THE CLEAN TECNOLOGY REVOLUTION AUSTRALIA & CHINA

Rebalancing the Structure of the Economy

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Rebalancing the Structure of the Economy

What is development?

- In economic terms it is a sustainable increase in welfare per capita
- This perspective is lost in industrialisation models and with the focus on GDP
- The structure of development can matter to welfare, as can the social costs in producing GDP
- The market doesn't necessarily deliver the optimal economic structure in terms of per capita welfare

Some recent thinking on these issues:

- Arrow et al. 2010

Table 1. Components of Comprehensive Wealth

- Natural capital (resources and environment)
- Human capital (education and embodied knowledge)
- Reproducible capital (physical assets)
- Health capital (health and lifespan)

Source: Arrow, K.J., Dasgupta, P., Goulder, L.H., Mumford, K.J. and Oleson, K., 2010, Sustainability and the Measurement of Wealth, NBER Working Paper 16599, NBER Cambridge MA.

Table 2: Growth in Components of Real Per-Capita Comprehensive Wealth: USA, China, Brazil, India and Venezuela, 2000-2005 (% pa)

	Elements of Comprehensive Wealth					GDP
	Natural	Human	Health	Reproducible	Total	
USA	-1.1	0.4	0.2	2.3	1.7	2.9
China	-1.0	1.1	0.1	10.8	2.8	7.6
Brazil	-2.0	1.4	0.3	-1.2	0.4	0.5
India	-0.2	3.0	0.2	7.3	2.0	4.0
Venezula	-2.6	0.2	0.1	-1.6	-2.1	-1.2

Source: Arrow et al 2010.

Chart 1: Global age-adjusted mortality rates by region and cause, 2008 (deaths per 100,000 population)

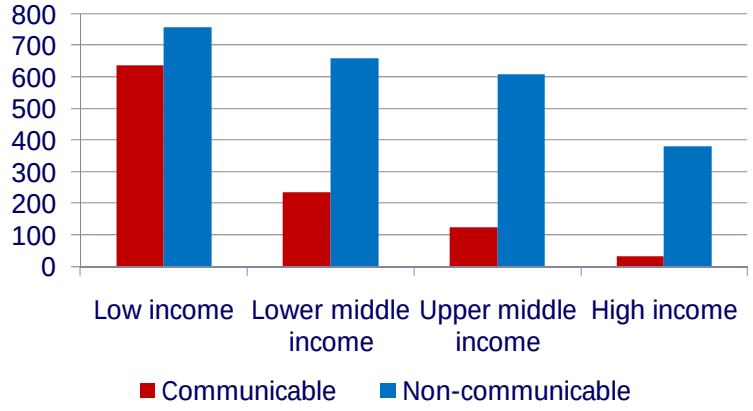
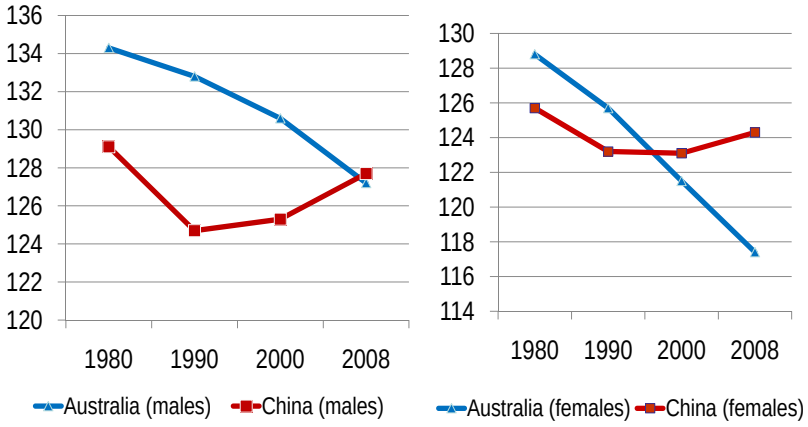


Chart 2. Mean Systolic Blood Pressure, Males and Females, Australia and China, 1980-2008 (mm Hg)



The Structure of Development Matters Greatly in China

- The Government has been trying to change the structure of development in the 10th, 11th and now 12th Five Year Plans
- The current development structure is very energy intensive, and has other external costs
- Progress in reducing energy intensity has been entirely in reductions in within-industry intensity, and not through changes in structure
- Overall very limited progress has been made in terms of changing the structure of development

