Innovation for Inclusive Structural Change.
A framework

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Outline

A proposed framework (Ciarli et al., 2018)
- A framework to unpack Inclusive Structural Change (ICS), and trade-offs between innovation, structural change and inclusion
- The political economy of Inclusive Structural Change

What to do?
- What are the policy challenges (beyond the above trade-offs)?
The heart of the matter

- **Innovation** is a component of (economic) development
- **Structural change** is central to economic development (Hausmann and Hidalgo, 2011; Hidalgo et al., 2007)
- Innovation is often **disruptive** (Schumpeter, 1911), and may have **distributional consequences** (Aghion et al., 2015; Lee, 2011; OECD, 2015)
- Economic growth and structural change tend to **reduce poverty** (Ravallion and Chen, 2003), but the extent depends on how income is distributed (Bourguignon, 2003)
- The concept of **inclusive innovation** is still loose and the understanding of how it can be achieved is limited (Chataway et al., 2014; Cozzens and Sutz, 2014)
- We know little about how **inclusion affects innovation and SC**
Inclusive structural change (Ciarli et al, 2018, IDRC project)

- **WHAT**: Theoretical map to understand how a number of variables, actors, and interactions affect
  - the diffusion of a given innovation (INN)
  - outcomes of structural change (SC) and inclusion (INC)
  - and their trade-offs: inclusive structural change?
- **HOW**: Investigate the role of a number of actors, and how they influence the outcomes
- **HOW MUCH**: Measure how innovation, structural change, and inclusion are related over time (in Saha and Ciarli, 2018) – to be presented tomorrow!
Innovation, Inclusion & Structural Change: a 3-ways chicken and egg issue

INNOVATION

STRUCTURAL CHANGE

INCLUSION

INN: innovation; SC: structural changes; INC: inclusion; EXC: exclusion
Pathways from Innovation to Outcomes

INN: innovation; SC: structural changes; INC: inclusion; EXC: exclusion
Dynamic relations in innovation pathways

INN: innovation; SC: structural changes; INC: inclusion; EXC: exclusion

Reinforcing mechanism
Between INN & SC

INN creates future INC

R: reinforcing mechanism

INN on INC

INN on EXC

INN creates exclusion

Reinforcing mechanism Between INN & SC

1
Dynamic relations in innovation pathways

INN: innovation; SC: structural changes; INC: inclusion; EXC: exclusion;

R: reinforcing mechanism
B: balancing mechanism

Opportunity & ability to generate innovations, accounting for relevant characteristics and external factors.

Reinforcing mechanism Between INN & SC
INN creates exclusion
INN creates future INC
INN on INC
INN on EXC

CAP: Capabilities

1 Reinforcing mechanism Between INN & SC
2
Dynamic relations in innovation pathways

**CAP: Capabilities**
Opportunity & ability to generate innovations, accounting for relevant characteristics and external factors.

**R: reinforcing mechanism**
**B: balancing mechanism**

1. Reinforcing mechanism Between INN & SC
   - INN on INC → INN
     - Improve capabilities, positive effect on future innovation
     - Capabilities are dispersed, no impact on further innovations

2. INN on EXC
   - INN creates exclusion

INN: innovation; SC: structural changes; INC: inclusion; EXC: exclusion;
Dynamic relations in innovation pathways

INN: innovation; SC: structural changes; INC: inclusion; EXC: exclusion; R: reinforcing mechanism; B: balancing mechanism

**R: reinforcing mechanism**
- INN on INC → INN
  - Improve capabilities, **positive effect** on future innovation
  - Capabilities are dispersed, **no impact** on further innovations

**B: balancing mechanism**
- INN on EXC → INN
  - No impact on capabilities, **no impact** on future innovation
  - Negative impact on capabilities for future innovation, **limiting further innovation**
  - Increase capabilities of only a certain population, which may in turn increase future innovation but also exclusion

**CAP: Capabilities**
Opportunity & ability to generate innovations, accounting for relevant characteristics and external factors.

