

# Industrialisation and Industrial policy. New challenges and new opportunities

## High Level Policy Dialogue Jakarta, 7-8 March 2016

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# 1. Introductory remarks

The role of manufacturing is increasingly being debated, but manufacturing is still considered to be important for growth and development.

- Innovation in services is enhanced if there is a dynamic and innovative industrial sector (cf. Apple).
- Intersectoral relationships important: agriculture and manufacturing; manufacturing and services. It is no longer only about manufacturing.
- Global value chains provide new opportunities for industrialisation
- increasing wages in China provide new opportunities for industrialisation elsewhere.
- Industrial Policy is back on the agenda after years of absence, but lessons of past experiences are sometimes being forgotten.
- Changing circumstances, new challenges, new opportunities
- Important to learn from past mistakes: we have two generations of mistakes to learn from: inward-looking industrialisation of the fifties, sixties and seventies and excessive reliance on unrestricted liberalisation between 1980-2000.
- Urgent need to combine industrial policies and innovation policies.



## 2. Productivity Growth, Growth enhancing and growth reducing structural change

- Accelerated economic growth requires a combination of within sectoral productivity growth and growth enhancing structural change
- Growth enhancing structural change: shift of resources from low productivity to high productivity sectors; shift of resources from stagnating sectors to dynamic sectors with more potential for productivity increases.
- MacMillan and Rodrik point to the danger that structural change, and in particular the growth of the low productivity informal sector is growth reducing.
- But one not only needs a shift to more productive sectors, but also the creation of employment. This may cause a conflict between productivity increases which reduce employment, and employment creation which results in low labour productivity.
- Only solution: structural transformation in the context of sufficiently rapid growth (plus a slowdown in the rate of population growth, which is usually not discussed in this context).
- Structural transformation involves shifts towards both dynamic industrial and dynamic service sectors

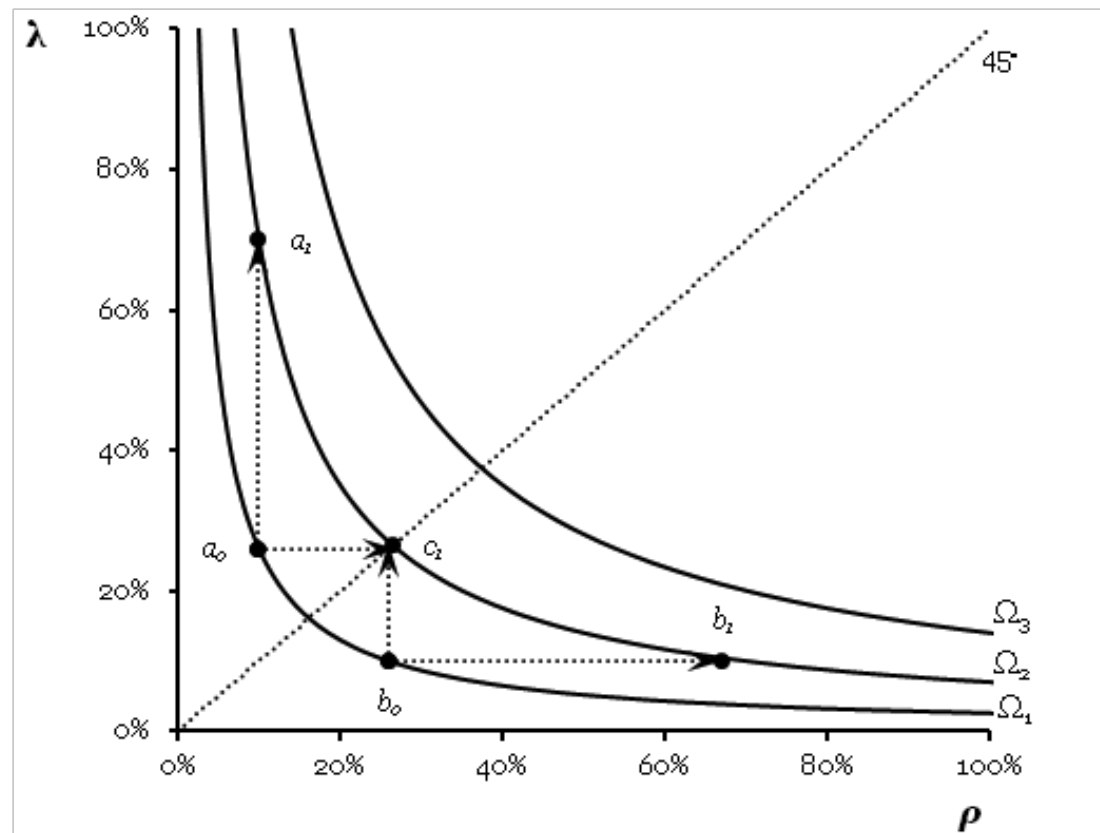
### 3. Structural modernisation versus industrialisation

