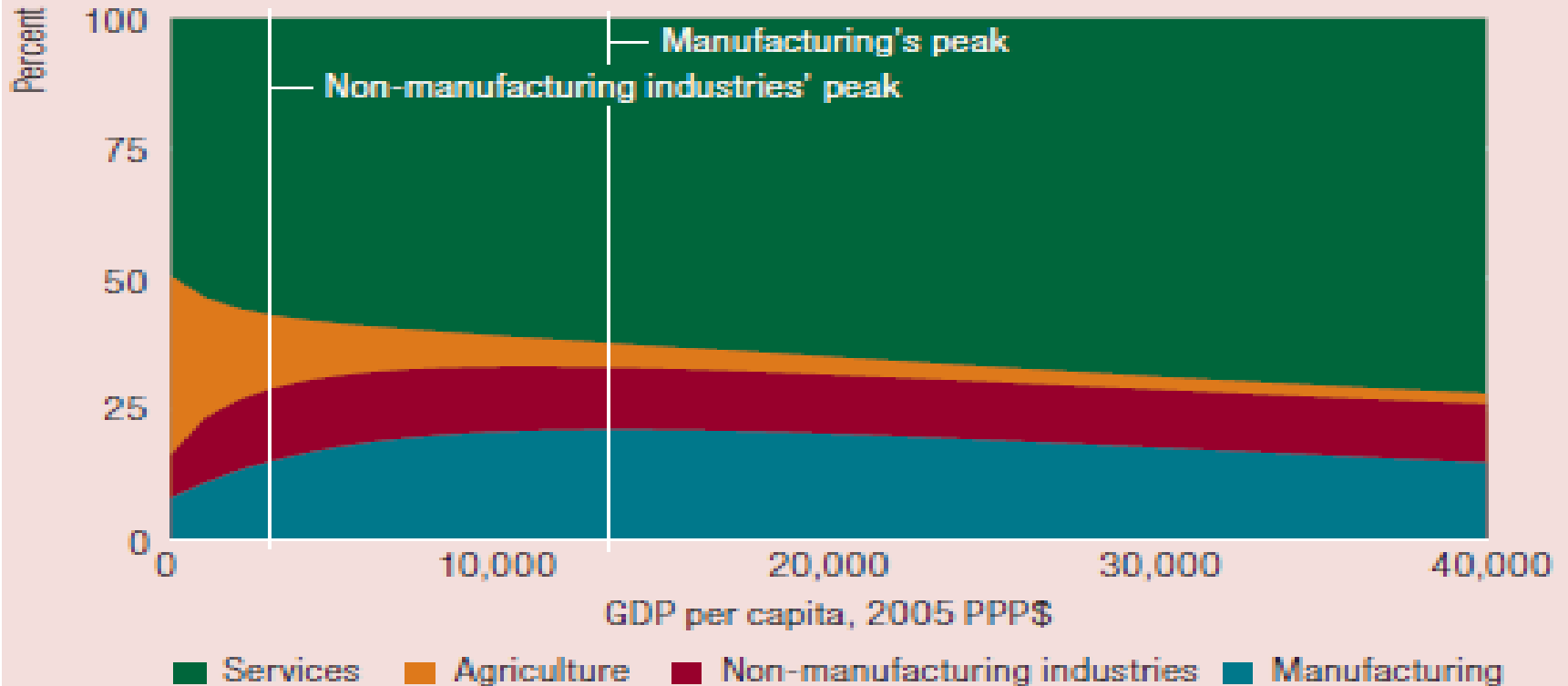


# Exponential Technological Change and Structural Change

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Organización de las Naciones Unidas para el Desarrollo  
Industrial (ONUDI)  
Mexico, 6-8 Julio 2016

