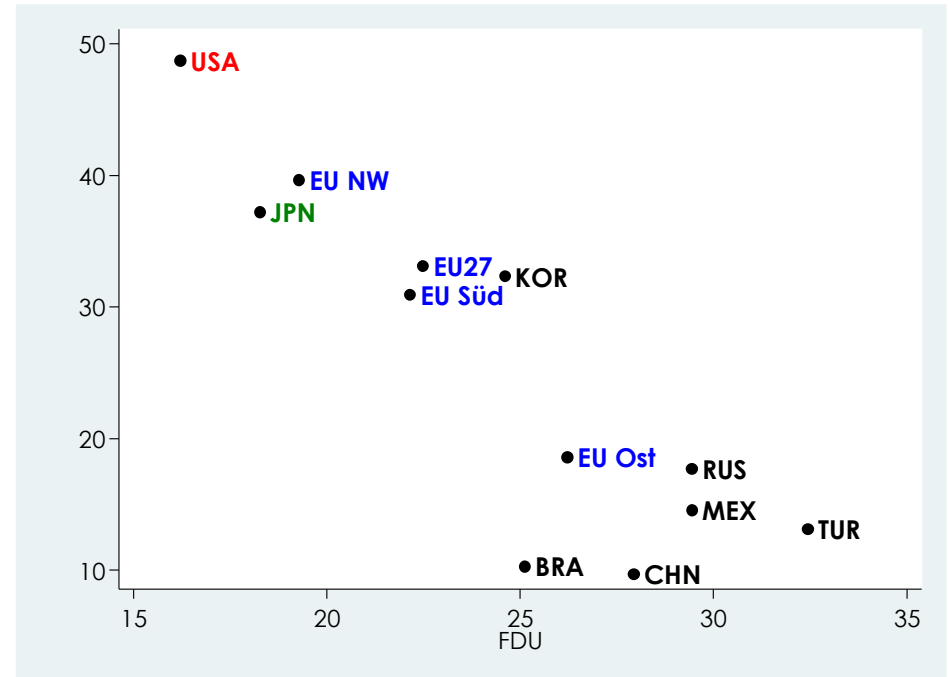
- $IVA_{ij}^{k\,l}$ = Value added in sector $i$ and country $k$, which originates in the final demand of sector $j$ in country $l$

  - Country: *domestic **d*** vs *foreign **f***
  - Sector: *manufacturing* **m** vs *non-manufacturing* **n**

| Value Added | ... induced by | | | | |
|---|---|---|---|---|---|
| | Domestic | | Foreign | | Total |
| ... generated in | Manufacturing | Non-manufacturing | Manufacturing | Non-manufacturing | |
| **Domestic** | | | | | |
| Manufacturing | $IVA_{m,m}^{d,d}$ | $IVA_{m,n}^{d,d}$ | $IVA_{m,m}^{d,f}$ | $IVA_{m,n}^{d,f}$ | $IVA_{m,m+n}^{d,d+f} = VA_m^d$ |
| Non-manufacturing | $IVA_{n,m}^{d,d}$ | $IVA_{n,n}^{d,d}$ | $IVA_{n,m}^{d,f}$ | $IVA_{n,n}^{d,f}$ | $IVA_{n,m+n}^{d,d+f} = VA_n^d$ |
| **Foreign** | | | | | |
| Manufacturing | $IVA_{m,m}^{f,d}$ | $IVA_{m,n}^{f,d}$ | $IVA_{m,m}^{f,f}$ | $IVA_{m,n}^{f,f}$ | $IVA_{m,m+n}^{f,d+f} = VA_m^f$ |
| Non-manufacturing | $IVA_{n,m}^{f,d}$ | $IVA_{n,n}^{f,d}$ | $IVA_{n,m}^{f,f}$ | $IVA_{n,n}^{f,f}$ | $IVA_{n,m+n}^{f,d+f} = VA_n^f$ |
| Total | $IVA_{m+n,m}^{d+f,d}$ | $IVA_{m+n,n}^{d+f,d}$ | $IVA_{m+n,m}^{d+f,f}$ | $IVA_{m+n,n}^{d+f,f}$ | $\sum_k \sum_i VA_k^i$ |