- Structural modernisation index (Lavopa and Szirmai, 2014) defined as :

Product of the share of modern market activities in total employment ( $\lambda$ ), multiplied by the labour productivity of the modern sector relative to the world productivity frontier, in other words the technology gap ( $\rho$ ).

$$\lambda_t^i = \frac{N_{M,t}^i}{L_{T,t}^i} \quad \rho_t^i = \frac{P_{M,t}^i}{P_{M,t}^f} \quad \Omega_t^i = \lambda_t^i * \rho_t^i$$

- Modern sector includes market services, excludes government and is broader than manufacturing.
- Which part of the modern sector is most important?

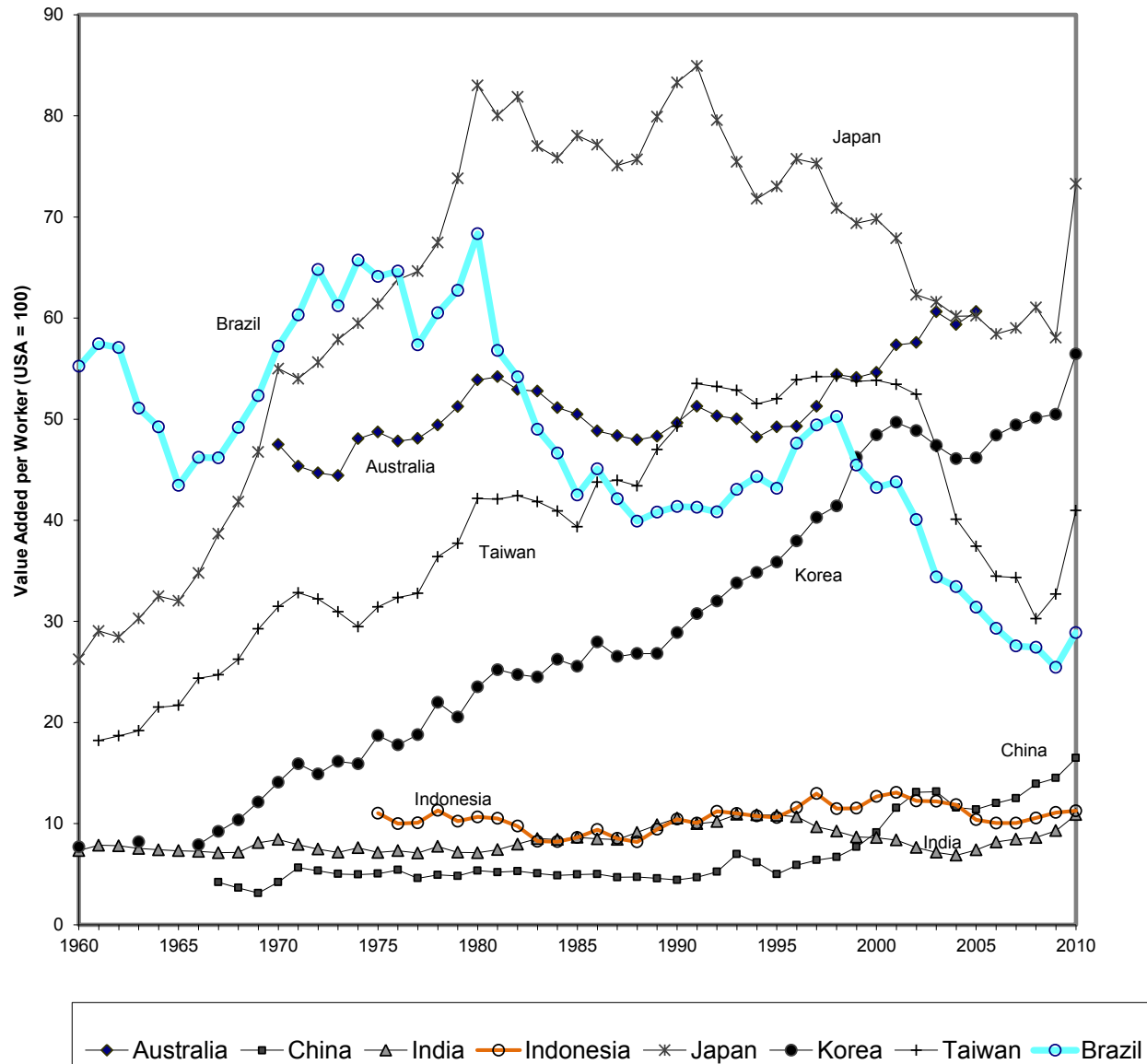


Source: Lavopa and Szirmai, 2014

### 3: Indonesia: some stylised facts

- Share of manufacturing in GDP declining, but high in comparative perspective (23, no indications of premature deindustrialisation)
- Slowdown in productivity performance since Asian crisis;
- In manufacturing: modest productivity performance in comparative perspective; little or no catch up
- Weak participation in global and regional value chains
- Manufacturing structure: share of food, beverages and tobacco rapidly increasing (32.5% in 2011), share of textiles rapidly declining, shares of high tech sectors declining somewhat, with the exception of electrical and optical equipment.

Value Added per Worker in Manufacturing, 1960-2010  
(USA = 100)



## 4. The Evolution of Industrial Policies and Strategies

The normal historical pattern of successful industrialisation is an alternation of open and closed models.

1. **primary exports** which finance the imports of finished manufactured goods
2. **import substitution and protection**

*Two main alternatives:*

- Processing of food and raw materials
- labour intensive assembly of imported semi-fabricated goods

*Two stages*

- consumer goods, early, easy.
  - intermediates and capital goods difficult
3. **Export orientation** and specialisation in labour intensive manufactures according to comparative advantage, or descent into industrial stagnation.
  4. **Upgrading** in terms of technology, sector, capabilities and product quality. If no successful upgrading danger of middle-income trap



# 5: New challenges for manufacturing in the 21<sup>st</sup> Century

1. Globalisation and the increased importance of global value chains controlled by MNEs. Industrialisation in some ways easier, in other ways harder. Indonesia has been less successful than other members of ASEAN. Share of intermediate exports is modest.
2. Premature de-industrialisation. Not a major problem for Indonesia, which has higher than average shares of manufacturing value added in GDP.
3. The shrinking of policy space in the present international order. International orthodoxy leaves insufficient space for industrial policies. Does not seem in the case of Indonesia, which has enacted increasingly protectionist and interventionist measures in the past five years.