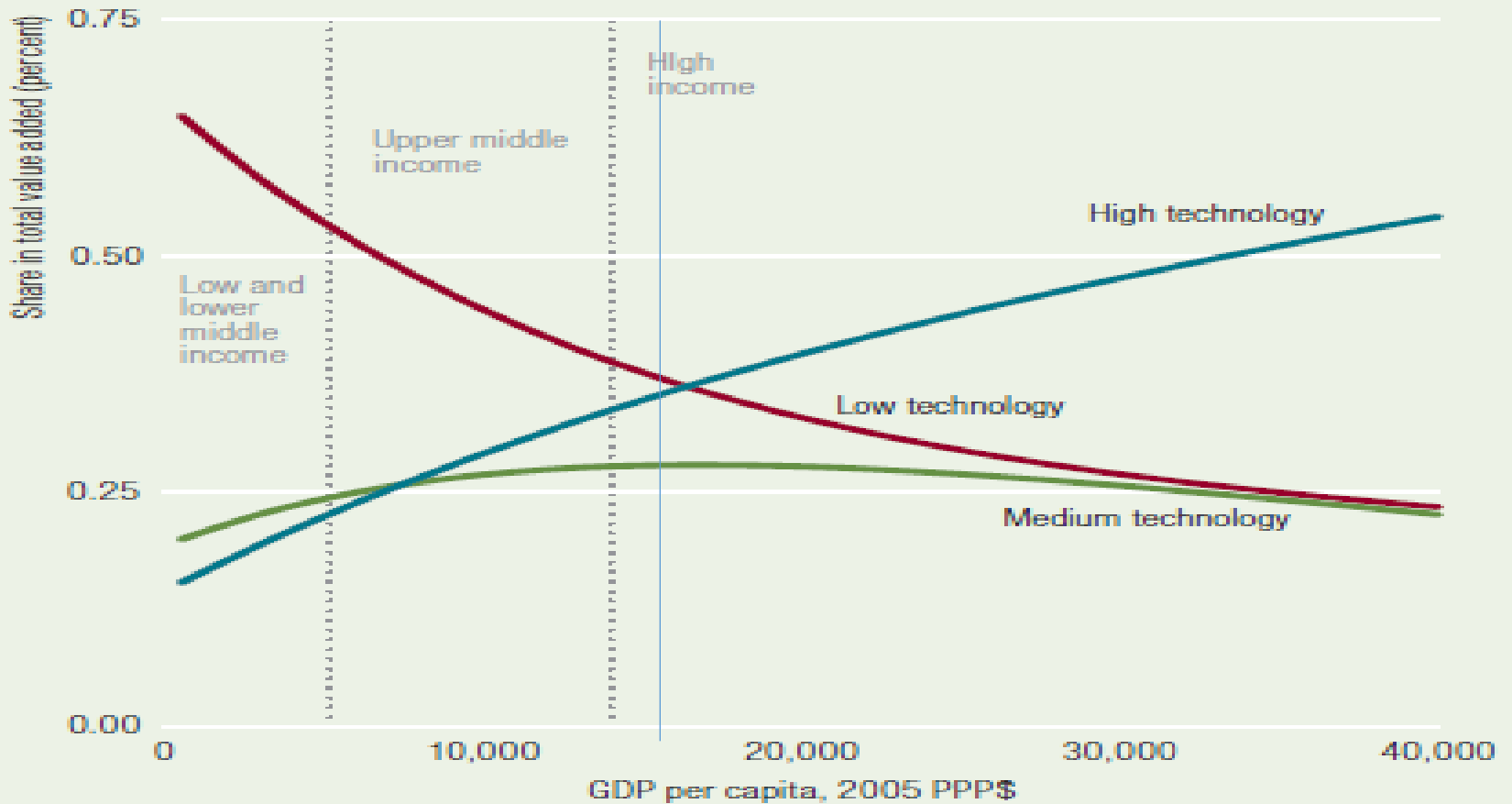
## GDP composition by income and sector, 1963–2007



Note: Pooled data for 100 countries.

