Topic 2: The Critical Role of IP Policies in Modern Economies

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THE ROLE OF INTELLECTUAL PROPERTY OFFICES (IPOs) IN PROMOTING INNOVATION, BUSINESS COMPETITIVENESS AND ECONOMIC GROWTH

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Overview

- Background and Context
- Critical Role of IP Policies
- Case Studies
  - USA
  - South Africa
  - Gauteng province
- Concluding Remarks
Background and Context
Intellectual Property and Competitiveness

The World Economic Forum Global Competitiveness Report indicates a correlation between the protection of intellectual property rights and national competitiveness. In 2004, the 20 countries that were perceived as having the most stringent intellectual property protection were classed among the top 27 in the WEF’s growth competitiveness index. Conversely, the 20 countries perceived as having the weakest intellectual property regimes were ranked among the bottom 36 for growth and competitiveness.
Anecdotal evidence of link between R&D investment, patent protection and economic growth

New drug development can benefit developing countries, e.g. in unique disease areas, technology transfer, skills development.

Innovative research leads to better health outcomes, skills development and increased investment.

Total R&D Investments: Fastest Growing Economies Gaining Rapidly on U.S.

Fastest Growing Economies:
China, Ireland, Israel, Singapore, South Korea, Taiwan
(India and Hong Kong data not available)
The intellectual property system was an important catalyst for the development of indigenous technology by Korean companies, several of which have become global market leaders. Korea’s spectacular transformation from a poor farming economy in the 1960s with a per capita income of less than US $100 to a highly industrialized country with a per capita income of US $12,000 today, resulted from a systematic economic and trade development policy that included incentives for technological innovation and the development of domestic intellectual property assets.

Chulsu Kim, Integrating Intellectual Property into the National Development Policy: the Korean Experience, keynote address at WIPO/ KIPO Ministerial Conference on Intellectual Property for Least Developed Countries
## Background and Context

### World’s most rapidly developing countries

BRICS nations - Brazil, Russia, India, China and South Africa – are expected to make a major economic breakthrough in the next ten years.

<table>
<thead>
<tr>
<th>Country</th>
<th>GDP per capita based on PPP* in 2009 (USD)</th>
<th>GDP growth in the past ten years (%)</th>
<th>GDP growth needed to catch up with the largest economies by 2050 (%)</th>
<th>Time needed to catch up with the largest economies (years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Russia</td>
<td>15,039</td>
<td></td>
<td>10</td>
<td>17</td>
</tr>
<tr>
<td>Brazil</td>
<td>10,455</td>
<td>4.3</td>
<td>5.3</td>
<td>119</td>
</tr>
<tr>
<td>China</td>
<td>6,549</td>
<td>8.3</td>
<td>5.7</td>
<td>23</td>
</tr>
<tr>
<td>India</td>
<td>2,930</td>
<td>4.9</td>
<td>7.4</td>
<td>50</td>
</tr>
<tr>
<td>Poland</td>
<td>17,536</td>
<td>4.3</td>
<td>4.0</td>
<td>22</td>
</tr>
<tr>
<td>Mexico</td>
<td>14,534</td>
<td>5.2</td>
<td>4.7</td>
<td>55</td>
</tr>
<tr>
<td>Argentina</td>
<td>14,125</td>
<td>8.1</td>
<td>4.0</td>
<td>17</td>
</tr>
<tr>
<td>Turkey</td>
<td>13,138</td>
<td>8.3</td>
<td>5.3</td>
<td>28</td>
</tr>
<tr>
<td>South Africa</td>
<td>10,136</td>
<td>3.9</td>
<td>4.6</td>
<td>135</td>
</tr>
<tr>
<td>Indonesia</td>
<td>3,980</td>
<td>4.3</td>
<td>7.2</td>
<td>181</td>
</tr>
</tbody>
</table>

* Purchasing power parity (PPP) is a theory of long-term equilibrium exchange rates based on relative price levels of two countries.