4. Competition from the Asian driver economies China and India.
5. Lower-middle-income trap: competitive advantage in labour intensive manufacturing erodes before successful upgrading takes off. (Minimum) wage policy important here. Wages have to be kept in line with productivity increases.
6. New opportunities provided by technological innovation in resource-based industrialisation (see debate about ban on unprocessed primary exports).
7. The accelerating pace of technological change in manufacturing, need for innovation and upgrading. How to upgrade in Global Value chains?
8. The challenge of jobless growth
9. How to respond to the threats of global warming and climate change?



# The Middle-income trap

- Many countries enter the global market for labour intensive manufactured exports
- As a low-income country changes to a middle income country its competitive advantage in low labour costs becomes eroded.
- If the middle income country cannot start competing with technological advanced economies in both manufacturing and services, its manufacturing growth will slow down and it will be caught in a middle income trap.
- Resource rich economies suffer from Dutch disease effects, high wages and lack of competitiveness in more labour intensive manufacturing

# 6. New Directions in Industrial Policy

- Re-emergence of industrial policy, but debate about degree of selectiveness of policy intervention (sectors, firms, technologies)
- Selectiveness depends on bureaucratic and state capabilities, transparency and corruption. The weaker bureaucratic capabilities the stronger the argument against selectivity.
- Hausmann and Rodrik: economic development as self-discovery. The role of innovative entrepreneurship and the problem of underinvestment in new opportunities. Coordination failures. Role for policy in supporting self-discovery.
- (Re)connecting science, technology and innovation policy with industrial policy. Instruments of innovation policy and improving the functioning of national and sectoral innovation systems may be more important than the traditional instruments of industrial policy.
- Justin Lin: structural economics. Latent comparative advantage and the role of industrial policy, coordination failures.
- Rodrik: focus on binding constraints versus focus on comprehensive reforms (c.f. Indonesia in 1997).
- Carlotta Perez and the opportunities for resource based industrialisation.
- Renewed emphasis on learning and entrepreneurship: requires a different mode of industrial policy, more experimental, less top down, creating a learning environment.
- The key role of entrepreneurial innovation: new dimensions of intensive interaction between the state and private entrepreneurs. Essential for a learning environment. Different from top down policies in the past.