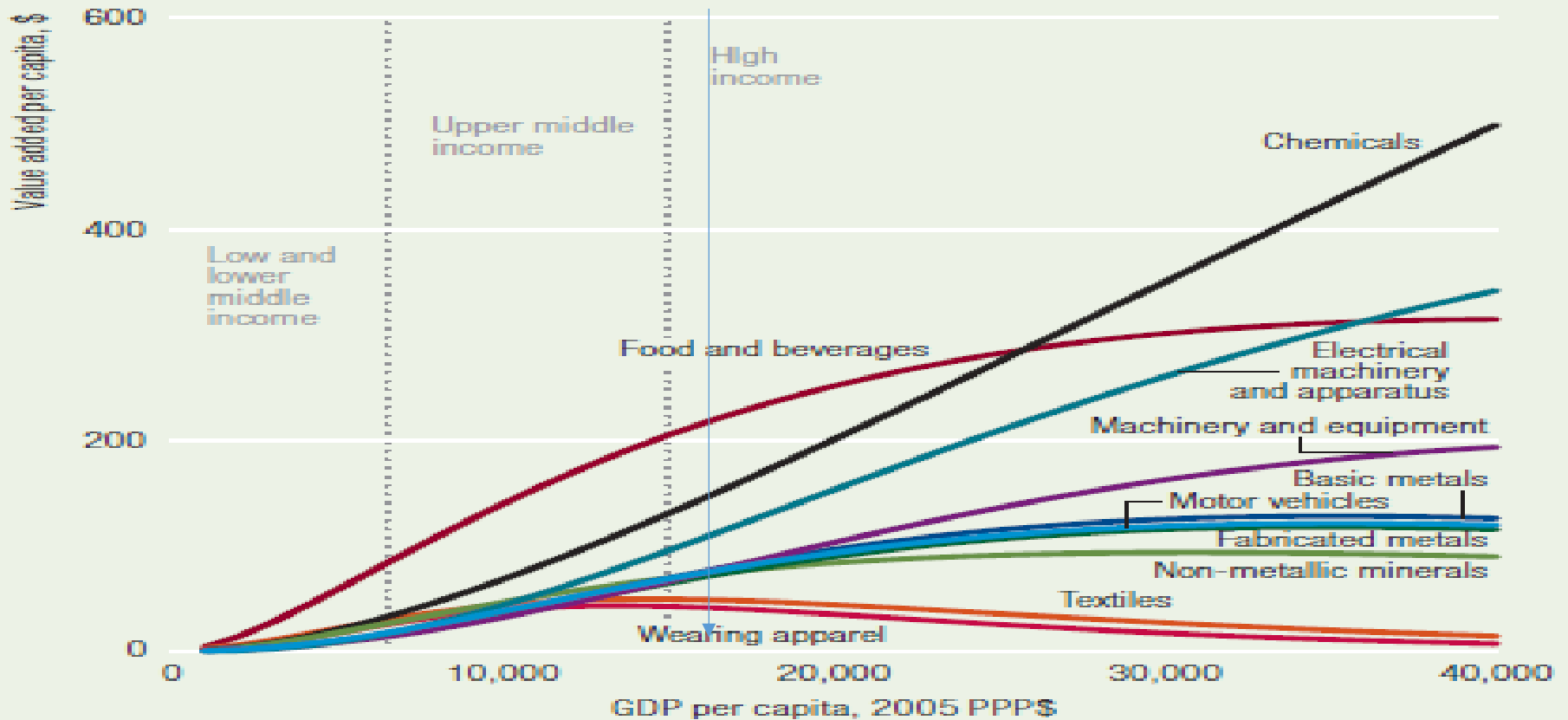
Source: UNIDO estimate based on CIC (2009) and World Bank (2013b).

## Changes in the shares in manufacturing value added by income and technology group, 1963–2007



Source: UNIDO estimate based on CIC (2009) and UNIDO (2012a).