# *Induced Value Added Chains*

- ▪ *VAS* (**value added share**)

$$VAS_m^d = \frac{IVA_{m,m}^{d,d} + IVA_{m,n}^{d,d} + IVA_{m,m}^{d,f} + IVA_{m,n}^{d,f}}{IVA_{m,m}^{d,d} + IVA_{m,n}^{d,d} + IVA_{m,m}^{d,f} + IVA_{m,n}^{d,f} + IVA_{n,m}^{d,d} + IVA_{n,n}^{d,d} + IVA_{n,m}^{d,f} + IVA_{n,n}^{d,f}}$$

- ▪ *MIVAS* (**manufacturing induced** value added share)

$$MIVAS_{(m+n),m}^{(d+f),d} = \frac{IVA_{m,m}^{d,d} + IVA_{n,m}^{d,d} + IVA_{m,m}^{f,d} + IVA_{n,m}^{f,d}}{IVA_{m,m}^{d,d} + IVA_{m,n}^{d,d} + IVA_{n,m}^{d,d} + IVA_{n,n}^{d,d} + IVA_{m,m}^{f,d} + IVA_{m,n}^{f,d} + IVA_{n,m}^{f,d} + IVA_{n,n}^{f,d}}$$

- ▪ *DIVAS* (**domestically induced** value added share)

$$DIVAS_{m,m+n}^{d+f,d} = \frac{IVA_{m,m}^{d,d} + IVA_{m,n}^{d,d} + IVA_{m,m}^{f,d} + IVA_{m,n}^{f,d}}{IVA_{m,m}^{d,d} + IVA_{m,n}^{d,d} + IVA_{n,m}^{d,d} + IVA_{n,n}^{d,d} + IVA_{m,m}^{f,d} + IVA_{m,n}^{f,d} IVA_{n,m}^{f,d} + IVA_{n,n}^{f,d}}$$

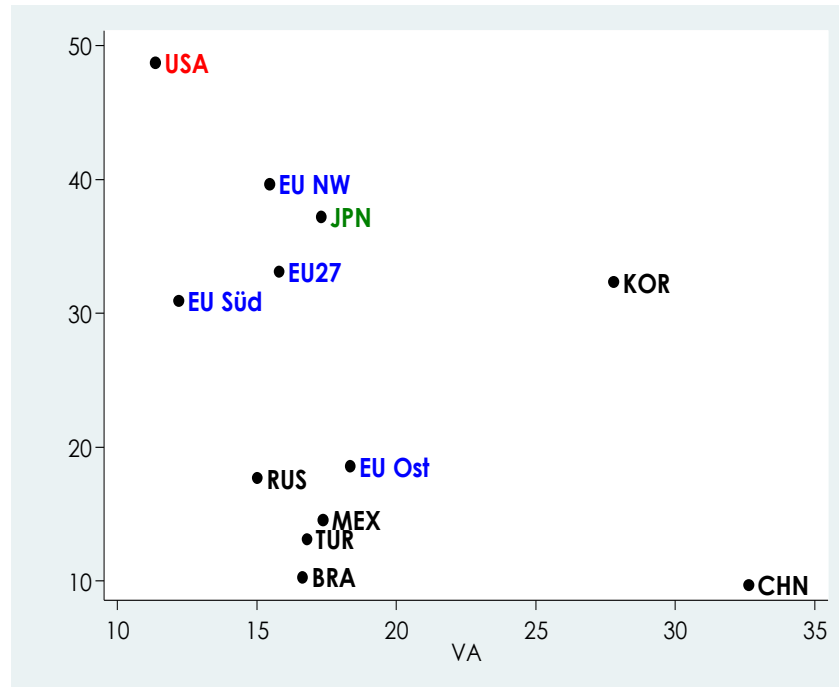- ➤ *TEVAS* (**trade effect** on value added share)