# New Directions in Industrial Policy, cont.

- Focus on ‘constrained gazelles’. SMEs with growth potential
- Environmental technologies and recycling as new opportunities
- Investing in human capital, investing in firm level capabilities (not new, but more important than ever?)
- How to profit most from MNEs and FDI: absorptive capacity?
- Never provide unconditional support for enterprises: sticks and carrots
- Global value chains offer new opportunities
- Challenge of upgrading in global value chain: 1. product/process; 2. shifting to other functions (e.g. Design). Important role for policy
- Export zones: the examples of China, Mexico, Mauritius: finding a niche, supporting the niche with targeted export policies such as export zones, export subsidies
- Strengthening administrative capabilities, improving ease of doing business, predictability and transparency.



# New Directions in Industrial Policy, cont.

- Supporting learning and experimentation, rather than applying blueprints (Hobday)
- Temporary protection for new activities no longer taboo, but important to avoid rent seeking and inefficiency associated with older industrial strategies
- Increased importance of innovation policy both for low-income countries and middle-income countries
- Sustainability offers new opportunities in recycling, energy efficiency, resource efficiency

# New directions in industrial policy, cont.:

## Escaping the middle income trap

- Keun Lee has argued that the best changes of escaping the middle income trap lies in focusing on areas of technology where technological change is very rapid (e.g. Ki and Lee, 2011, Lee, 2013). Rapid change and creative destruction of technology may diminish the advantages of incumbent firms and make it possible for new firms to enter the global market with new innovative products and technologies. Changes in technological paradigms also offer opportunities for leapfrogging.
- The ability to enter such new technological areas depends even more on the development of technological capabilities, research capacity and higher and more creative levels of human capital. Human capital is important at all stages of catch up. It becomes more important than ever at higher levels of GDP per capita.

# New directions in Industrial Policy, cont.:

## Escaping the middle income trap

Industrial and technology policy should aim at creating the conditions and incentives for investment in the sectors identified in this fashion. It should focus first on improving capabilities of domestic firms.

Infant industry support can be justified for such new activities, if it is tied to export targets, is not given unconditionality and specifies built in 'sunset clauses'. An interesting example is the Cuban medical export industry – a high tech export success, in the context of an otherwise languishing economy.

- Subsidies are usually better policy instruments than protection, because sunset can be built in as well as conditions. Innovation policy provides quite a nice set of instruments, e.g. R&D and innovation subsidies, cluster policies, incubators, high-tech parks because they do not run foul of international agreements.
- If capabilities of domestic firms are too weak, policy should encourage foreign direct investment with the appropriate capabilities.
- Policies should subsequently focus on maximising knowledge spillover from MNEs to domestic firms. This should result in learning and capability improvements of domestic firms.
- Maximising knowledge spillovers depends first and foremost on improving the absorptive capacity of the economy through investment in human capital and capability building in the private sector, second on balanced negotiations with foreign investing firms.

