



Innovation, productivity and employment

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DCED workshop on private sector development and job creation

Geneva, 10 July 2014

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1. Innovation happens everywhere, including in the poorest countries
 2. Innovation, productivity change and employment are often positively related
 3. Special economic zones (SEZs), development finance institutions (DFIs), and effective state-business relations (SBRs) are amongst specific tools to promote employment, innovation and productivity
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1) Innovation is everywhere



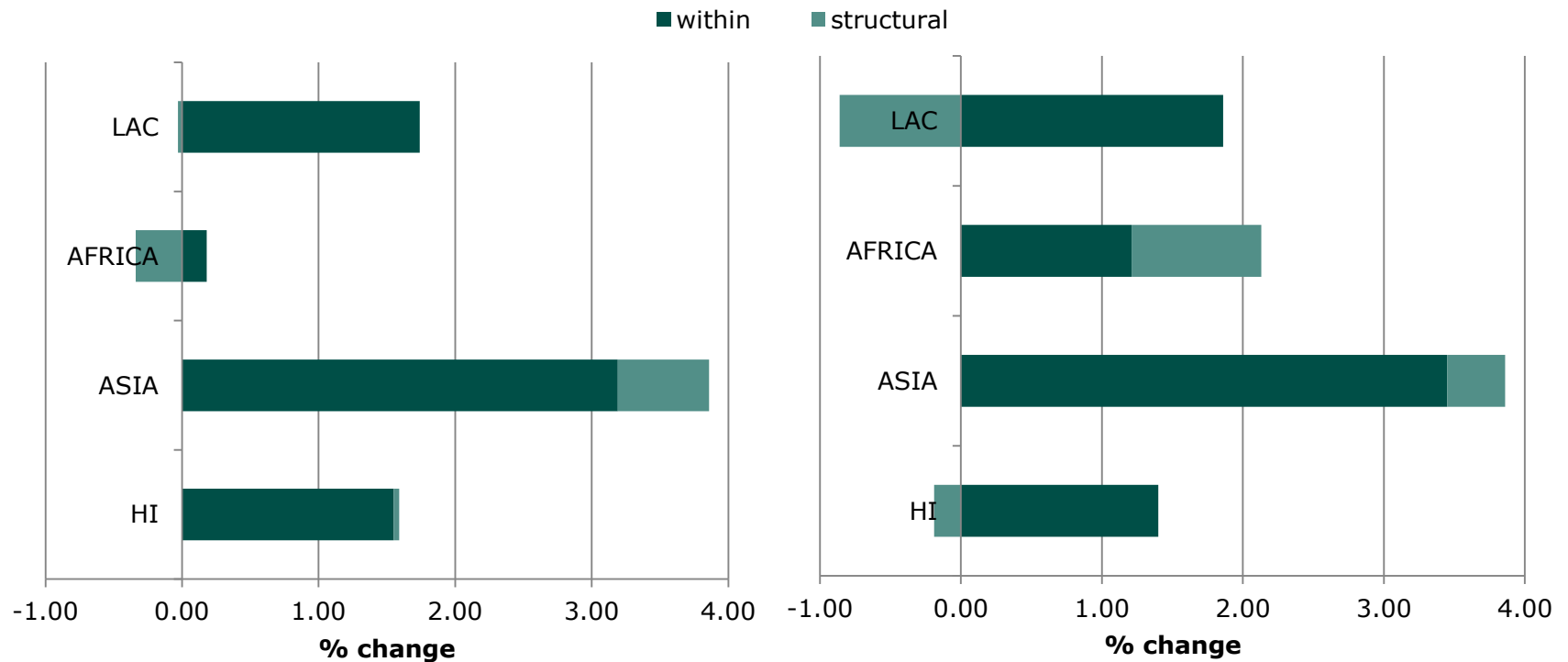


Innovation and productivity change

- **Across sectors:** moving labour from agriculture to manufacturing and services helps productivity change (DEGRP evidence from Macmillan and Rodrik, 2011; Macmillan 2014; Gollin et al, 2014)
- **Within sector:** productivity differentials across firms in a sector (Bloom and Van Reenen; Hsieh and Klenow)
- **Within firms across production lines** (new DEGRP evidence: Woodruff, Serneels)
- **Other:** innovation under the radar screen (DEGRP evidence from Fu)