Towards a Revised Development Strategy in the 11th Five Year Plan

Limitations of Existing Strategy	*Towards a New Strategy*
Emphasis on export oriented manufacturing	Reduce preferential climate for exports
Over-emphasis on investment activities	Control Over-Investment
Labour and energy intensive growth	Strengthen knowledge and technology intensive growth
Low growth of health, welfare and services	Develop public and private sources of services growth
Low social dividend from growth for many	More employment and better services

Table 3. The Structure of China's Energy Use

	PRIMARY ENERGY CONSUMPTION				
	2007 (Mt SCE)	Change 1994-2001 (% pa)	Change 2001-07 (% pa)	Real value added (2007)	Energy use/value added[1]
Agriculture	82.4	3.3	4.3	24.4	3.4
Five industries					
Petroleum processing	131.8	11.0	9.9	2.4	55.5
Chemicals	272.5	-2.7	12.5	5.8	47.4
Non-metallic minerals	203.5	-1.3	10.1	4.9	41.4
Ferrous metals	477.7	2.4	17.6	7.5	63.6
Non-ferrous metals	106.9	6.8	17.6	3.3	32.5
Total	**1192.4**	**1.1**	**14.0**	**23.8**	**50.0**
Other Industry	749.6	2.4	8.4	89.3	8.4
Services	631.4	3.5	9.7	93.6	6.7
Total economy	**2655.8**	**2.2**	**10.8**	**231.2**	**11.5**

Chart 3. Decomposition of changes in energy use per unit of GDP into structure and intensity effects (1994-2009)

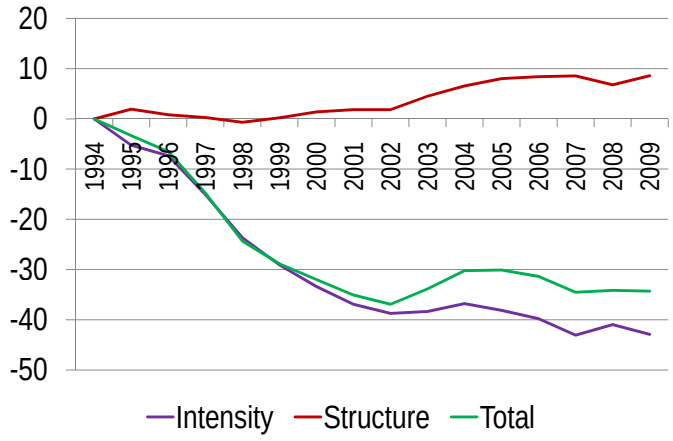
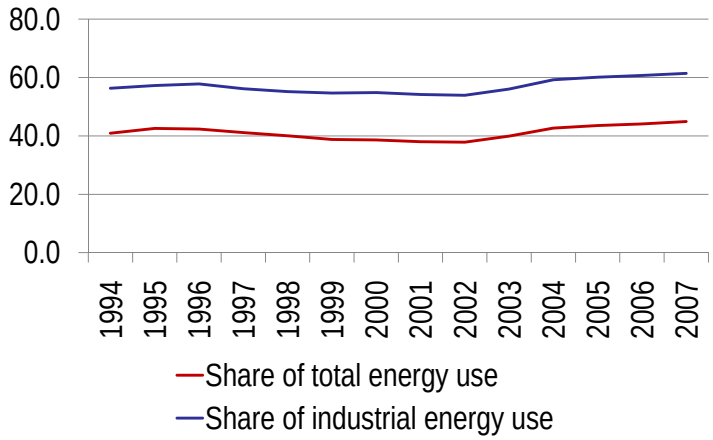


Chart 4. Energy use in the five energy intensive industries: share of total and of industrial energy use (%)



Rebalancing China's Development Path: Why is it so difficult?

Constraints and policy issues

- Factors driving energy intensive industries (macro settings, incentives for local officials, big growth mentality)
- Difficulties in increasing knowledge intensive activities – energy and labour
- Constraints on growing the service sector (fiscal issues, access and market structure, other factors)

GDP growth and employment: Is employment growth a constraint?

- What rate of growth for China?
- Does the need for employment growth preclude structural change?

