Synergies between Industrial and Health Policies: a contribution to economic transformation?

Watu Wamae and Maureen Mackintosh

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Synergies between industrial and health policies: a contribution to economic transformation?

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Scope of comments

• Integrating health systems strategies with local production systems
  – Local production systems: industrial production systems in health systems strengthening
  – The role of capabilities in linking the two

• Contributing to structural change (transformation) in the economy
  – Types of capabilities (R&D and non-R&D)
  – Scale of D&E in innovation systems
  – Role of non-R&D capabilities in innovation systems strengthening

• The significance of D&E in the structure of African economies
  – The sectoral structure of African economic growth
  – D&E role in structural change (transformation)
  – The role of learning in developing capabilities
Integrating health systems strategies with local production systems

  • African Centre for Technology Studies (ACTS) Nairobi, Research on Poverty Alleviation (REPOA) Dar es Saalam and The Open University, UK
  • Funded by the UK Department for International Development (Dfid) and the UK Economic and Social Research Council (ESRC)
  • Commenced June 2012 and ends in November 2014

• Aim of the study: to identify opportunities for improved local industrial supply of essential health commodities to strengthen health systems performance
Integrating health systems strategies with local production systems

• The research traces potential synergies between industrial and health policy by drawing on three analytical frameworks
  – Value chains: up-grading
  – Industrial economics: structural transformation
  – Innovation systems perspective: health systems strengthening

• Three stages upon which we draw preliminary reflections
  – Initial advisory stage and senior stakeholder interviews
  – Health systems research
  – Industrial sector research

• The focus of the presentation is on:
  – local production systems: industrial production systems in health systems strengthening
  – The role of capabilities in linking the two
Integrating health systems strategies with local production systems

Production or operating capabilities
capabilities for using knowledge that is embodied in or closely associated with existing production systems and facilities.

A range of capabilities required including production capabilities – they contribute to innovation in production
Integrating health systems strategies with local production systems

• Innovation in production depends on production capabilities
  – capabilities for using knowledge that is embodied in or closely associated with existing production systems and facilities

• For policy to have an impact on structural change, the peculiar nature of technological learning for innovation in specific activities, including within production activities that contribute to the effective production of health services, needs to be addressed

• This implies dealing with policy at two levels
  – policies that explicitly address innovation, and
  – the broader socio-economic policies such as health policies, macro-economic policies, competition policies etc.
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Contributing to structural change (transformation) in the economy

- Technological capabilities lie at the heart of this process
  - “the resources needed to generate and manage technical change, including knowledge, skills, experience, institutional structures and linkages”, Bell and Pavitt (1993)

- Two categories of technological capabilities:
  - R&D specific capabilities
  - Non-R&D specific capabilities (they play a critical complementary role in converting knowledge to value)
    - Production or operating capabilities
    - Design and engineering capabilities (D&E capabilities)
Contributing to structural change (transformation) in the economy

• R&D specific capabilities
  − Defined as those capabilities for creating new knowledge and transforming it into the specifications for application and production

• Non-R&D specific capabilities
  • Production or operating or capabilities
    − Defined as capabilities for using knowledge that is embodied in or closely associated with existing production systems and facilities
  • Design and engineering capabilities
    − Defined as those capabilities for transforming existing knowledge into new, often innovative, configurations for new or changed production systems

• Fragments of data from a few advanced countries suggest that the quantitative scale of D&E activities is greater than R&D activities, and this disparity is greater in developing economies (Bell 2012)
Main activities of scientists and engineers in the US (Bell, 2006)

• 10% undertook R&D specific activities

• 90% were engaged in activities that are non-R&D specific, but key in translating research into practical applications
  – A large proportion of them were engaged in design and engineering activities

<table>
<thead>
<tr>
<th>The Activities of Scientists and Engineers in the US: 2003</th>
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<tbody>
<tr>
<td>Research (basic and applied) and technological development</td>
</tr>
<tr>
<td>Design (equipment, processes, structures, models) and computer programming, systems development, etc.</td>
</tr>
<tr>
<td>Management/Supervision (people, projects, quality, productivity, etc.)</td>
</tr>
<tr>
<td>Business, administrative and production activities (accounting, personnel, sales, maintenance, etc.)</td>
</tr>
<tr>
<td>Professional services (financial services, healthcare, legal, etc.)</td>
</tr>
<tr>
<td>Teaching</td>
</tr>
<tr>
<td>Other specified</td>
</tr>
<tr>
<td>All Above</td>
</tr>
</tbody>
</table>

