Innovation, Industrial Dynamics and the Global Economy

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Adapting IP to a digital word for Diversification and Transformation
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The world economy has become more integrated

- Rising **share of trade in world output**, initially through increased flows amongst advanced economies, but with increasing developing countries participation since the 1970s.

- Dramatic rise of cross-border capital flows, including **foreign direct investment (FDI)**.

- **Restructuring of production around GVCs**: goods are no longer made in one country and shipped, but go through many stages (each associated with a specific task) traversing several geographic borders and adding components and value before they reach their final markets.
GVCs made new actors entering in global trade dynamics

BUT

Top 20 WORLD FDI destination cities, 2013-15 in automotive

- Tianjin
- Shanghai
- Wuhan
- Guangzhou
- Rayong
- Bekasi
- Karawang
- St. Petersburg
- Chongqing
- Chennai
- Kribi
- Tanger
- Silao
- Monterrey
- San Luis Potosi
- 1.8
- 1.5
- 1.1
- 1.0
- 1.4
- 1.2
- 0.9
- 0.9
- 1.3
- 1.5
- 2

Source: UNITED NATIONS UNCTAD
Top 20 WORLD FDI destination cities, 2013-15 in electronics
Top 20 WORLD FDI destination cities, 2013-15 in textile
Game changers

• Supply side: accelerated pace of innovation (automation & digitisation)

• Demand side: changing aspirations and values (green production & transport, workers rights)
The use of robots has increased rapidly since 2010
Digitization is affecting all aspects of businesses, but at different speeds

The Industry Digitisation Index of US industries, 2017

<table>
<thead>
<tr>
<th>Selected sectors</th>
<th>Overall digitalisation</th>
<th>Digitalisation indices</th>
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<tbody>
<tr>
<td>ICT sector</td>
<td>High</td>
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<tr>
<td>Finance and insurance</td>
<td>High</td>
<td>High</td>
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<tr>
<td>Wholesale trade</td>
<td>High</td>
<td>Medium High</td>
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<tr>
<td>Oil and gas</td>
<td>Medium High</td>
<td>Medium High</td>
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<tr>
<td>Advanced manufacturing</td>
<td>Medium High</td>
<td>High</td>
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<td>Government</td>
<td>High</td>
<td>High</td>
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<tr>
<td>Personal and local services</td>
<td>High</td>
<td>High</td>
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<tr>
<td>Retail trade</td>
<td>High</td>
<td>High</td>
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<td>Education</td>
<td>High</td>
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<tr>
<td>Transportation and warehousing</td>
<td>High</td>
<td>High</td>
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<tr>
<td>Basic goods manufacturing</td>
<td>Medium High</td>
<td>Medium High</td>
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<tr>
<td>Health care</td>
<td>High</td>
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<td>Construction</td>
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<td>High</td>
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<tr>
<td>Hospitality</td>
<td>Medium High</td>
<td>High</td>
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- Early mover now digitising labour
- Digitising assets but low usage
- Wide variation
- Long tail of small firms with basic digital
- Local, fragmented and variable
GVCs in transition
Changes in the organisational structure

Key trends in innovation and demands are driving change in the organization of production.

The digitisation of manufacturing is redefining the organization of production within and between firms (and the source of rents).

From (traditional) OEM- or retail-centred chains to platform- and consumer-centred chains.
The Traditional GVC

- Design of the product and retail are retained by controlling firm (OEM/ODM)
- Production and assembling of components are outsourced
The Platform-centred GVCs

- Data is an asset (main source of power)
- Control found in networks and platforms
- Demand-side economies of scale & huge first mover advantage
The Consumer-centred GVC

- Customer design (linked to innovation, e.g., 3D printing)
- Local on-demand production
- Demand for sustainability
- Platform still keep control & capture value
The future is already here….but not (yet?) for all Disparities Across Countries – Geographical concentration

Robot density in manufacturing (robots per 10,000 employees)
The future is already here….but not (yet?) for all Disparities Across Countries

Internet connection speed & share of fast connection

Source: OECD Development Centre elaboration on Akamai Faster Forward State of the Internet Report, 2017
Raising disparities across firms – Market concentration
The era of superstars

Ratios of market capitalization of the top 100 non-financial firms, 1995–2015

Observed share of top 100 firms relative to observed share of bottom 2,000 firms (right scale)

UNCTAD TDR 2017
What are the drivers of rising market power and concentration?

Average labour productivity of the top 100 firms compared with all other firms, 1995−2015
Digital Polarization?

- Market concentration and noncompetitive pricing are particularly evident in information intensive & digital activities.

- Digital content can be spread instantly facilitating the attempts of market expansion & new avenues have been opened to create artificial scarcity and erect fences wherever possible.