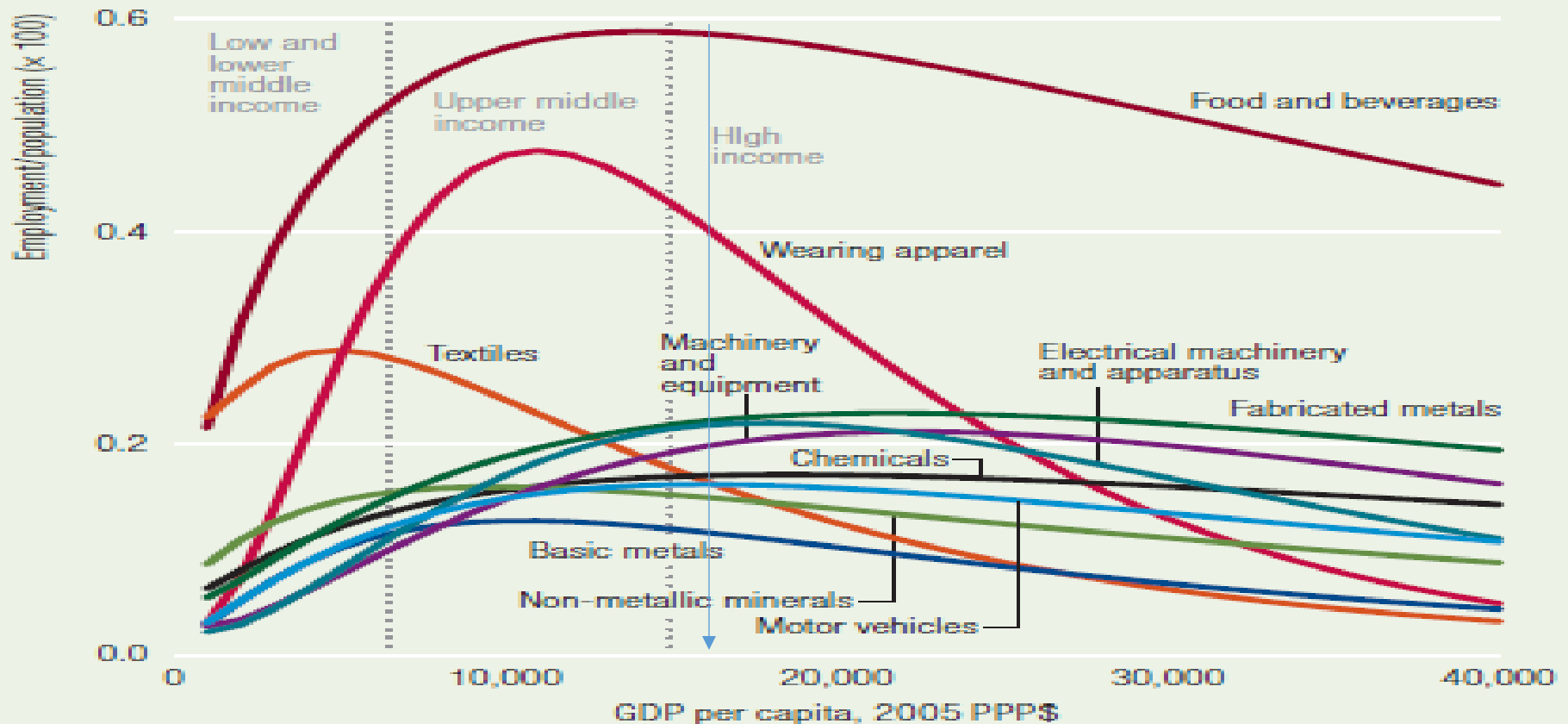
## Changes in value added per capita by income and manufacturing industry, 1963–2007



Note: Pooled data for 74 countries.

Source: UNIDO estimate based on CIC (2009) and UNIDO (2012a).