$$TIVAS_{m,m+n}^{d+f,d+f} = \frac{(IVA_{m,m+n}^{d,d} + IVA_{m,m+n}^{d,f})(IVA_{m,m+n}^{d,d} + IVA_{m,m+n}^{f,d} + IVA_{n,m+n}^{d,d} + IVA_{n,m+n}^{f,d})}{(IVA_{m,m+n}^{d,d} + IVA_{m,m+n}^{f,d})(IVA_{m,m+n}^{d,d} + IVA_{m,m+n}^{d,f} + IVA_{n,m+n}^{d,d} + IVA_{n,m+n}^{d,f})}$$
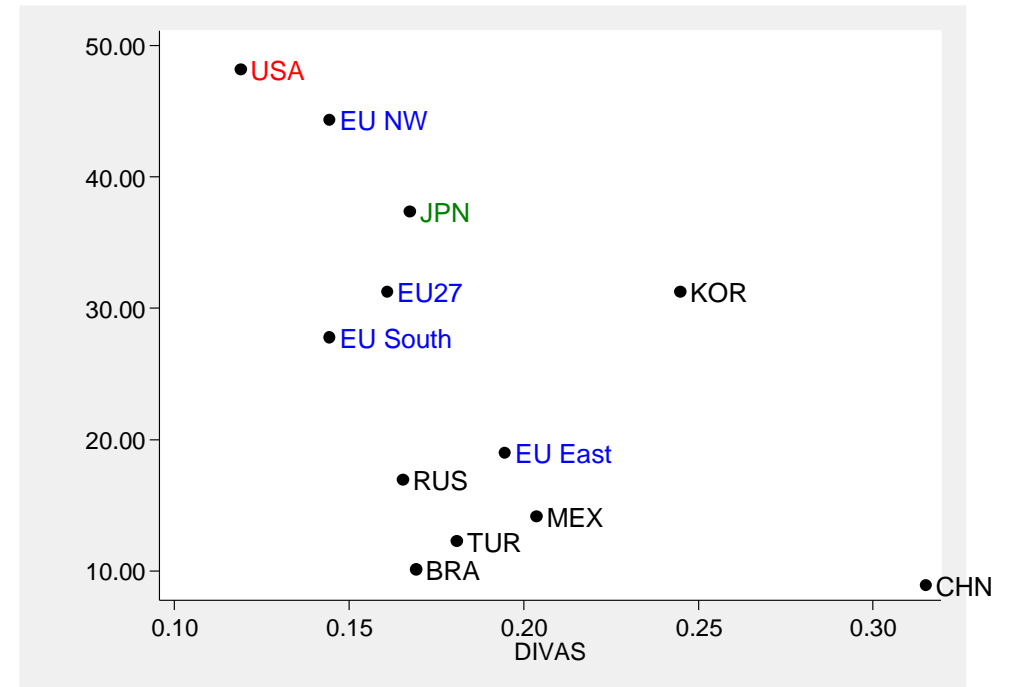
- *TEVAS* = Wertschöpfungsanteil dividiert durch Anteil an der von Endnachfrage induzierten Wertschöpfung (VAS / DIVAS)

- Trennt Handelseffekte von der Wirkung heimischer Ausgaben für Industriewaren (Nachfrage- und Preiseffekte)

- Verknüpfung von Input-Output & Aussenhandelsdaten (WIOD)

- Werte von (über/unter) 1 bedeuten einen neutralen (positiven/ negativen) Beitrag zum Wertschöpfungsanteil

- **Ausgewählte Ergebnisse** in % des von der eigenen Endnachfrage induzierten Wertschöpfungsanteils 2010 (1995):

  - **Österreich: +7% (+4%)**; Deutschland: +12% (+8%); Finnland: +26% (+19%)

  - **EU: -3% (-1%);** USA: -1% (-2%); Japan: +13% (+6%);

