Diversification and innovation strategies in natural resource-rich economies: Benchmarking Azerbaijan and Kazakhstan

Thomas Andersson
Astana, October 23, 2013
Disposition

- Technical progress and Globalisation
- R&D and Innovation
- NREs and Benchmarking
- Way forward
Technical Progress and Globalisation
From Genomic research to Connecting Cars ...it’s Only the Beginning

... and places us to a world where IT truly moves from cost center to innovator and key business enabler
Science and ICT Technologies

• High-speed communications and advance computation give rise to the era of e-Science.

With a proper scientific e-Infrastructure, researchers in different domains can collaborate on the same data set, finding new insights.

They can share the data across the globe, protecting its integrity and checking its provenance.

They can use, re-use and combine data, increasing productivity.
Empowering and Ubiquitous

... not using technology for technology's sake!

Around us: cars, toys, home, automation ...

On us: watches, clothes...

Between us: who is who, can know and rely on ...

In us: RFID tags for health care and automatic payment ...

... not using technology for technology's sake!
Interwoven Knowledge linkages

Development Capacity (DC)
- Knowledge creation
- Knowledge exploitation

Absorptive Capacity (AC)
- Access external knowledge
- Anchor external knowledge
- Diffuse knowledge

External knowledge
Globalisation, FDI Flows (% of GDP, 2011 or latest available)

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<tr>
<th>LOCATION</th>
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<td>WITHIN FIRM</td>
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**OFFSHORING**

*In-firm offshoring*

*Domestic outsourcing*

*International outsourcing*

*Vertical integration abroad*

*Global sourcing*

*Source:* based on Van Welsum and Vickery (2004), Miroudot et al. (2009) and Sturgeon (2009)
“Smile Curve”
R&D and Innovation
R&D Expenditure % of GDP

Source: The World Bank (KAM)
Innovation related finance
FINLANDIA

GOBIERNO CENTRAL

CENTROS DE IYD

UNIVS

EMPRESAS
CHILE

GOBIERNO CENTRAL

UNIVS.

CENTROS DE IYD

EMPRESAS
Innovation Output
Patents granted/mill. People (2005-09)

Source: World Bank (KAM, 2013)
Innovation

• Definition … “the customer” decides
• Technological – non-technological
• Incremental - radical
• Open innovation
• Social innovation
• Innovation system
Abandoning the linear model

Increased intensity in linkages through ICT

Supply: R&D

Innovations

Demand: Market

Ideas technologies

Researchers

Entrepreneurs

Customers

Competitors
Open innovation model

Supply and demand

• Innovation stimulated from two ends
• Enormously enhanced opportunities
• Requires specialisation and collaboration
• Learning around your core business
• New combinations
• Experimentation, risk-taking
# Evolution of Innovation Metrics

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<td>·Benchmarking innovation capacity</td>
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<td>·Tech intensity</td>
<td>·Quality change</td>
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<td>·Demand</td>
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<td>·Risk/return</td>
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NREs and Benchmarking
Undiversified economy
High-technology exports (% of manufactured exports)

Source: The World Bank, 2010 or latest available
Assets: Natural Resource-based; Manufacturing; KBE

**Capital:** Abundant, depleting; Fixed, expensive; Intangible

**Labour:** Abundant unskilled; More expensive; Expensive

**Knowledge:** Expensive; Specialised; Complex

**Infrastructure:** Good; Good; Very good

**Governance:** Strong state; industrial relations; Market driven

**Examples:** GCC, Kaz, Az; Brazil, Korea; Nordics, Japan, US
Natural resource-based economies

- Production process: multidimensional, spanning from extraction, exploration, manufacturing, and services
- High purchasing of existing technologies rather than in-house R&D
- Resource innovation influenced by degree of collaboration with suppliers, customers, competitors, governments …
- Tendency for innovation to focus on processes and distribution of low-to-medium goods and services rather than high-value products and services
- Bulk of innovation activities in large extensively internationalised firms, deficit of dynamic SMEs and opportunity-based entrepreneurship
## Competitiveness ranking, 2013-14

<table>
<thead>
<tr>
<th>Index rank</th>
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*Source: The Global Competitiveness Report 2013-2014*
## Macroeconomics and Infrastructure, 2013-14

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*Source: The Global Competitiveness Report 2013-2014*
### Education & Training, 2013-14

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*Source: The Global Competitiveness Report 2013-2014*
# Labour Market, 2013-14

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## Goods market efficiency, 2013-14

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*Source: The Global Competitiveness Report 2013-2014*
# Technology Readiness, 2013-14

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*Source: The Global Competitiveness Report 2013-2014*
The most problematic factors for doing business


- Insufficient capacity to Innovate
- Tax rates
- Tax regulations
- Government instability/coups
- Foreign currency regulation
- Corruption
- Policy instability
- Inadequate supply of infrastructure
- Access to financing
- Inefficient government bureaucracy
- Inflation
- Poor work ethic in national labour force
- Inadequately educated workforce
- Restrictive labour regulations

Kazakhstan
Azerbaijan
The most problematic factors for doing business

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- Inadequate supply of infrastructure
- Access to financing
- Inefficient government bureaucracy
- Inflation
- Poor work ethic in national labour force
- Inadequately educated workforce
- Restrictive labour regulations