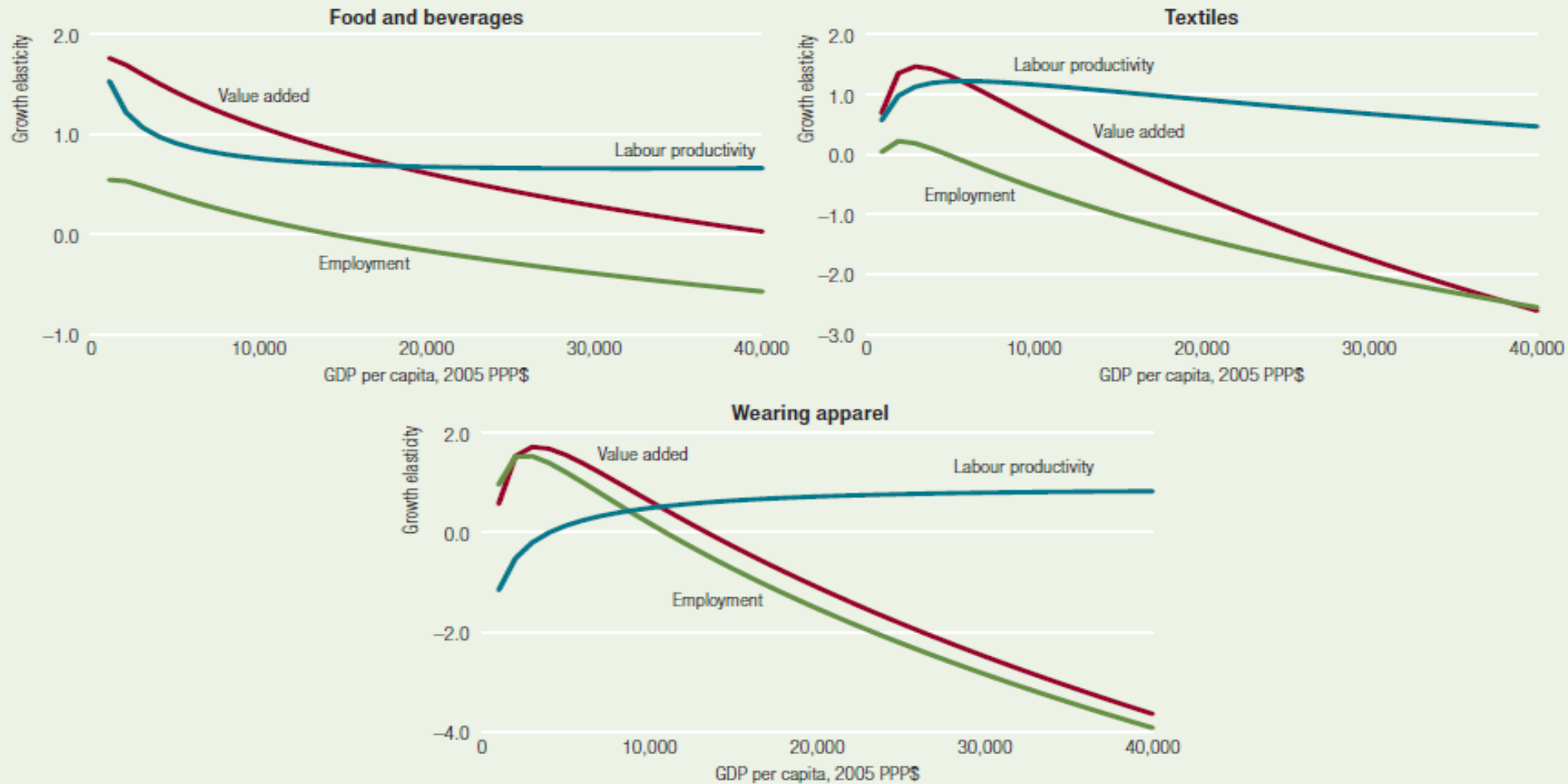
## Changes in employment by income and manufacturing industry, 1963–2007



Note: Pooled data for 95 countries.