  - China: +4% (-2%); Südkorea: +24% (+5%); Indien: -14% (-3%)
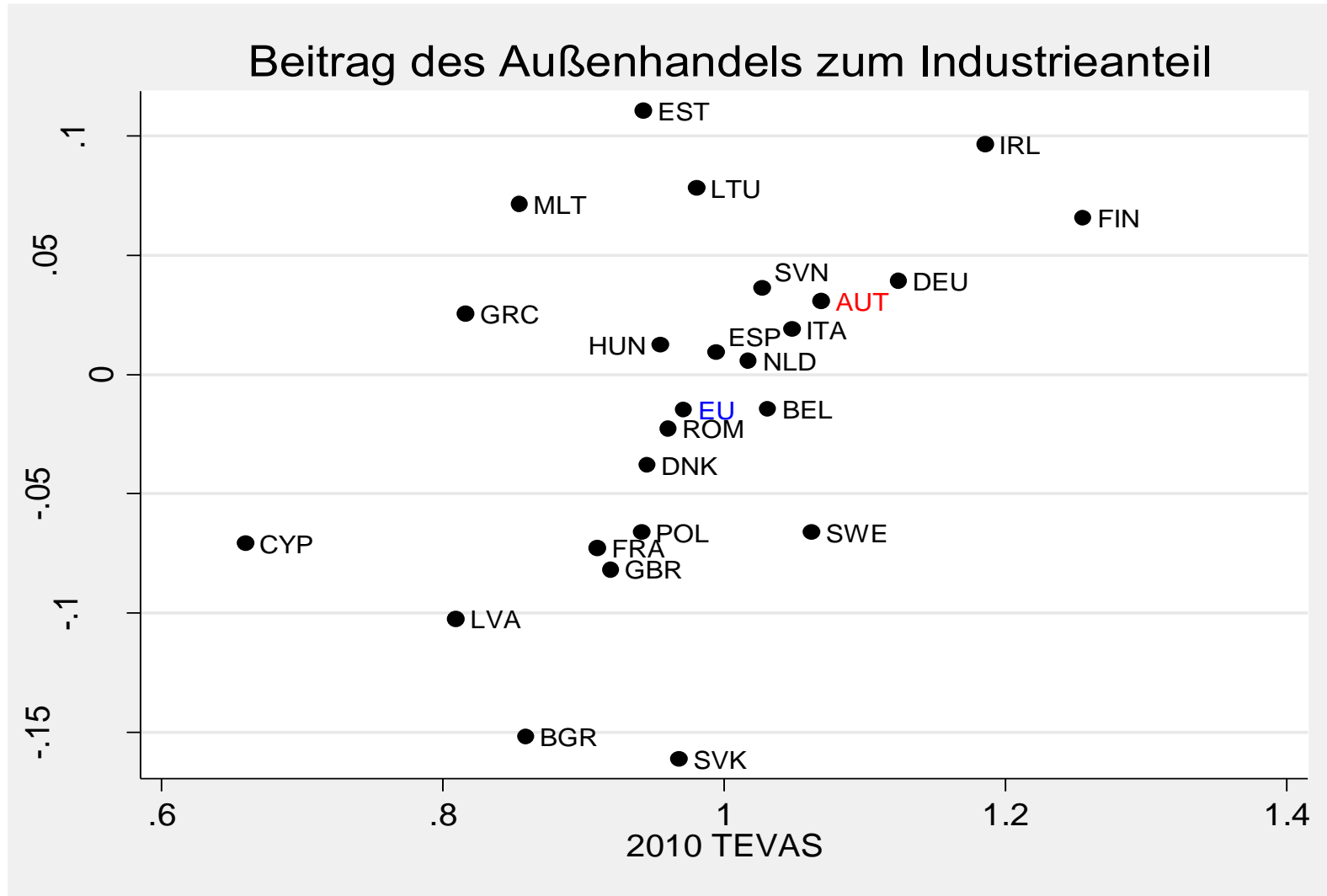
*Quelle*: Peneder – Streicher (2014)