Source: Annex Tables 1, derived from the US NSF.
Contributing to structural change (transformation) in the economy: what is D&E? (Bell 2012)

• Design
  – An activity or process that creates the ‘specifications’ of products, processes and production systems (not just about the aesthetic form of objects)

• Engineering
  – Overlaps with design
  – But extends towards the realisation of specifications in operational forms – includes various kinds of:
    • ‘project management’ and procurement
    • implementation and ‘system integration’
    • testing, initiation and supervision

• Design and engineering capabilities
  – Defined as those capabilities for transforming existing knowledge into new, often innovative, configurations for new or changed production systems
The significance of D&E in structure of African economies: the role of D&E

Design and engineering capabilities

the capabilities that play a direct (and critical) role in adapting and modifying specifications for integration into processes and products
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September 2012 Mozambique: Accumulation and Transformation
The significance of D&E in the structure of African economies

- The sectoral structure of African economic growth (Bell, 2012)

<table>
<thead>
<tr>
<th>Sector</th>
<th>Kenya</th>
<th>Tanzania</th>
<th>Uganda</th>
<th>ISIC Divs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture and fishing</td>
<td>-30</td>
<td>-16</td>
<td>-56</td>
<td>01-05</td>
</tr>
<tr>
<td>Services</td>
<td>22</td>
<td>1</td>
<td>18</td>
<td>10-45</td>
</tr>
<tr>
<td>Industry</td>
<td>-9</td>
<td>25</td>
<td>31</td>
<td>50-99</td>
</tr>
<tr>
<td>of which manufacturing</td>
<td>-24</td>
<td>-1</td>
<td>-18</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>23</td>
<td>50</td>
<td>79</td>
<td></td>
</tr>
</tbody>
</table>

| Other                               |       |          |        |            |
| Mining, oil, gas, quarrying         |       |          |        | 10-14      |
| Construction                        |       |          |        | 45         |
| Electricity, gas, water supply      |       |          |        | 40-41      |
The significance of D&E in the structure of African economies: the role of D&E in transformation

• The continuing surge in world demand for natural resources is expected to remain the driving force for growth in Sub-Saharan Africa.
  – The concentration of investments is highly skewed in favour of countries rich in natural resources. Mozambique is reported to have become a leader in natural resource driven investment in southern and eastern Africa.

• Growth paths dominated by these resource-intensive and capital-intensive sectors can be massively ‘excluding’ in a broad macro sense e.g. in much of Latin America through most of the 20th century (Bell, 2012)

• But not always, investment in technological capabilities including D&E in Africa seem particularly important (Bell, 2012)

• The sectoral structure of growth, especially in African economies, is heavily concentrated on sectors that are strikingly D&E-intensive
The significance of D&E in the structure of African economies: creating D&E capabilities

Design and engineering capabilities
the capabilities that play a direct (and critical) role in adapting and modifying specifications for integration into processes and products
The significance of D&E in the structure of African economies: the role of D&E in transformation

• It involves a complex learning process within the firm
  – entrepreneurs must adapt and up-grade the technological capabilities of their firms to meet the needs of the final consumers
  – adapting and up-grading of technological capabilities requires deliberate investment efforts in knowledge assets within the firm - may involve substantial deliberate costs

• Policies that explicitly address innovation, and implicit policies must be coherent to allow the creation of technological capabilities (especially D&E capabilities in Africa)
  – Implicit policies i.e. the broader socio-economic policies such as health policies, macro-economic policies, competition policies etc.
  – With effective policy coherence, growth in extractive industries leads to growth in infrastructure (which contributes to growth in other sectors)

• Progressive diversification into activities that attract relatively small amounts of investment, but are critical for social inclusion (such as health) and the role of D&E in the transformation must be considered