Structural change accounts for half of Africa's productivity growth after 2000

Decomposition of productivity growth by country group 1990-99 2000-10

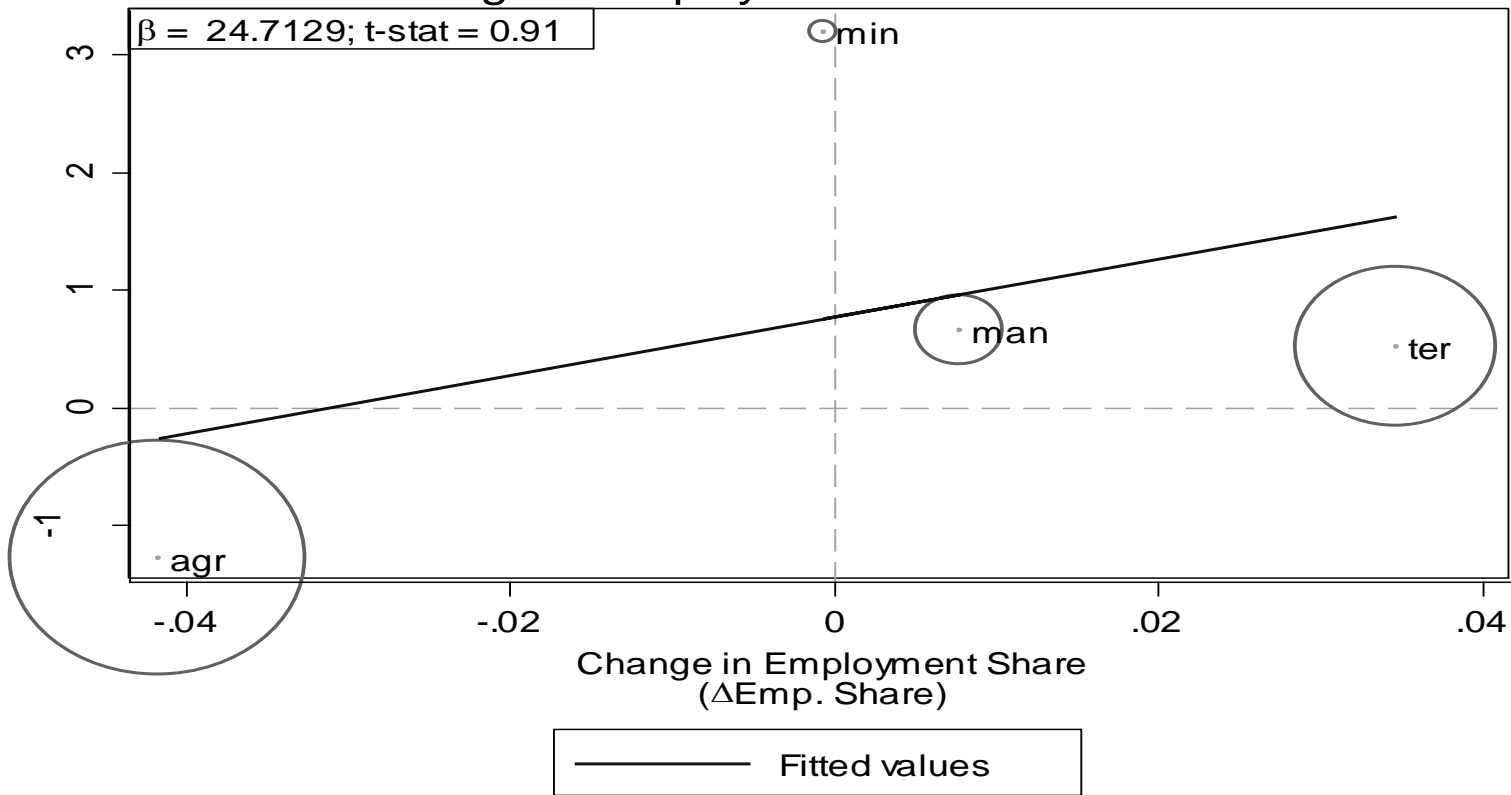


Macmillan (2014)