# Income effect
## Industry share in %, 2010

**Wertschöpfung (VAS)**

**Nachfrage induziert (DIVAS)**

*Quelle*: WIOD, WIFO-Berechnungen

WIFO ■

Beitrag des Außenhandels zum Industrieanteil



EST

IRL

LTU

MLT

FIN

SVN

DEU

AUT

GRC

ESP ITA

HUN

NLD

EU

BEL

ROM

DNK

CYP

POL SWE

FRA

GBR

LVA

BGR

SVK

2010 TEVAS

# IP paradox
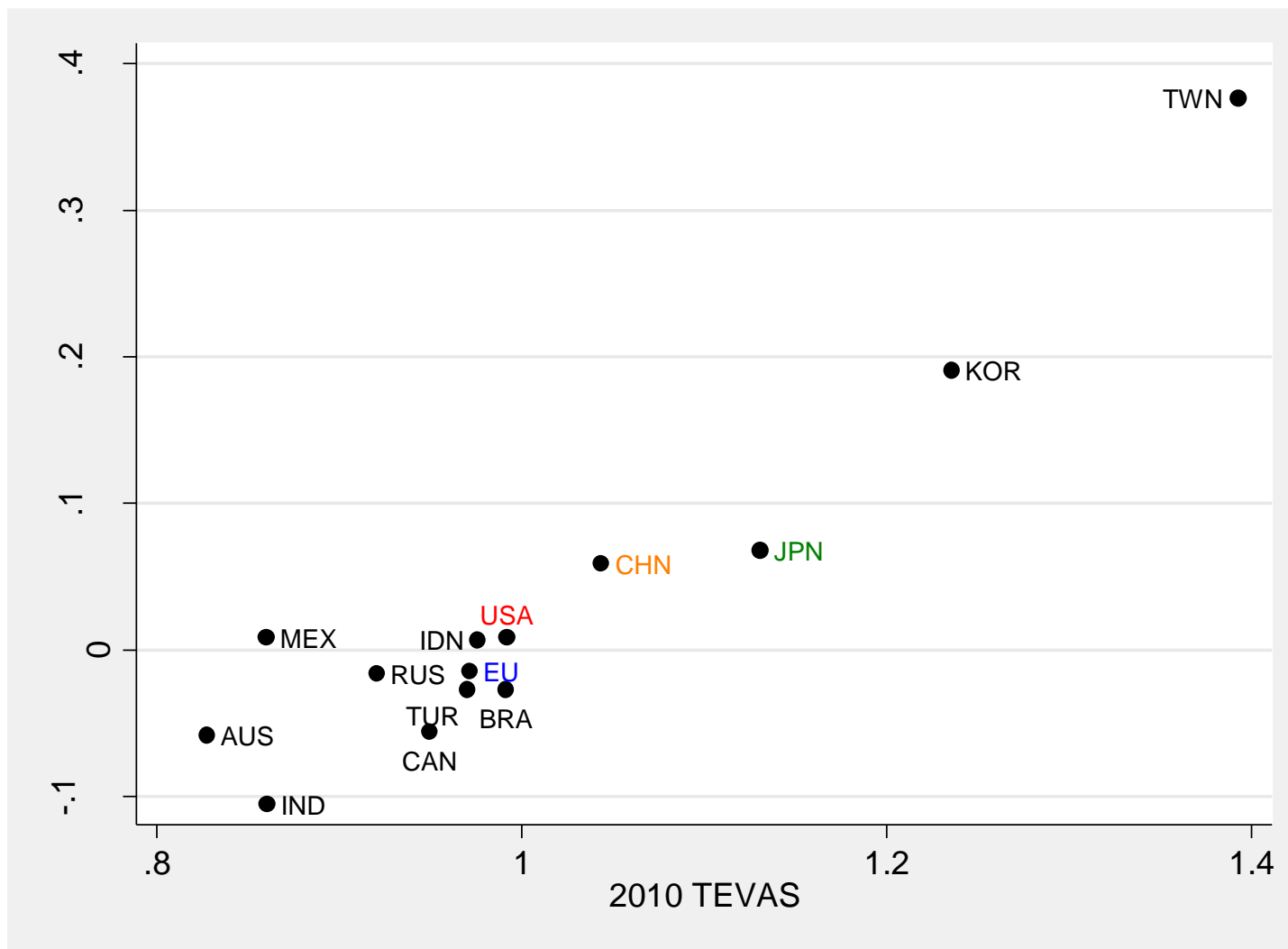
- If real incomes grow, declining share in **final domestic use** has systematic, **non-reversible causes** (below-/above average growth of demand/productivity)

- Reduces also shares in **value added** and **employment**

- For individual countries, higher **competitiveness** can raise demand through international trade

- But since all aim for it, the consequence is ...