Thank you



# Annexes

## Sources

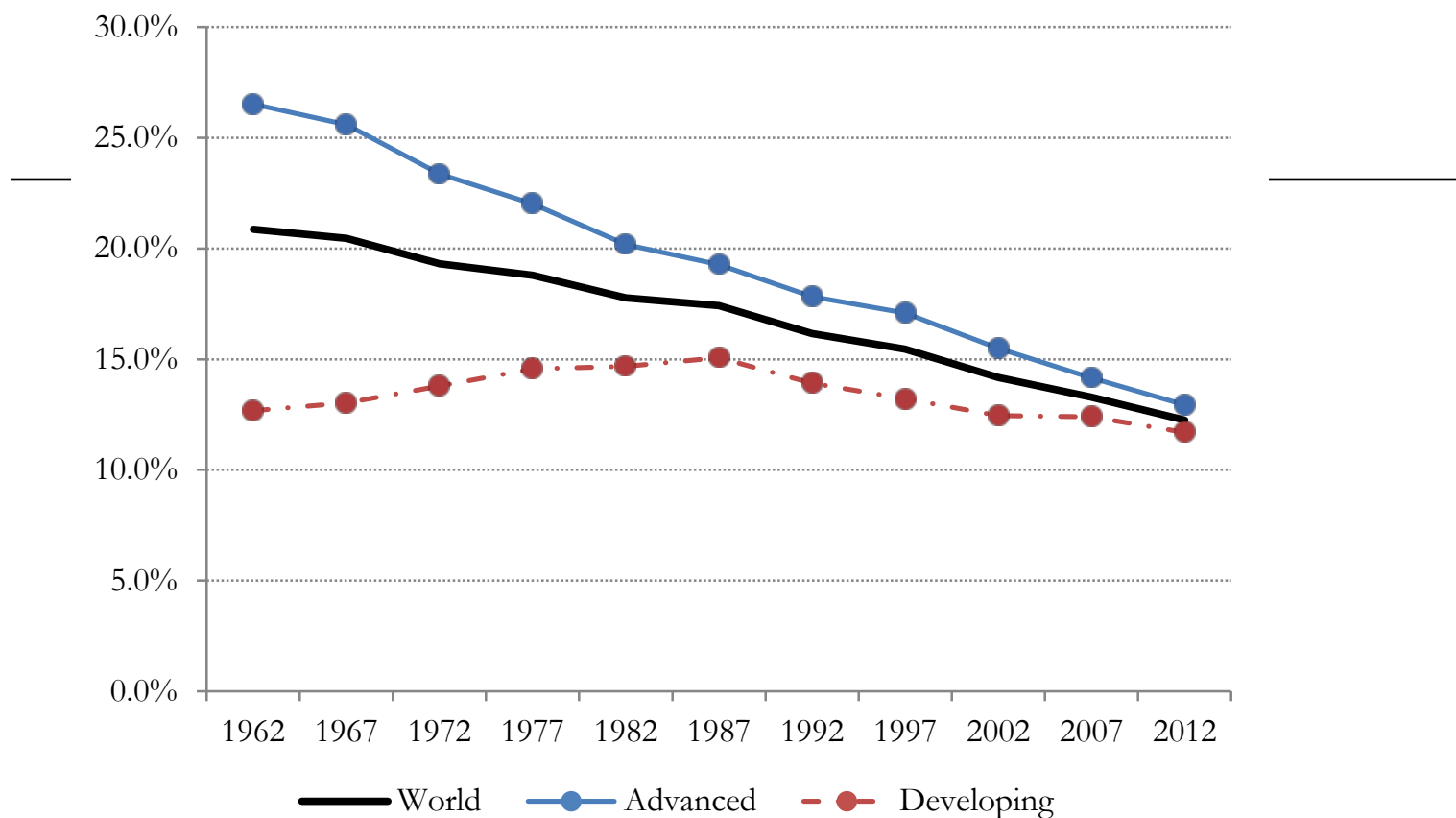
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# Outline

1. Introductory Remarks: innovation policy and structural change, the role of manufacturing and other dynamic sectors.
2. Productivity Growth, growth enhancing structural change; structural modernisation
3. Indonesia in the context of global transformations
4. Evolution of Industrial Strategy
5. New challenges and new opportunities
  - The increasing importance of global value chains
  - Shrinking policy space?
  - The threat of premature deindustrialisation?
  - Competition from Asian giants
  - Jobless growth
  - Coping with accelerating technological advance
  - Escaping the middle-income trap
  - Responding to the challenge of environmental sustainability
6. New Directions in Policy

# When is de-industrialisation premature?

**Figure 1.** *Manufacturing share on GDP between 1960 and 2012 (5-year averages). Comparison between different regions.*



**Note:** Series calculated using sector-specific PPP convertors at the country level.

Source: Lavopa and Szirmai, 2015

## Structure of Production, 1950-2010

(Gross value added in agriculture, industry, manufacturing and services at current prices, regional averages)

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**Structure of Production in Indonesia 1960-2012, at current prices**