Moving labour to high productivity sectors, Africa 2000-2010

Correlation Between Sectoral Productivity and Change in Employment Shares in Africa



*Note: Size of circle represents employment share at beginning of period

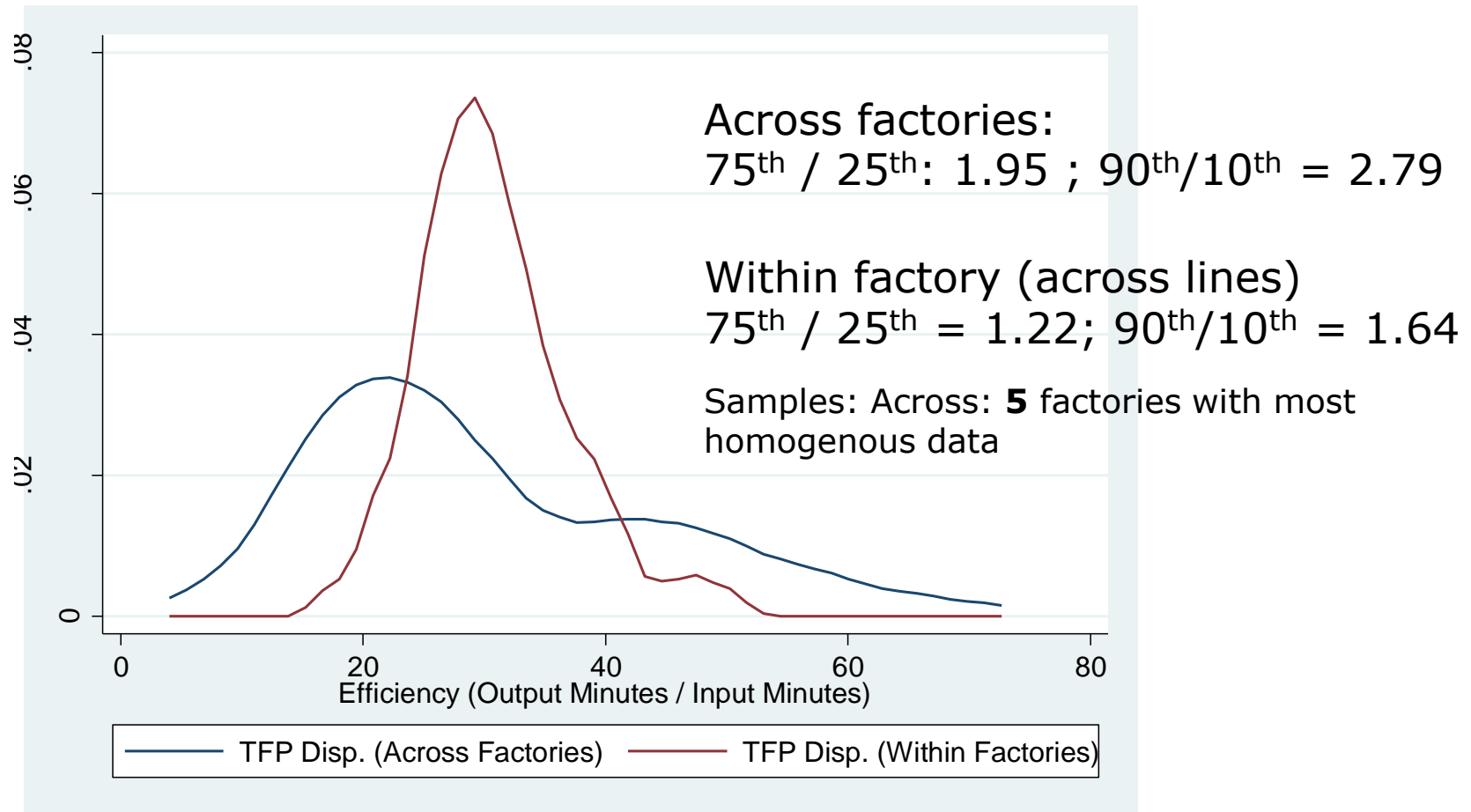
**Note: β denotes coeff. of independent variable in regression equation:

$$\ln(p/P) = \alpha + \beta \Delta\text{Emp. Share}$$

Source: Authors' calculations.



Woodruff (2014): Bangladeshi garments Productivity varies, even within factories





General implications

- Facilitate inter-sectoral movement of labour: no special treatment to agriculture (Dercon and Gollin, 2014) but favour manufacturing which experiences unconditional convergence (Rodrik, 2013)
 - Strengthen competition within sector; promote firm entry/exit
 - Foster improvements within firms, e.g. management training (Bloom and Van Reenen, 2012, point to differences across firms; Woodruff, 2014 suggest positive impact)
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2) Innovation, productivity and employment

Links?



Innovation and employment: links

- Process and product innovation = new the market (invention of new technology but also spread of existing technology), Oslo Manual (2005). Productivity as measure of innovation impact.
- **Product innovation**: new product raises labour demand (esp with low elasticity of substitution amongst products)
- **Process innovation**: greater efficiency reduces demand for labour initially, but can increase market share, depending on (high) price elasticity, and time framework

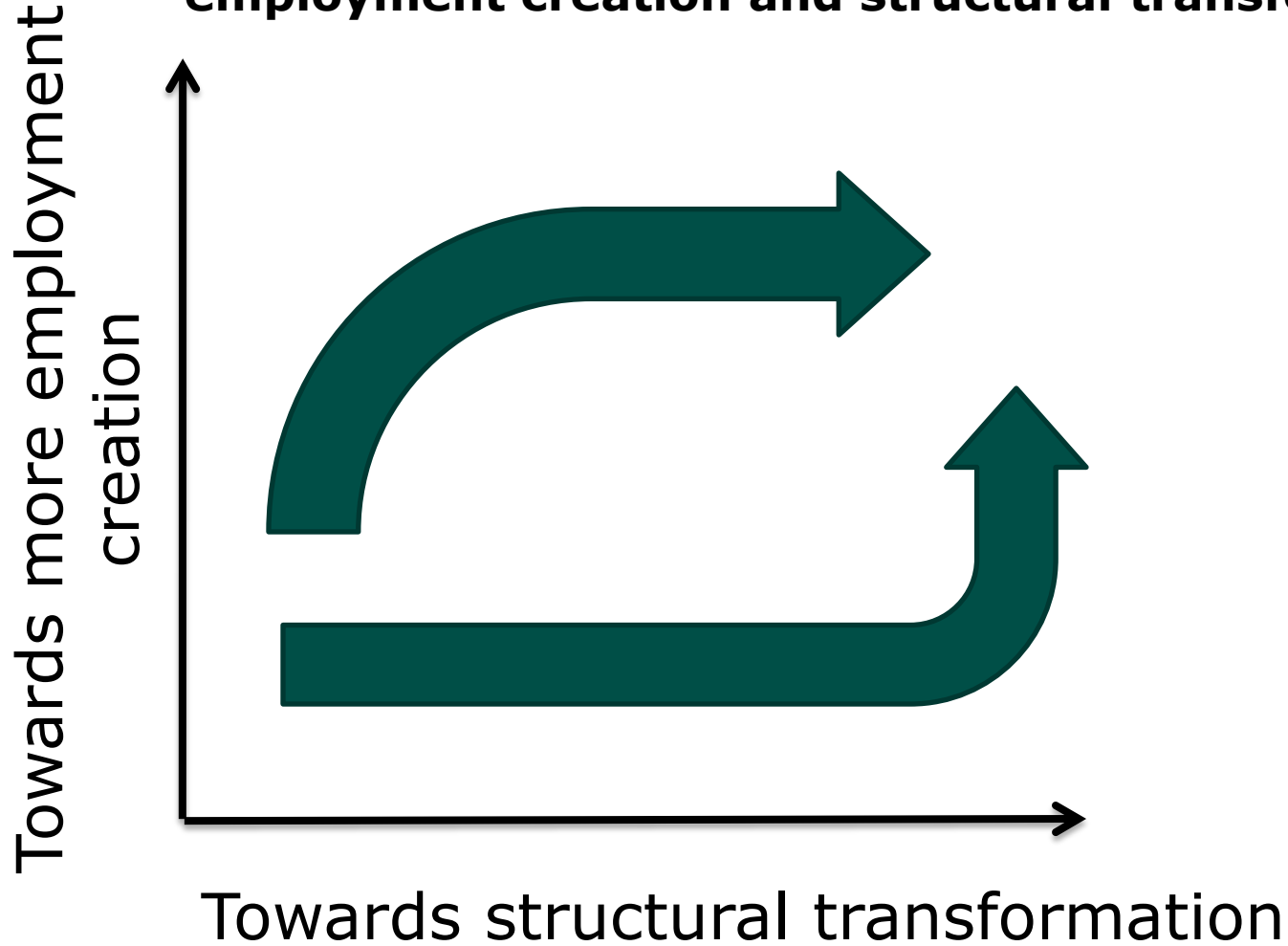


- Meta analysis on basis of 53 studies (Ugur et al, 2013):
 - Positive effect process innovation on skilled labour but not on total employment
 - Process and product innovation together have a small positive effect on employment
 - Employment creation in innovative enterprises, but this may be at the expense of job losses in their non-innovative counterparts within same sector
 - Effects depend on (i) type of innovation; (ii) skill levels; (iii) aggregation levels; (iv) linkages; (v) institutional quality.
 - Timeframe matters (e.g. Autor, 2013, on past role of mechanisation).
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3) Innovation, productivity and employment change at inter-sectoral level

3 policy tools

Tackling two key challenges for policy in LICs: employment creation and structural transformation