  - **Industrial policy** becomes necessary (not to fall behind)

  - **Real incomes grow** (because of productivity push)

  - ➢ **De-industrialisation** (in terms of nominal income shares) **will accelerate!**

# III. Dynamic Industrial Policy

**A puzzle of many parts** ...

- Innovation policy
- Education policy
- SME policy
- Trade policy
- Competition policy
- State Aid regulation
- Sector regulations
- Infrastructure policy, etc.  etc.

➢ **Do we need another "Industrial Policy", and what would be distinctive about it?**

**WIFO** ■

**Definition of IP → Comprehensive**
Narrow ← **Definition of IP** → Comprehensive

# Competitiveness

Target **productivity** growth (within and between sectors)
Target **societal objectives** (e.g., ecology, health)
➔ **finetune policies** to needs of sector; seek **dialogue** with stakeholders

## Structural Change

Target **factors** (technology, education, capital, labour, energy, etc.)
➔ **differential impact on industries**

Target **activities** with high added value ➔ **quality upgrade** (within & between industries)

## Manufacturing

(Tradeable) Services

Agriculture

Functional          ←   **Targets of IP**   →          Sectoral

- **Market failure, system failure, government failure,** ... isn't this an odd way to warrant policy?
  - Strong belief in 'optimal' outcomes as benchmark
  - Rather constraints to policy choices and design

- Towards a **dynamic logic of intervention**
  - Reason policy by what we **aim to achieve**
  - Assess **strengths** and **weaknesses** of markets vs government as distinct means of economic co-ordination
  - Long for a coherent vision and **integrated perspective**

# **Dynamic industrial policies**

- Dynamic industrial policies are public interventions to enhance **industrial development**, i.e. the growth of real income (productivity) and qualitative change,

    - be it at the level of individual **enterprises, industries** or the aggregate **economy**

    - in a **sustainable** manner, and

    - in support of the overall **goals of society**.

- Essentially synonymous with **competitiveness policies**

- **Strengths**
  - **Allocative efficiency**: selection directed by demand, directly coupled to user's preferences, utility & consumer welfare
  - **Productive efficiency**: strong selection forces discipline on agents; incompetence or corruption tend to be punished rapidly
  - **Co-ordination** of decentralised knowledge (supply and demand)
  - **Fast learning** about own comparative (dis-)advantage