	1960	1970	1980	1990	2000	2005	2010	2012
1 Agricultural, Forestry and Fisheries	52.0	43.7	23.0	18.3	16.3	13.1	15.7	14.8
2 Mining	3.0	4.9	24.2	10.8	13.1	12.9	13.0	13.7
3 Manufacturing	12.2	13.4	16.7	26.5	26.9	25.6	24.0	23.2
4 Utilities	1.8	0.2	0.2	0.3	0.6	1.0	0.8	0.8
5 Construction	0.2	2.8	5.2	5.3	5.7	7.0	10.5	10.7
6 Trade, restaurants and hotels	15.0	19.8	15.0	17.5	16.3	15.6	14.1	14.3
7 Transport, storage and communication	3.3	3.1	4.7	5.7	4.5	6.5	6.7	6.8
8 Finance, insurance, real estate and business services	2.7	1.2	2.0	6.1	7.8	8.3	4.7	4.8
9 Government services, Community, social and personal services	9.7	10.8	8.8	9.5	9.0	10.0	10.5	11.0
10 of which public administration, defense	4.1	4.4	4.1	4.0	4.2	5.1	4.8	2.3
Source: UN national accounts.								

<b>Structure of manufacturing value added , at current prices, 1995-2011</b>					
		1995	2000	2005	2011
1	Food, Beverages and Tobacco	21.5	27.5	25.0	32.5
2	Textiles and Textile Products	12.4	12.0	9.0	7.3
3	Leather, Leather and Footwear	2.6	2.5	1.8	1.2
4	Wood and Products of Wood and Cork	8.7	5.4	5.0	5.0
5	Pulp, Paper, Paper , Printing and Publishing	6.1	4.6	4.8	4.1
6	Coke, Refined Petroleum and Nuclear Fuel	5.2	7.4	12.6	7.9
7	Chemicals and Chemical Products	9.1	11.0	7.1	8.1
8	Rubber and Plastics	3.3	4.0	3.6	3.1
9	Other Non-Metallic Mineral	3.1	2.9	3.5	3.0
10	Basic Metals and Fabricated Metal	2.3	3.0	2.6	1.8
11	Machinery, N.e.c	1.9	1.4	1.8	1.5
12	Electrical and Optical Equipment	7.6	5.8	6.7	9.8
13	Transport Equipment	13.7	10.5	14.6	12.2
14	Manufacturing, Nec; Recycling	2.3	1.8	2.0	2.4
Sources: GGDC 10 sector database, WIOD database					

Structure of manufacturing employment					
		1995	2000	2005	2011
1	Food, Beverages and Tobacco	32.2	25.4	15.3	15.3
2	Textiles and Textile Products	13.2	15.5	19.1	19.1
3	Leather, Leather and Footwear	4.6	5.4	4.4	4.4
4	Wood and Products of Wood and Cork	18.0	20.7	20.0	20.0
5	Pulp, Paper, Paper , Printing and Publishing	1.9	3.0	4.7	4.7
6	Coke, Refined Petroleum and Nuclear Fuel	0.2	0.4	0.8	0.8
7	Chemicals and Chemical Products	1.8	2.5	2.5	2.5
8	Rubber and Plastics	7.3	7.6	9.1	9.1
9	Other Non-Metallic Mineral	7.4	5.5	7.7	7.7
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Sources: GGDC 10 sector database, WIOD database					



# Global Shift

<b>Shares of Developing Countries in World Manufactured Exports, 1963-2010</b>					
	1963	1973	1983	2000	2010
Asia	2.6	3.9	7.0	20.4	31.7
China			1.2	4.6	14.8
India	0.7	0.4	0.4	0.7	1.4
Hong Kong, Singapore, S. Korea, Taiwan	1.6	2.9	5.6	12.8	11.9
Iran	0.05	0.03		0.04	0.16
Latin America	0.8	1.6	1.7	4.2	3.8
Brazil	0.0	0.3	0.7	0.7	0.7
Argentina	0.1	0.2	0.1	0.2	0.2
Mexico	0.2	0.3	0.2	2.9	2.3
Africa, incl. S. Africa	1.3	1.2	0.7	0.8	1.0
South Africa	0.6	0.6	0.3	0.3	0.4
Middle East	0.1	0.3	1.2	0.9	1.3
Developing Economies	5.9	8.8	14.5	26.3	38.1
Developed Economies	75.3	79.0	69.5	71.9	58.7



# Final words

- Industrial Policy is more important than ever, but may be more difficult to practically implement than before. We should learn from the shortcomings of the post-1980 market oriented policies, but should not forget the lessons of the failures of the post-war period.
- Incorporate changing conditions and new challenges into the policy debate.