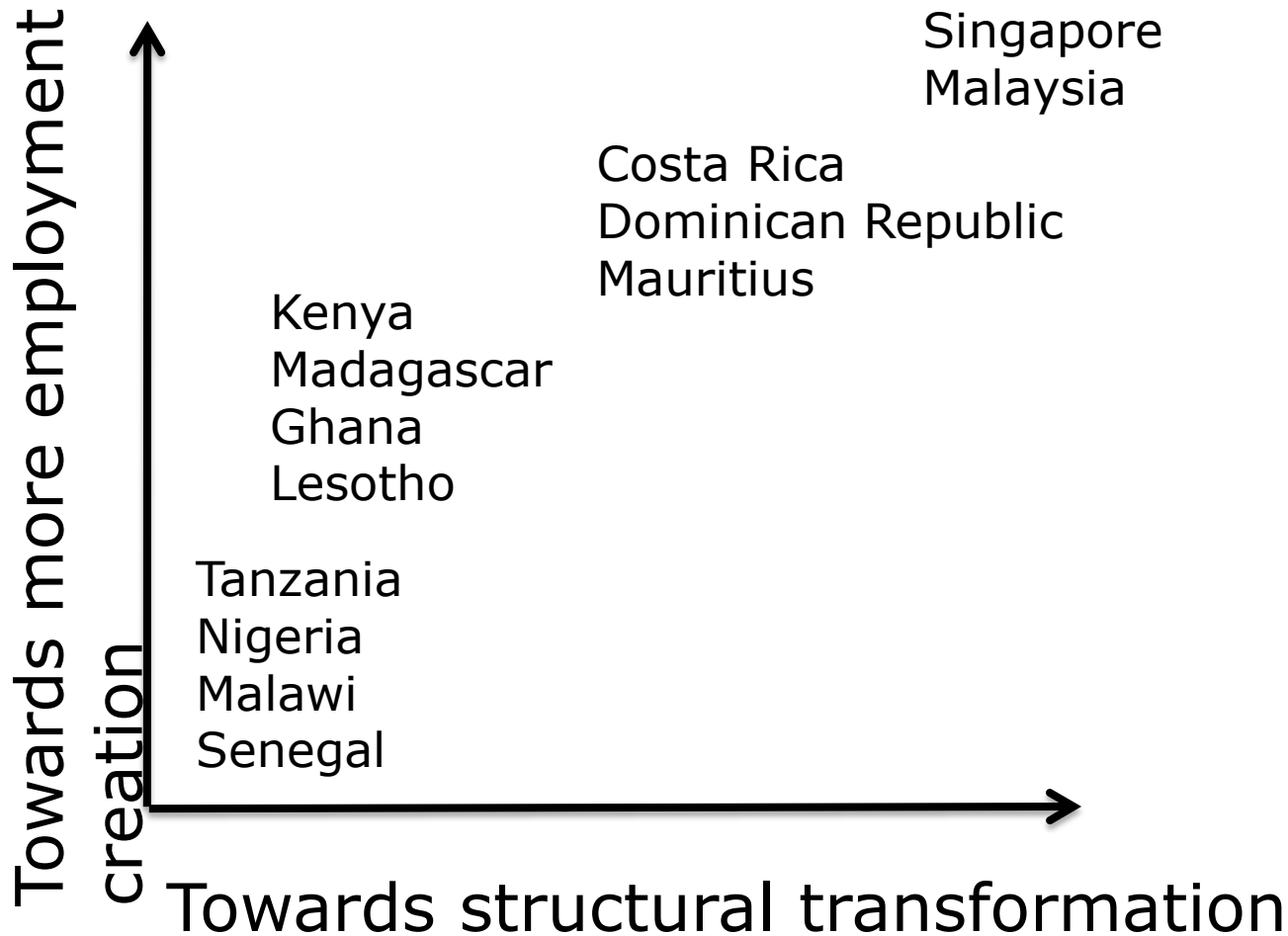




Assessing 3 policy tools

1. Using SEZs as part of a strategic vision for transformation Kingombe and Te Velde (forthcoming)
2. Incentivising Development Finance Institutions (Jouanjean and te Velde, 2013)