- **Weaknesses**
  - **Market failure** (public goods, external effects, asymmetric information, collusion & monopoly, transaction costs)
  - Self-organisation is **myopic** ($\rightarrow$ lock-in to local equilibria), and
  - on itself **blind** to other societal goals (e.g. income distribution, health, ecology etc.).
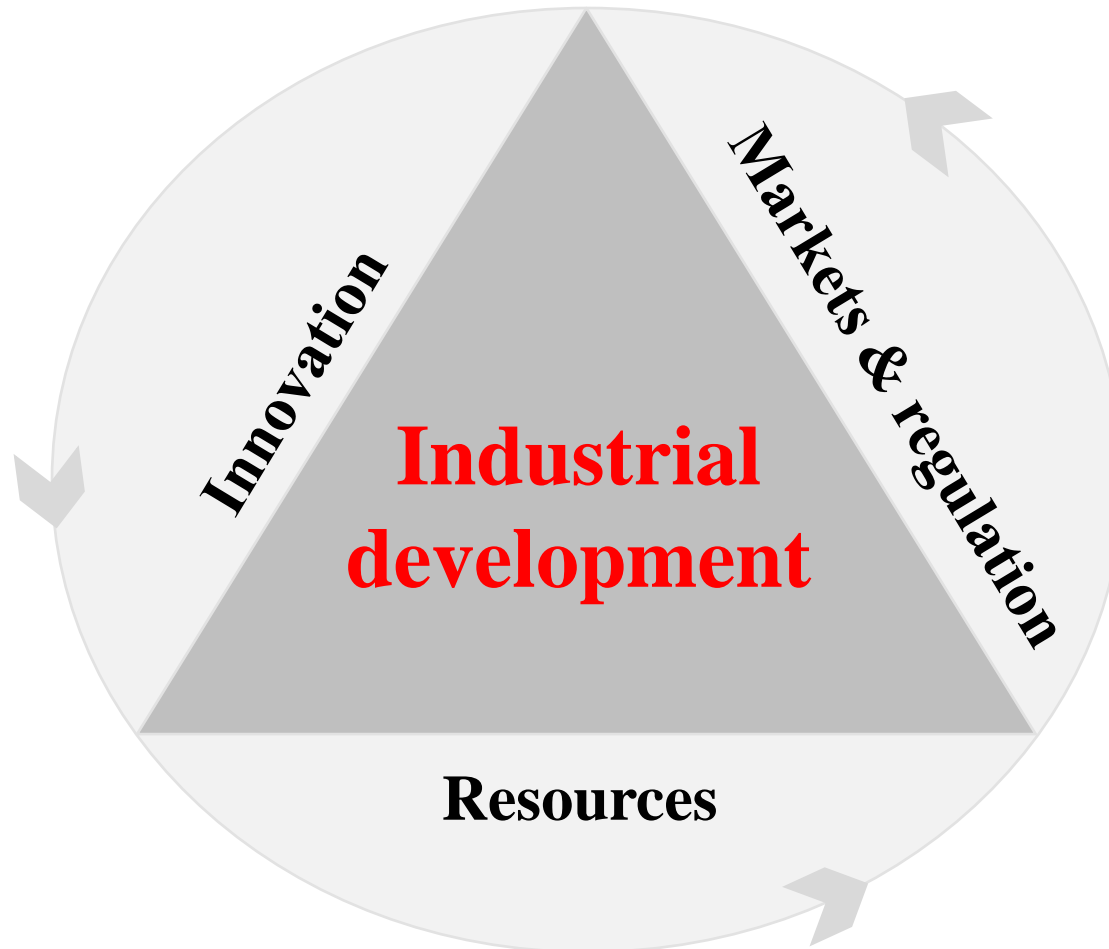
- **Strengths**

    - Mobilise **resources** (e.g., infant industry; market failures)