INN creates future INC

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INN: innovation; SC: structural changes; INC: inclusion; EXC: exclusion; R: reinforcing mechanism (a positive shock in one variable induces a positive effect in the other variable); B: balancing mechanism (a positive shock in one variable induces a negative effect on the other variable). Blue indicates a positive impact; red indicates a negative impact. Source: Ciarli et al. (2018)
The ingredients of the framework
Relatively established dynamics

Innovation & Structural Change

- **[INN $\rightarrow$ + SC]** emergence of new sectors, increases in productivity and firm size, capital intensity, entrepreneurship, and changes in consumption patterns

- **[SC $\rightarrow$ + INN]** SC requires introduction of new technologies (Dosi 1997; Ruttan, 2002); Firms cope with the disequilibria generated by SC (Lundvall, 1992)
Relatively ambiguous dynamics

Structural Change & Inclusion [SC → INC?]

- Imbalances that accompany structural change – e.g.: capital accumulation, factors composition, substitution of domestic for foreign labour/knowledge, skills:
  - (i) increases income inequality in the short run (Kuznets, 1973; Ravallion, 2004),
  - decreases poverty (McMillan and Rodrik, 2011; UNU-WIDER, 2012)

Innovation & Inclusion [INN → INC?]

- Innovation generates winners and losers (Schumpeter, 1911; Helpman et al., 2010):
  - (i) income distribution
  - (ii) “frugal” innovation
  - (iii) grass-roots (Paunov, 2013)
  - (iv) Innovation may increase inequality but also social mobility (Aghion et al., 2015)
Does inclusion affect innovation in the long run?
- Some degree of oligopoly is required for firms to have an incentive and resources to innovate (Arrow, 1962; Malerba and Orsenigo, 1997)
- Background of inventors (Akcigit et al., 2017; Aghion et al., 2017)

Which forms of inclusion scale up to structural change?
- E.g. access to goods and finance (frugal)
- Grass-roots innovation?
How to make policies for inclusion **aligned** with policies that support innovation and structural change?

1. By empirically supporting **evidence** on the impact of inclusion on innovation (as in Saha and Ciarli, 2018, positive)

2. By designing **action to address territorial and mature sectors-related unbalances as a priority** (e.g. Savona, 2018)

3. By facilitating **macro economic redistributive policies** that tackle not only income inequality per se but increase the income of excluded parts of society and incentivize **demand-led innovation**

4. By more generally ensuring a **“governance of network alignments”** (e.g. in von Tunzelmann, 2003)
A new political economy of ISC

- **Gathering evidence** (qualitative and quantitative) on what variables, actors and processes are more likely to lead to inclusionary or exclusionary pathways

- **Steering Reinforcing mechanisms** for a virtuous circle between innovation, structural change and inclusion

- **Balancing the mechanisms that lead to** a scalable, but exclusionary innovation pathway

- **Steering and/or scaling up** the positive effects of innovation on inclusion that might fade away and not result in a virtuous circle
A research agenda on ISC

• **Revisiting the role of R&D** and traditional forms of technology transfer in the context of LMICs.

• As seductive as it is, grassroot innovation might not be the inclusion panacea for LMICs: **identifying conditions of scalability** and sustainability.

• **Identifying relevant opportunities for indigenous innovation** and making sure that indigenous innovation is scalable and made endogenous to change.

• Complementing the Innovation System approaches with perspectives on **power relationship** → perhaps revisiting the Governance of Network Alignment framework (von Tunzelmann, 1993).

• **Revisiting the role of demand and macro economic conditions** as affecting the diffusion process.

• A radical new approach to **indicators of ICS** and quantitative analysis should follow on from this framework.
Wrapping up

• What is inclusive structural change as a policy aim?

• What are the **conditions** by which innovation and structural change can be inclusive/exclusionary?
  - Innovation can be inclusive but not enough scaled up to enhance structural change and growth
  - Innovation can support structural change but be exclusionary
  - Inclusion might be conducive of innovation

• What are the **policies for inclusive structural change**?

• Are the **inclusive innovation policy** approaches enough?