The most problematic factors for doing business

- Insufficient capacity to Innovate
- Tax rates
- Tax regulations
- Government instability/coups
- Foreign currency regulation
- Corruption
- Policy instability
- Inadequate supply of infrastructure
- Access to financing
- Inefficient government bureaucracy
- Inflation
- Poor work ethic in national labour force
- Inadequately educated workforce
- Restrictive labour regulations

Kazakhstan
Azerbaijan
Korea
Penetration of selected ICTs, 2012
(per 100 people)

Source: ITU, 2013
Governance Indicators: Government Effectiveness

Source: WGI, Worldwide Governance Indicators
Way forward
Central Asia – Context

- High Growth based on natural resources, dip with crisis but recovered.
- Critical challenge to diversify away from oil & gas and large public sector with high cost levels
- Political stability but efficiency and trust issues
- Generational changes; informed, wired and educated young, but quality problems in education, mismatch with labor markets
- Emphasis on real estate and tangible investment
- Not yet inspirational and inclusive approach to research, innovation and entrepreneurship!!
Nexus of issues

- Incentives for Long Term Commitment
- Opportunity-based Entrepreneurship
- Risk and Failure
- Quality Education
- Seed and Venture Capital
- Coordination Collaboration
- IPR infrastructure
- Public Private Partnership
- Investment Law
- Mindset
- Research, innovation
- Risk-taking
## On Mindset

<table>
<thead>
<tr>
<th></th>
<th>Reactive</th>
<th>Receptive</th>
<th>Constructive</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Attitude</strong></td>
<td>We follow the rules</td>
<td>We do what we have to in smartest way</td>
<td>We look for competitive advantages</td>
</tr>
<tr>
<td><strong>Position</strong></td>
<td>Defensive</td>
<td>Acceptance</td>
<td>Conscious decision</td>
</tr>
<tr>
<td><strong>Perceived impact</strong></td>
<td>Threat</td>
<td>Competition neutral</td>
<td>Opportunities</td>
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<tr>
<td><strong>Typical solution</strong></td>
<td>Filter on pipe</td>
<td>Process change</td>
<td>Product development/innovation</td>
</tr>
<tr>
<td><strong>Collaboration partners</strong></td>
<td>Technical specialists</td>
<td>Responsible within the industry</td>
<td>Customers, suppliers, competitors</td>
</tr>
<tr>
<td><strong>Focus</strong></td>
<td>Cut costs</td>
<td>Optimize investment</td>
<td>Carve out strategic edge</td>
</tr>
</tbody>
</table>
Key to Value-Creation

- **Specialisation;** A sharp portfolio of strengths, permeating research, graduate education and innovation

- **Critical mass;** Sufficient own and networked resources and capabilities to create a unique platform

- **Bridging;** Academia engaged with society; businesses and entrepreneurs that engage with academia; medical research, hospitals and care centres linked with society

- **Environment;** A living, green and smart city, or rural areas that are “alive” - conducive to active life and sustainable development

- **Wellness;** Healthy lifestyle and a vibrant medical & health sector

- **Governance;** Quality control, efficiency, inclusion
Experience/service-based business development as a source of differentiation, growth & innovation

Firm’s product enhanced via sales & marketing services & experiences (storytelling, events, product launches, competitions)

Outsourced experiences & services support world-class operational delivery

Experiences & services provide added revenue streams for firm’s core product

Systems, Not Silos...
Essentials

• Knowledge era
• Innovation, trust and inclusion
• Diverse networks and human relations
• Soft power
• Local identity, user-centric
• Inspiring entrepreneurship, coaching, mentoring
• Embracing what is inexperienced, challenging the incumbent – overcoming rigidity
• Content driven by relevance and engagement
Regulatory Framework and Incentives

- Enabling tangible and intangible investment, incl. research funding and innovation support (fiscal incentives not most important)
- Governance, public goods provision coupled with strong stakeholder engagement and influence
- Public – private partnership (pooling of risk, diverse contributions, requires: legal structure that is transparent and lenient, operational modalities, principles for funding and for participation)
- IPR (flexibility to negotiate win-win, qualified support by institution to innovator)
- Embrace knowledge-based entrepreneurship, start-ups and diverse sources of investment (all funding components)
- Employment (40-40-20, under responsibility)
Gazelle Society

• Jumping stages of infrastructure development
• Foregoing vested interest formation
• Overcoming fragmentation and mediocrity
• Creating user- and needs-driven innovation and development-oriented communities
• Building on cultural strengths for enhanced creativity and embracing entrepreneurship and innovation
• Provide the enablers – seed-funding and mechanisms for entry, competence development and growth
Natural resource-based innovation governance

- Strong governance promoting constructive collaboration
- Promoting cross-sectoral technology transfer
- Strong leadership in engineering mindset change: from sunset to strategic sector - vision of resource based sector as innovative and creative
- Promoting diversification through product innovation, adding design, intelligence, experience industry aspects …
- Promoting constructive university – industry linkages, in research and in higher education
- Improving image in market, sustainable development, societal relevance
From evaluations as events to evaluations as learning processes

Innovation System Analysis = hypothesis

Evaluations produce data by which corrections of the innovation system analysis and programme plans continuously are made

"Timing matters"
Traditional positioning of innovation policy

Implicit positioning of innovation policy

Explicit positioning of innovation policy

Explicit positioning of innovation policy with interactions