    - Potential for **purposeful**, planned and directed activities

    - Can set/adjust priorities according to overall **goals of society**
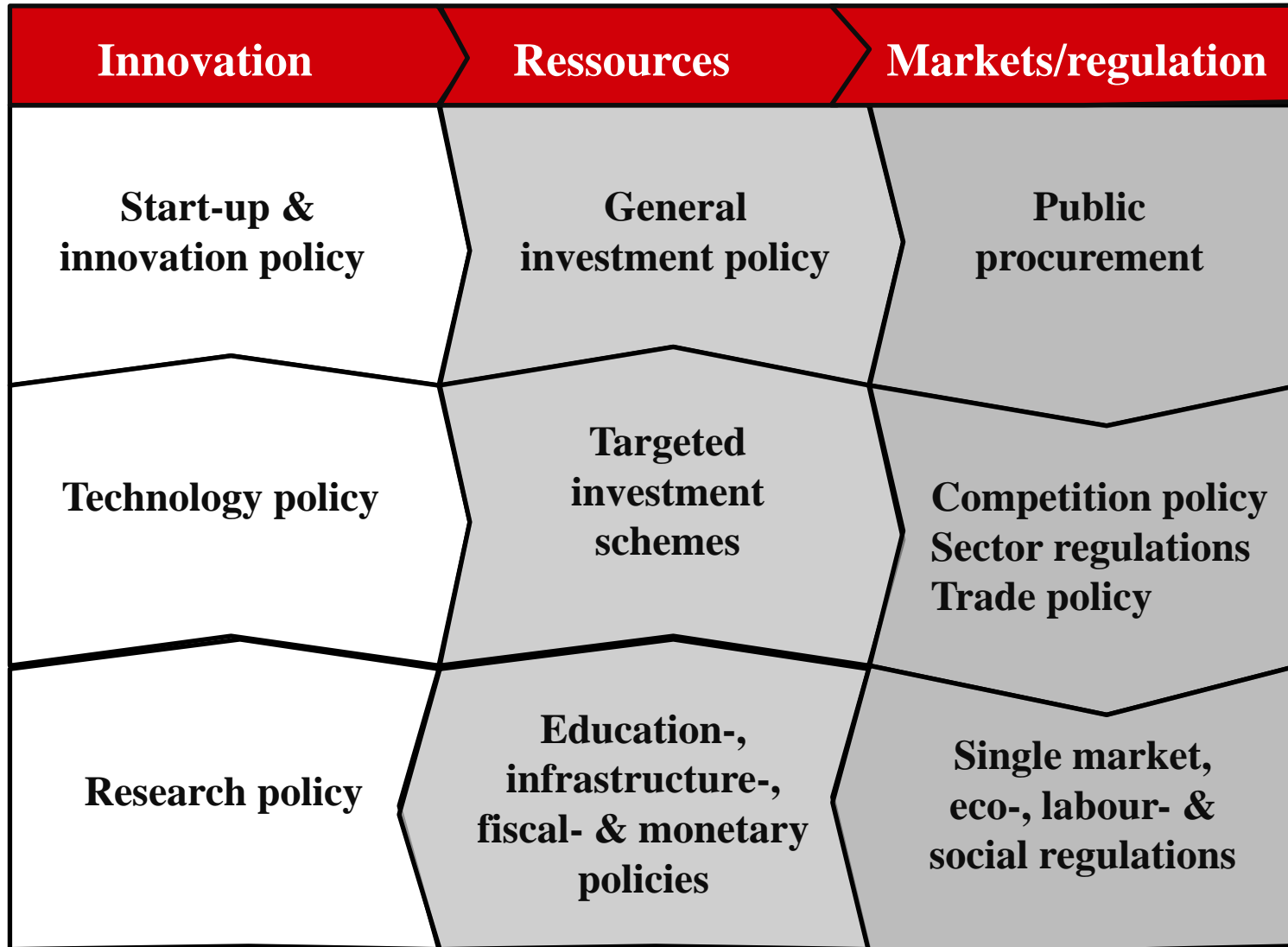
- **Weaknesses**

    - **Agency** problem (principal's power is diffuse)

    - **Capture** by interest groups → rent-seeking behaviour

    - **Leviathan** → growing administrative burden and control

    - **Crowding-out** of private initiative

    - **Weak selection** → allocative & productive inefficiencies

- **Degree of intervention** should depend on
  - the economy's capacity for **self-organisation** → developed economies *need* less IP,
  - but also on the **quality of public institutions** → less mature societies might *want* less IP

➢ Apply principle of **opportunity cost**
  - If private markets can do it, don't waste public resources
  - Not every positive effect is good enough!

➢ Conduct systematic **evaluation** by independent agencies

➢ Go for even stronger **international co-ordination** to avoid escalation of subsidy or trade wars (prisoner's dilemma).

# System characteristics

| Examples | Variation ❯ Structural change (*or* purely stochastic) | Cumulation ❯ Time | Selection ❯ Direction |
|---|---|---|---|
| **White noise** | (+) | - | - |
| **Blind growth** | - | + | - |
| **Random walk/drift** | + | + | - |
| **Static equilibrium** | (+) | - | + |
| **Steady state growth** | (+) | + | + |
| **Development (i.e. evolution)** | + | + | + |

**Thank you for your attention!**