3. Supporting effective SBRs (te Velde, ed, 2013 for DEGRP; Treebhohun, ERD forthcoming)

The evidence on SEZs



→ Success and failures: Policy and context matter

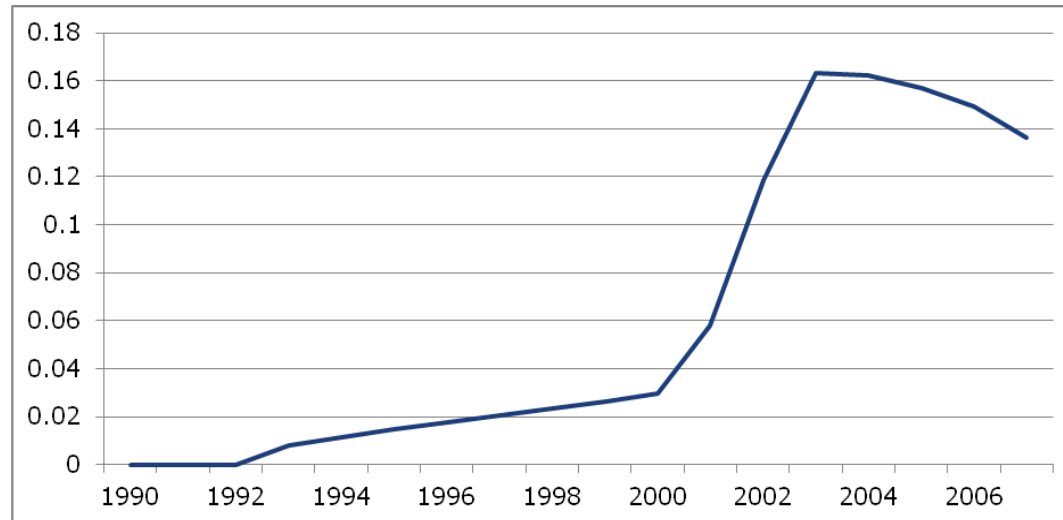
SEZ policies for employment and structural transformation