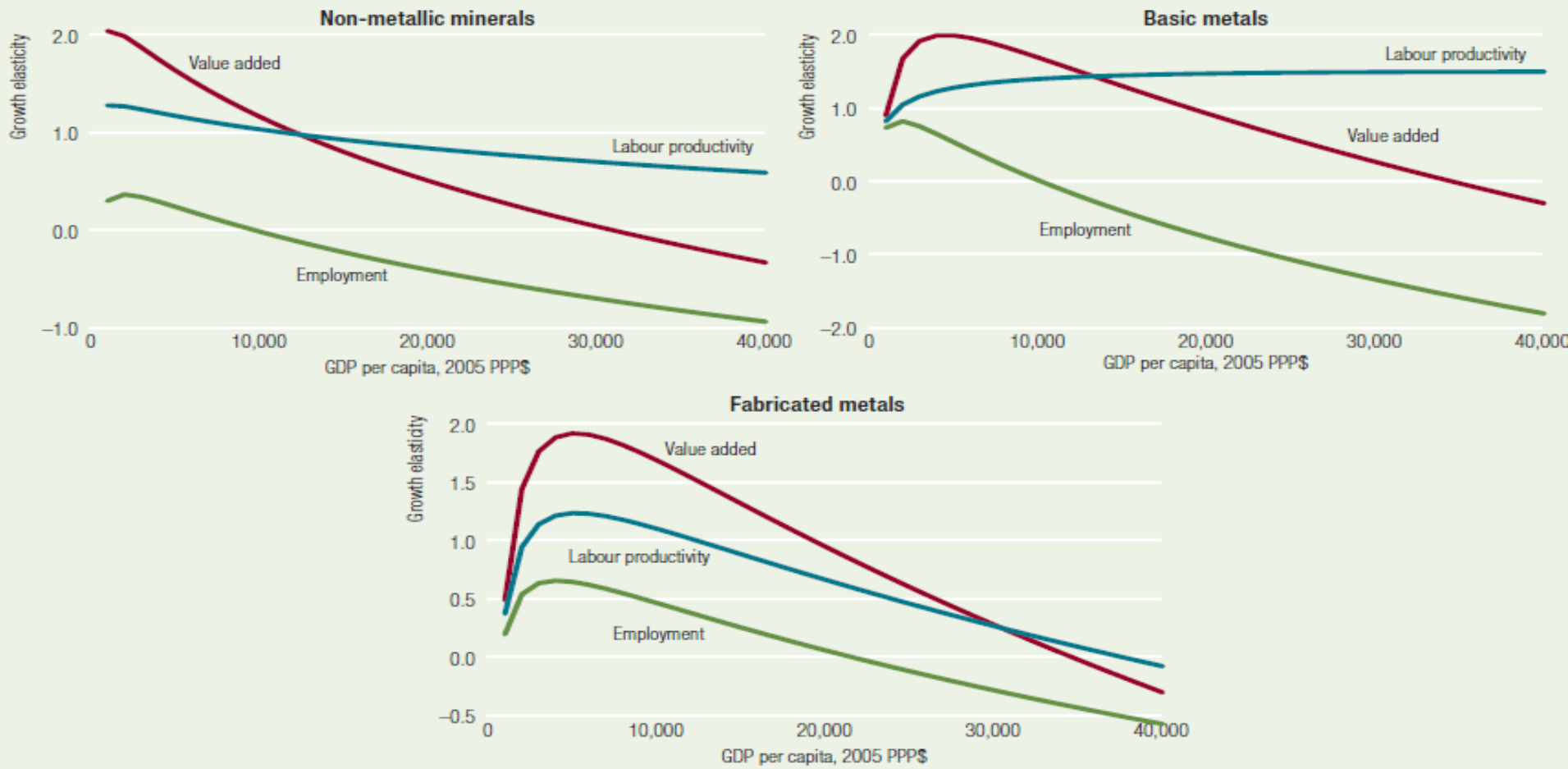
Source: UNIDO estimate based on CIC (2009) and UNIDO (2012a).