- E.g. “network effects”, through which the benefits associated to the use of a service raise with the number of users, give rise to the capture of consumers and “demand-side economies of scale” which allow the largest firm in an industry to increase its attractiveness to consumers.
Going Forward

- **Regulation! Regulation! Regulation!** (domestic & global to avoid market capture, increase competition & reduce rents)
- **Investment! Investment! Investment!** (the transition towards the new industrial & services model will require high(er) level of investments)

**Current Outcomes**
- Higher heterogeneity
- Growing divides
- Risk of marginality
- Growing concentration

**Prosperity for all**
- More inclusive and sustainable economies
- Tailor-made solutions
- Stronger regional & globally connected production systems

**DESIGN BETTER POLICIES**
- Deeper understanding dynamics of industries/sectors
- Renewed strategies for production transformation
The PTPRs are a Policy Assessment Tool to identify actionable policy options and detect future opportunities.

The PTPRs build on a 5 pillar framework for effective governance and for successful production systems:

- **Anticipation capacity**: The capacity of the private and public sectors to detect future opportunities, factor in voices for change, and anticipate change.
- **Adaptation capacity**: The capacity of the private and public sectors to adapt to external conditions and take actionable steps.
- **Embeddedness potential**: The capacity of the private and public sectors to create long-term linkages and capture/retain local value.
- **Interconnectedness propensity**: The density and variety of networks in which the agents of the production and innovation systems, as well as government institutions, are involved and the capacity to deal with them.
- **Learning and upgrading potential**: The quality and quantity of the learning base and the system’s attitude towards learning by doing and knowledge accumulation.
On-going PTPRs

Peers
- Colombia
- Chile
- Shenzhen (PRC)
- Sweden
- Germany
- Emilia Romagna (Italy)
The PTPR of Chile: a 15-month country targeted support process

Multi-stakeholder consultations in the country
International peer-review (Government of Emilia Romagna, Italy; NIR-Sweden, DLR- Germany)

• Shared visions for the future
• Concrete recommendations in going forward to transform Chile
• Taking stock of experiences for knowledge sharing with other countries Initiative for Policy Dialogue on GVCs, Production Transformation and Development as a space for continuous policy support, reporting of reforms’ implementation and monitoring of global changes

5 Pillars for the PTPRs

- Anticipation Capacity
- Adaptation Capacity
- Embeddedness Potential
- Interconnectness Propensity
- Learning and Upgrading Potential

5 dimensions for assessing the potential of production and innovation systems and policies for transformation and upgrading
Chile is a relatively stable, high growth and open economy and Chileans today are on average better off than in the 1990s.

Three barriers hamper future progress:

- **Low productivity**
- **Limited diversification** leaves the country vulnerable
- **High concentration** of economic opportunities in few activities, firms and regions limits innovation
PTPR Chile focus on innovation

Chile lags behind in public and private R&D

2015
PTPR Chile focus on innovation

Chile Manufacturing sector invest little in R&D

R&D investment as share of manufacturing value added, 2015
PTPR Chile focus on innovation

Chile lags behind leading mining countries in innovation

Panel A: R&D intensity in mining, 2015

Panel B: Total R&D personnel/1 000 employees, 2014
Risk of de-sophistication

Copper production stages, Chile and China, 2003-16

Kilo metric ton (kMT) of copper content, by production stage
Chile has taken steps to **transform** the economy and reap the **benefits** of new demands and technologies.

### Current agenda

**Continuity**

1. Modernising the state
2. Facilitating business development
3. Fostering skills development and innovation

**Novelty**

4. Enabling public-private partnerships to address strategic challenges

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### Progress overview of Chile’s strategic programs, 2017

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<tr>
<th>Governance dimensions</th>
<th>Progress Overview</th>
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<tbody>
<tr>
<td>Anticipation capacity</td>
<td>Long term road maps</td>
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<td>Adaptation capacity</td>
<td>Revision of the road maps</td>
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<td>Learning and upgrading potential</td>
<td>Public private consultation</td>
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<td>Interconnectedness propensity</td>
<td>Synergies among different programs</td>
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<td>Embeddedness potential</td>
<td><strong>Within government</strong></td>
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<td>Private sector</td>
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<td>Academia</td>
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<td>Civil society</td>
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<td><strong>International</strong></td>
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<td>Standards and norms</td>
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<td><strong>Open government and effective M&amp;E</strong></td>
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**DEFINING NEEDS WITH A LONG-TERM VISION**

- Multi-stakeholder dialogue

**IDENTIFYING THE POLICY MIX FOR ACTION**

- Skills R&D and Innovation
- Norms & Standards
- Infrastructure & Logistics

**MOBILIZING INVESTMENT**

- Public and private financing
To consolidate the progress made Chile will need to:

• Advance in modernizing the state to cope with a fast-changing, uncertain and complex landscape (greater cooperation across line ministries)

• Strengthen and institutionalize anticipation capacity (increased dialogue and improved information flows across all affected stakeholders)

• Advance towards a place-based approach to policy making (increasing capabilities in local governments & implementing effective mechanisms for resource transfers)
Conclusions

• Globalization has delivered a *partial* prosperity

• New opportunities, new challenges

• Policy (and politics) matters:
  – Regulation to escape market concentration
  – Investment to escape geographical concentration

• Domestic and Global action needed (act *together*)