Responding to global developments	Place SEZs in growth strategies	Best-practice implementation
<p>Building on comparative advantage (e.g. agri-business, offshored services) more likely to succeed especially when state capacity is lacking</p>	<p>Complementary policies required such as linkage policies and building of local supply capabilities</p>	<p>SEZs near main markets or ports more likely to succeed</p>
<p>SEZs based on clustering more likely to succeed</p>	<p>Active human resource development (skills and technology centres)</p>	<p>Zones in lagging regions less likely to succeed</p>
<p>SEZs linked to trade preferences (e.g. garments and AGOA) are vulnerable</p>	<p>Providing specialised infrastructure</p>	<p>Consider adequate public / private mix in implementing zones</p>
<p>Requires flexible approach, with good quality institutions and effective state-business relationships</p>	<p>Promoting mobility</p> <p>Promoting labour institutions nationally</p> <p>Requires effective state-business relationships (and social cohesion)</p>	<p>Leadership and strong commitment from top</p> <p>Single factory schemes deny clustering benefits</p>



SEZs in Kenya

- SEZs in Kenya have helped to create some 40,000 manufacturing jobs in the 2000s, owing mainly to trade preferences. Share in manufacturing employment reached 15%



- Econometric evidence: Manufacturing employment in SEZs helped to increase manufacturing labour productivity by some 20% in the decade to 2006 (or 2% per annum).
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Using DFI for employment and productivity impacts

- Focus often on direct jobs - but it should also include jobs indirectly via transformation / productivity change
 - **Monitoring** direct jobs (some methodological differences, but easy to explain)
 - **Estimating** indirect jobs (input-output models)
 - **(gu)estimating** second-order growth effects (this works through transformation)
- Different methods exist for estimating job effects (counting, input-output models, econometric, etc)
- ODI micro-level study of Bugoye hydropower plant: PIDG supports electricity generation and jobs indirectly via productivity effects



Broad assessment of DFI impact (ODI)

Sector of DFI investment	Direct job effects	Indirect job effects (static and dynamic)	Induced and second order growth effects
Manufacturing such as garments	Very important (but depends on type of manufacturing)	Potentially important	Less important
Tourism	Medium important	Very important	Less important
Infrastructure	Less important	Mostly temporary	Very important
Agriculture	Very important	Less important	Less important



DFIs promote labour productivity

Jouanjean and te Velde (2013)

	Effects on labour intensity		
	Effect of the treatment (minus constructed counterfactual) after one year	Effect of the treatment (minus constructed counterfactual) after two years	Effect of the treatment (minus constructed counterfactual) after three years
	(1)	(2)	(3)
Treated	-0.033	-0.072*	-0.132**
	(0.221)	(0.062)	(0.013)
Constant	-0.017	-0.044	-0.053
	(0.490)	(0.232)	(0.290)
Observations	244	210	171

DFI has 13% effect on labour productivity:

Growth
Research
Programme

State-business relations and industrial policy

Current policy and research debates

Dirk Wilenski & Vukob (eds.)
Spring 2013

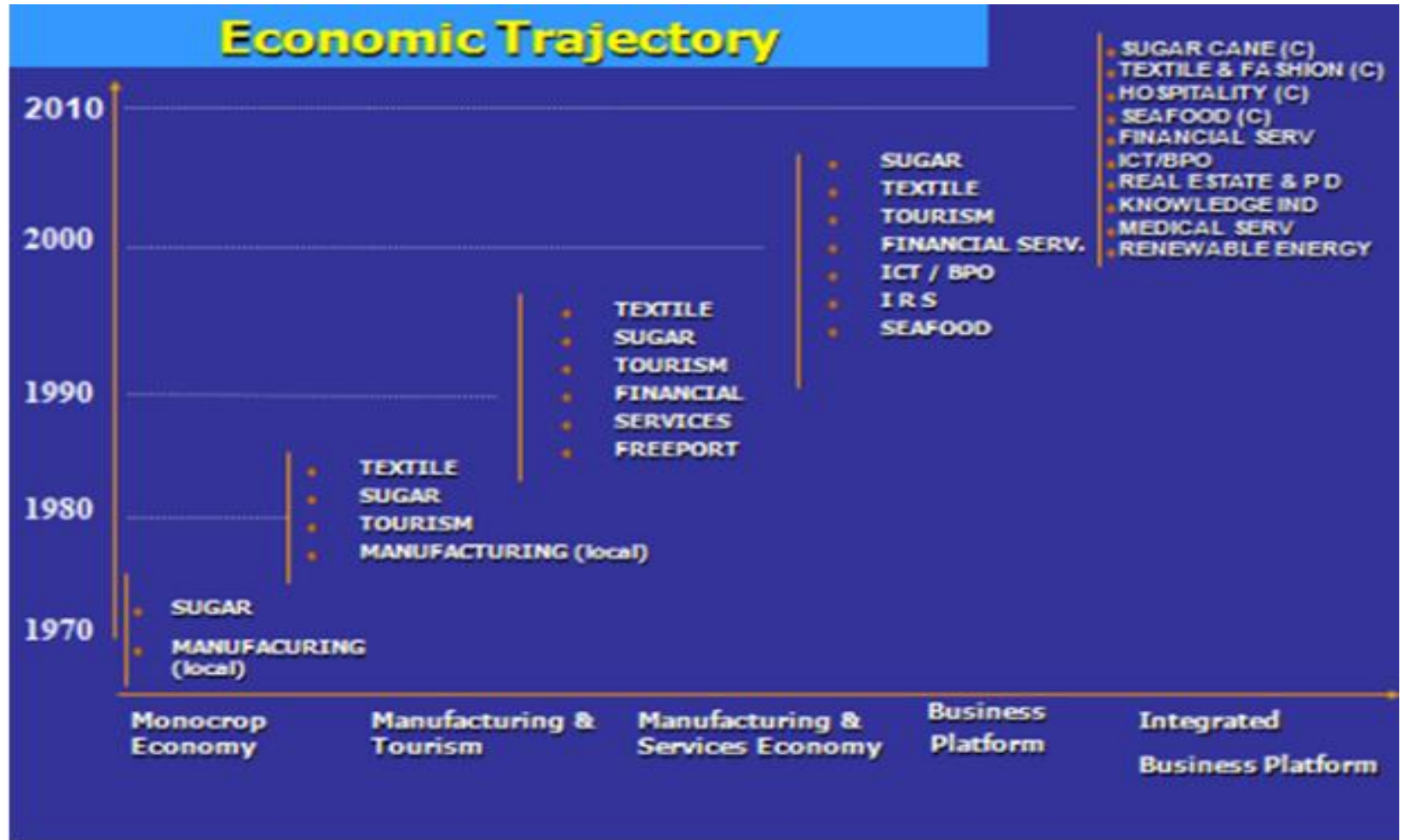


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- Institutional (Trust: Transparency, Reciprocity, Credibility)
 - Capacity (in public and private sector embeddesness)
 - Competition not collusion
- Better measured SBRs raise economic growth and firm productivity
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Effective SBRs helped engineer structural transformation in Mauritius



Conclusions



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- Innovation can be good for employment, but depends on several factors.
 - Much is happening already, much remains to be done, this has general policy implications
 - Specific policy tools can support innovation and manufacturing jobs (SEZs, DFIs and SBRs)