**Growth elasticities of value added, employment and labour productivity by income, low-tech industries, 1963-2007**



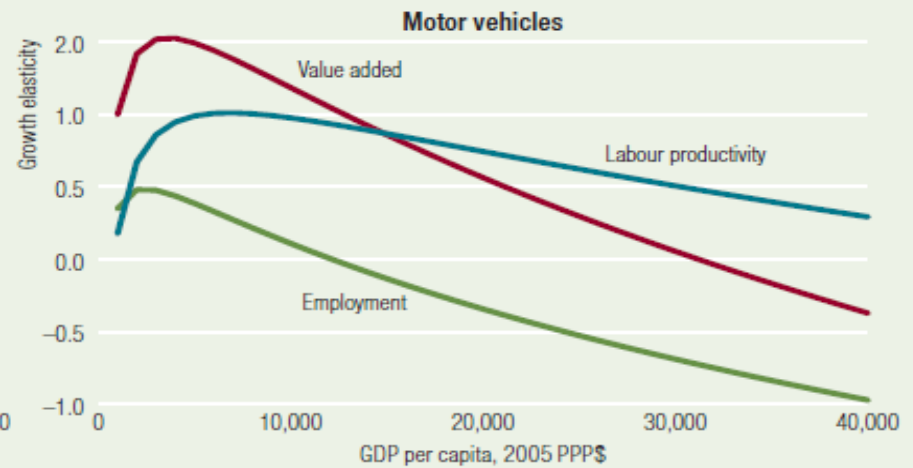
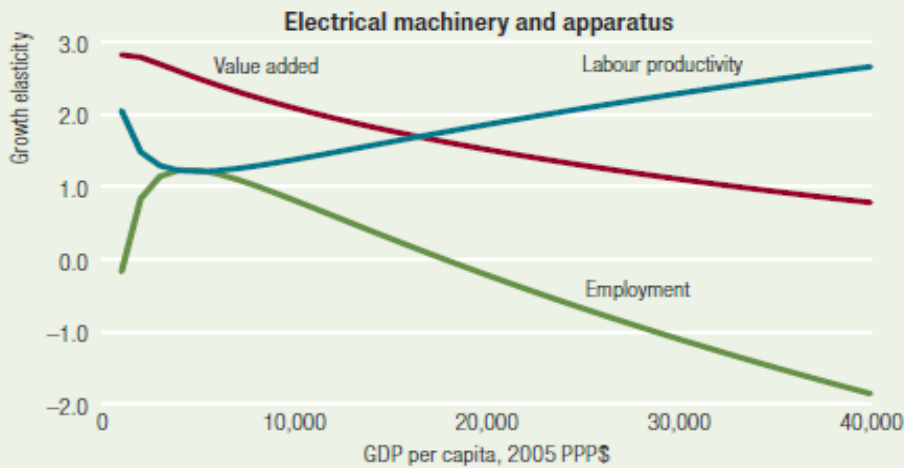
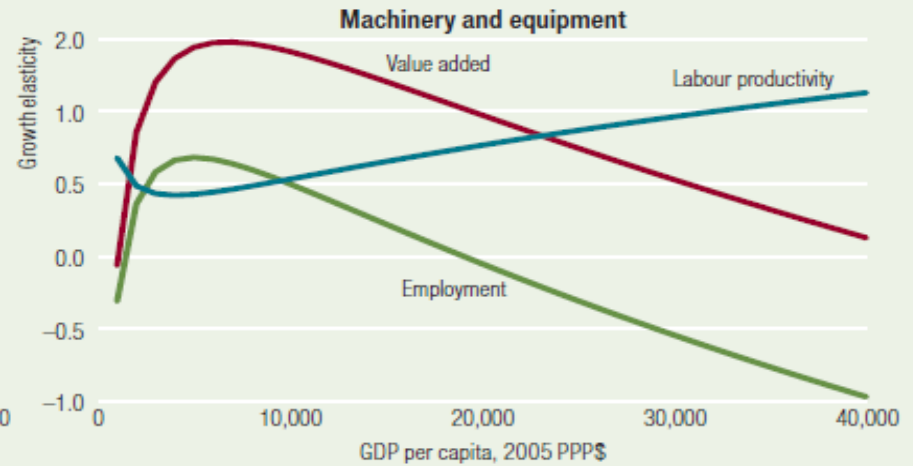
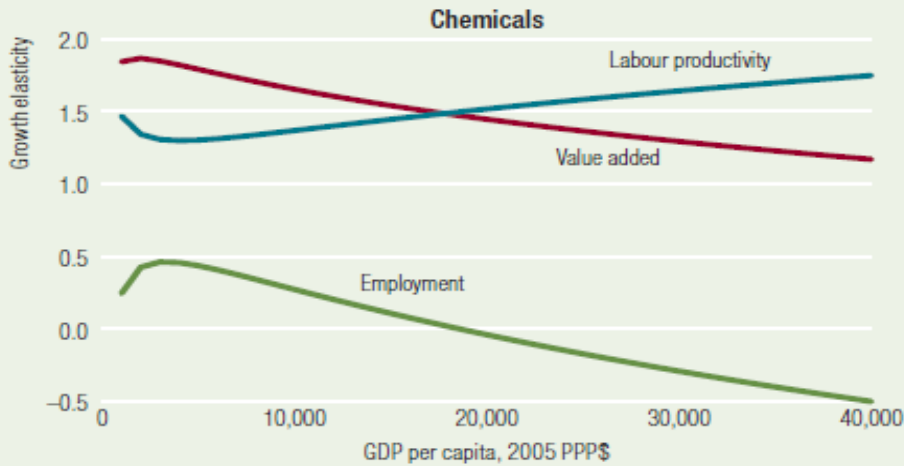
Source: UNIDO estimate based on CIC (2009) and UNIDO (2012a).