There are other models:

- The case of India
- Developed countries

Chart 5. Total growth in value added and employment, industry and services, China, 2004-08 (%)

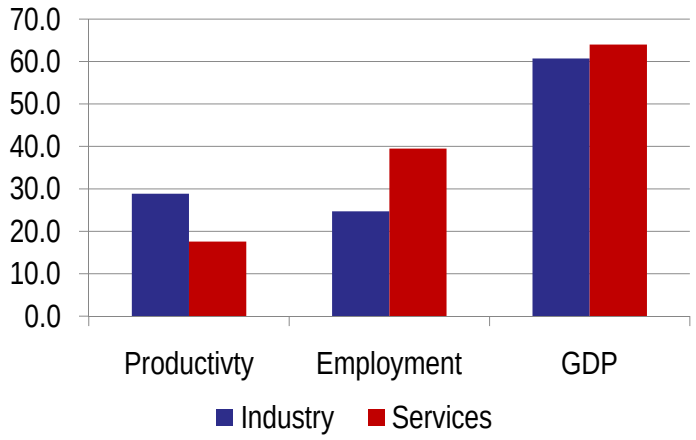


Chart 6. Total employment levels in the USA, industry and services, 1960-2008

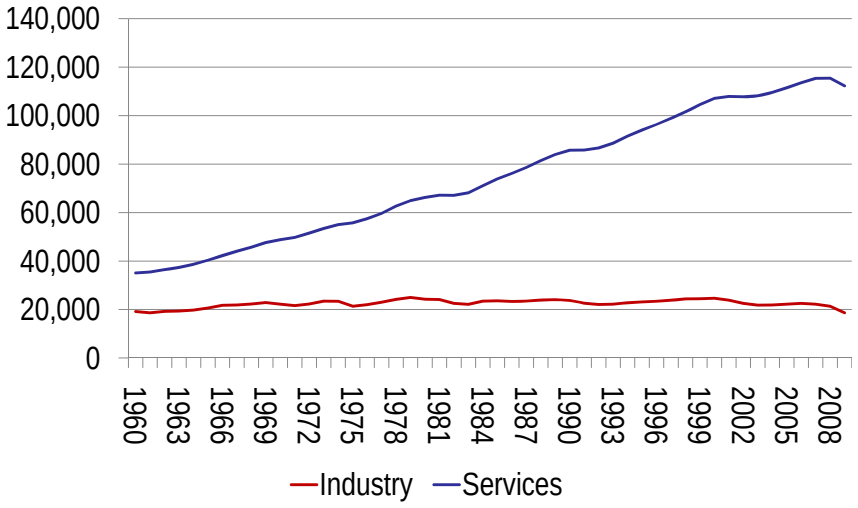
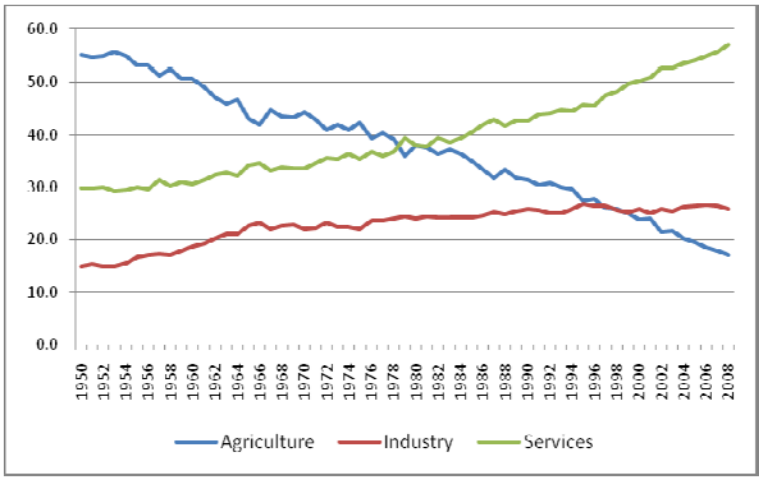


Chart 7. Sectoral shares of real value added, India, 1950-2008



Conclusion

This is a critical issue for China, and indirectly for the world.

What China is attempting – to change a successful development strategy in mid stream – is unprecedented, and very difficult.

Little is known about how to do this in general, and how to do it in China in particular.

However good its technology and other policies, China will not achieve its goals for the low carbon economy, and for the welfare of its people, unless it makes real progress on the industrial structure issue.