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[www.rian.ru](http://www.rian.ru)
The New World Powers in Innovation

Measuring innovation by how many patents a country files for each dollar of research budget reveals the true map of innovation winners around the globe. And The Republic of Korea is leading the way in efficiency.
Background and Context

R&D Intensity
Critical Role of IP Policies
Importance of clear IP Policies

- Alignment with country’s economic policies
- IP policies facilitators of investment decision and certainty in respect of trading environment
  - e.g. India and Brazil on compulsory licensing
  - e.g. USA on IKS

**e.g. Brazil vs Jordan on pharmaceuticals**

<table>
<thead>
<tr>
<th>Jordaan</th>
<th>Brazil</th>
</tr>
</thead>
<tbody>
<tr>
<td>• 75% of production for export market</td>
<td>• Lack of clarity in Industrial Property Law, ANVISA used its prior consent role to reject patent applications on the basis of novelty and inventiveness which is officially the role of the Brazilian Patent Office (BPTO).</td>
</tr>
<tr>
<td>• Allows both product and process patents</td>
<td>• AG decision of 2011 - ANVISA’s sole responsibility is analysis of the sanitary risks of the patented drug to health.</td>
</tr>
<tr>
<td>• Bolar provisions – development and testing of patented drug permitted before patent expiry</td>
<td></td>
</tr>
<tr>
<td>• 5 year data exclusivity – from date of registration by JFDA</td>
<td></td>
</tr>
</tbody>
</table>
Critical Role of IP Policies
Importance of clear IP Policies

- IP policies inform R&D investment and objectives
  - e.g. USA, South Africa, and Philippines

- Roadmap for international negotiation positions and hence inform trade policies as well as development policies

- Provide mechanisms of stimulating socio-economic development
Case Study: USA
Bayh Dole - Impact of University Ideas

- Prior to Bayh-Dole, government used to own intellectual property developed in university and federal laboratories

- Bayh-Dole Legislation
  - Ownership with universities and federal laboratories – institutional IP Policies
  - Empowered to commercialise their intellectual property and innovations
  - Preference for SME
  - Substantial manufacture in the USA
Case Study: USA
Bayh Dole - Impact of University Ideas

Universities creating 1.25 new products a day

Campus patenting 495 issued patents in 1980
3,278 issued patents in 2005

4,932 academic licenses in 2005
28,349 active licenses overall

Biotechnology industry rooted in academic research
Nanotechnology following similar trend

From: Joe Allen, USA, Ex-staffer to Senator Bayh,
Case Study: USA
Bayh Dole - Impact of University Ideas

- **STANFORD UNIVERSITY**
  - Recombinant DNA Cloning Technology (total royalties US$255 million)
  - Functional Antigen-Binding Proteins (total Royalties US$30.2 million)
  - FM Sound Synthesis (total Royalties US$22.9 million)

- **EMORY UNIVERSITY**
  - $525M Deal on ARVs developed by researchers at Emory
Case Study: South Africa
Innovation Policy Milestones

NSI Challenges:
• Existence of innovation “Chasm”
• Fragmentation of instruments
• Narrow definition of Innovation

Foundation for Technological Innovation (FTI)

R&D Strategy

Technology Foresight Studies

S&T White Paper

The “Knowledge Economy”:
• Knowledge = basic form of capital
• Economic growth driven by innovation

Foundation for Technological Innovation (FTI)

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Technology Foresight Studies

S&T White Paper

NSI Challenges:
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• Fragmentation of instruments
• Narrow definition of Innovation