**Growth elasticities of value added, employment and labour productivity by income, medium-tech industries, 1963-2007**



Source: UNIDO estimate based on CIC (2009) and UNIDO (2012a).

**Growth elasticities of value added, employment and labour productivity by income, high-tech industries, 1963-2007**



Source: UNIDO estimate based on CIC (2009) and UNIDO (2012a).



# Technology and structural change

- Much of the impact of technological change on low and middle (and high) income countries' structural transformation will depend on the industries they are involved in and their precise level of income
- Insofar as technological change will not be very disruptive in low tech industries, such as garments or textiles, no significant impact on value added, employment and productivity should be expected in least developed countries
- Insofar as medium tech industries such as fabricated metals face transformative technological change middle income countries engaged in such industry may face growing labour productivity but at the expense of even slower employment growth. However, there may be some employment compensation due to product diversification.
- In industries like non-metallic minerals and basic metals, whose value added, employment and productivity growth remains pretty stable at all levels of income, unless technological change is massively disruptive, very little impact is expected in middle and high income countries

## Technology and structural change

- Insofar as technological change will be highly disruptive in high tech industries middle and high income countries involved in industries such as machinery and equipment and electrical machinery and apparatus will face even faster growing labour productivity at the expense of employment, although product diversification effects on employment may also be observed
- In industries such as motor vehicles, where a relative ‘commoditification’ of output is taking place, middle and high income countries involved in it may also face increases in labour productivity not only as a result of falling employment but also value added.
- Overall since disruptive technological change is affecting high tech industries more than low tech industries the effects on value added, employment and productivity should be more pronounced in middle and high income countries engaged in these industries, hence limiting the potential for least develop and some middle income countries to structurally transform their economies, unless something is done.



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# THANKS