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R&D Strategy

Technology Foresight Studies

S&T White Paper

TIA Act 2008

IPR-PFRD Act

10 Year Innovation Plan

OECD Review

## Case Study: South Africa

**Management of IP at Universities (2008)**

<table>
<thead>
<tr>
<th>Institution</th>
<th>IP Policy</th>
<th>Tech. Transfer Capacity (Year Established)</th>
<th>Institution</th>
<th>IP Policy</th>
<th>Tech. Transfer Capacity (Year Established)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rhodes University</td>
<td>Yes</td>
<td>No</td>
<td>University of Limpopo</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Walter Sisulu Metropolitan University</td>
<td>Yes</td>
<td>No</td>
<td>Tshwane University of Technologie</td>
<td>Yes</td>
<td>Limited (2005)</td>
</tr>
<tr>
<td>Durban University of Technology</td>
<td>No</td>
<td>No</td>
<td>University of KwaZulu-Natal</td>
<td>No</td>
<td>In process of establishment</td>
</tr>
<tr>
<td>University of Fort Hare</td>
<td>No</td>
<td>No</td>
<td>UNISA</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Cape Peninsula University of Technology</td>
<td>No</td>
<td>No</td>
<td>University of Western Cape</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Vaal University of Technology</td>
<td>No</td>
<td>No</td>
<td>CSIR</td>
<td>Yes</td>
<td>Yes (2001)</td>
</tr>
<tr>
<td>Central University of Technology</td>
<td>No</td>
<td>No</td>
<td>University of Fort Hare</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Mangosuthu University of Technology</td>
<td>No</td>
<td>No</td>
<td>University of Zululand</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Vaal University of Technology</td>
<td>No</td>
<td>No</td>
<td>Agricultural Research Council (ARC)</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Medical Research Council (MRC)</td>
<td>Yes</td>
<td>Yes (2004)</td>
<td>Mintek</td>
<td>Yes</td>
<td>Limited</td>
</tr>
</tbody>
</table>
Case Study: South Africa
Case Study: South Africa:
The State of Patenting by Public Institutions
Impact of various Policy Decisions and Initiatives

2002 R&D Strategy
Patent Support Fund
IPR Policy Framework - 2006
Technology based support services for and directed towards creation of SMEs

Universities of Technology - technology base
- Provides engineering capabilities
- High value equipment
- Linkage to needs of industrial clusters

Key industrial clusters include:
- Agro-processing and Chemicals
- Primary and Secondary Manufacturing
- Tooling and Metal Casting

Human capital development - engineering and technical skills
Case Study: South Africa
THRIP Programme

- Grants to universities partnered by industry
- Human capital development
  - postgraduate students
  - industry-academic exchanges
- Applied research for industry
- Competitive Funding
- Development of Intellectual property that industry exploits
South Africa’s strengths and challenges are amplified in Gauteng – opportunity to be a leader in innovation

- 22% of the national population (11.2 million)
- 34% of South Africa’s GDP
- 11% of Africa’s GDP
- 52% of the share of national R&D (2008-2009)
- 63% of national trade
- Host to > 40% of South Africa's SMMEs
- 33% of GHG emissions and power demand
**Gauteng Innovation Strategy**
- A more efficient use of resources – both public and private – delivering on objectives of various provincial government strategies and policies
- Creation of new and valuable knowledge relevant to social and economic priorities
- Support movement towards an advanced, knowledge-based economy by creating appropriate functions and infrastructure.

**Gauteng province ...2/3**

**GEGDS**
- Becoming an innovating economy
- Innovation extends beyond high-tech R&D land includes ICT and socio-economic innovations and environmental breakthroughs to support green jobs and growth

**New Growth Path**
- Knowledge and green economies
- Opportunities for investment and employment in manufacturing; new energy technologies; knowledge-intensive sectors of ICT, healthcare, mining-related technologies, pharmaceuticals and biotechnology
Case Study: South Africa
Gauteng province ...2/3

- Focus – ICT, Biosciences and Green Economy
- Multi-helix collaborations and networking
- Incubation and Skills Development
Case Study: South Africa

Importance of an Integrated Approach

Lawsuit against the Government of South Africa

(February 18, 1998)
Case Study: South Africa
Importance of an Integrated Approach

Do National Measures that require the involuntary transfer or withdrawal of IP rights achieve the long term developmental goals of developing countries?

Lawsuit against the Government of South Africa
(February 18, 1998)
WHAT OTHER OPTIONS?

Under Patents Act: Section 4 (National Emergency) and s56 (compulsory licensing)
# Case Study: South Africa

Importance of an Integrated Approach

Section 15c to the Medicines and Related Substances Control Act

<table>
<thead>
<tr>
<th>Rank</th>
<th>Cause of Death</th>
<th>%</th>
<th>Group %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>HIV/AIDS</td>
<td>39.0</td>
<td>58.9</td>
</tr>
<tr>
<td>3</td>
<td>Tuberculosis</td>
<td>5.0</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Diarrhoeal diseases</td>
<td>3.8</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Lower respiratory infections</td>
<td>3.8</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Low birth weight</td>
<td>3.3</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Protein-energy malnutrition</td>
<td>1.4</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Septicaemia</td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Neonatal infections</td>
<td>0.8</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Bacterial meningitis</td>
<td>0.8</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Stroke</td>
<td>2.7</td>
<td>9.9</td>
</tr>
<tr>
<td>9</td>
<td>Ischemic heart disease</td>
<td>2.4</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Diabetes mellitus</td>
<td>1.2</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Hypertensive heart disease</td>
<td>1.1</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Chronic obstructive pulmonary disease</td>
<td>0.9</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Asthma</td>
<td>0.8</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Nephritis / nephrosis</td>
<td>0.8</td>
<td></td>
</tr>
</tbody>
</table>

Table 1: Initial Burden of Disease Estimates (2003)
The minister may prescribe conditions for the supply of more affordable medicines in certain circumstances so as to protect the health of the public, and in particular may-

(a) notwithstanding anything to the contrary contained in the Patents Act, 1978 (Act No. 57 of 1978), determine that the rights with regard to any medicine under a patent granted in the Republic shall not extend to acts in respect of such medicine which has been put onto the market by the owner of the medicine, or with his or her consent;

(b) prescribe the conditions on which any medicine which is identical in composition, meets the same quality standard and is intended to have the same proprietary name as that of another medicine already registered in the Republic, but which is imported by a person other than the person who is the holder of the registration certificate of the medicine.......... and which originates from any site of manufacture of the original manufacturer ............... may be imported;

(c) prescribe the registration procedure for, as well as the use of, the medicine referred to in paragraph (b).
Case Study: South Africa
Importance of an Integrated Approach
Section 15c to the Medicines and Related Substances Control Act

☑ South Africa still faces significant economic and health disparities
  ▪ approximately 40% of South Africans are living in poverty – with the poorest 15% in a desperate struggle to survive.

☑ HIV / AIDS and TB account for > 45% of all deaths in South Africa

☑ Potential benefits of compulsory licenses
  ▪ Lower price of AIDS pharmaceuticals to protect health of public
  ▪ Make AIDS pharmaceuticals more affordable

☑ Need for balance
  ▪ Service needs of needy
  ▪ Build absorptive and R&D capacity
4. **State bound by patent.**

A patent shall in all respects have the like effect against the State as it has against a person: Provided that a Minister of State may use an invention for public purposes on such conditions as may be agreed upon with the patentee, or in default of agreement on such conditions as are determined by the commissioner on application by or on behalf of such Minister and after hearing the patentee.

56. **Compulsory licence in case of abuse of patent rights.**

(1) Any interested person who can show that the rights in a patent are being abused may apply to the commissioner in the prescribed manner for a compulsory licence under the patent.

[Sub-s. (1) substituted by s. 45 (a) of Act No. 38 of 1997.]
Case Study: South Africa

Importance of an Integrated Approach

Public Policy Considerations – Medicines Control Act and IPR Act

- **MEDICINES CONTROL ACT – s31**
  Provisions of Medicines Act (giving Govt autonomy to grant licenses where pressing need arises)

- **IPR from Publicly Financed Research and Development Act, 2008**
  **Objects of Act**
  
  2. (1) The object of this Act is to make provision that intellectual property emanating from publicly financed research and development is identified, protected, utilised and commercialised for the benefit of the people of the Republic, whether it be for a social, economic, military or any other benefit.
  
  (g) where necessary, the State may use the results of publicly financed research and development and the attendant intellectual property in the interest of the people of the Republic.
Concluding Remarks  ...1/2

- Intellectual Property Policy, strategies and Legislation has to be relevant

- Must meet demands of global knowledge driven economies as well as local and regional development

- An integrated approach provides certainty and options – options to negotiate mutually beneficial outcomes

- Must be aligned with other developmental policies and strategies, e.g. Health Policy, Innovation Policy, Industrial Policy, Foreign Policy, Education Policy,
Modern Economies are knowledge based economies

Intellectual property is the currency in modern economies – value lies in the intangibles

Patent Offices have a critical role in assisting government, institutions as well as private sector to establish appropriate IP Policies and strategies

Holistic approach to IP Policies required
Certainly an inventor ought to be allowed a right to the benefit of his invention for some certain time. It is equally certain it ought not to be perpetual; for to embarrass society with monopolies for every utensil existing, and in all the details of life, would be more injurious to them than had the supposed inventors never existed... How long the term should be is the difficult question.

—Thomas Jefferson, 1807
THANK YOU
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