

# 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)?

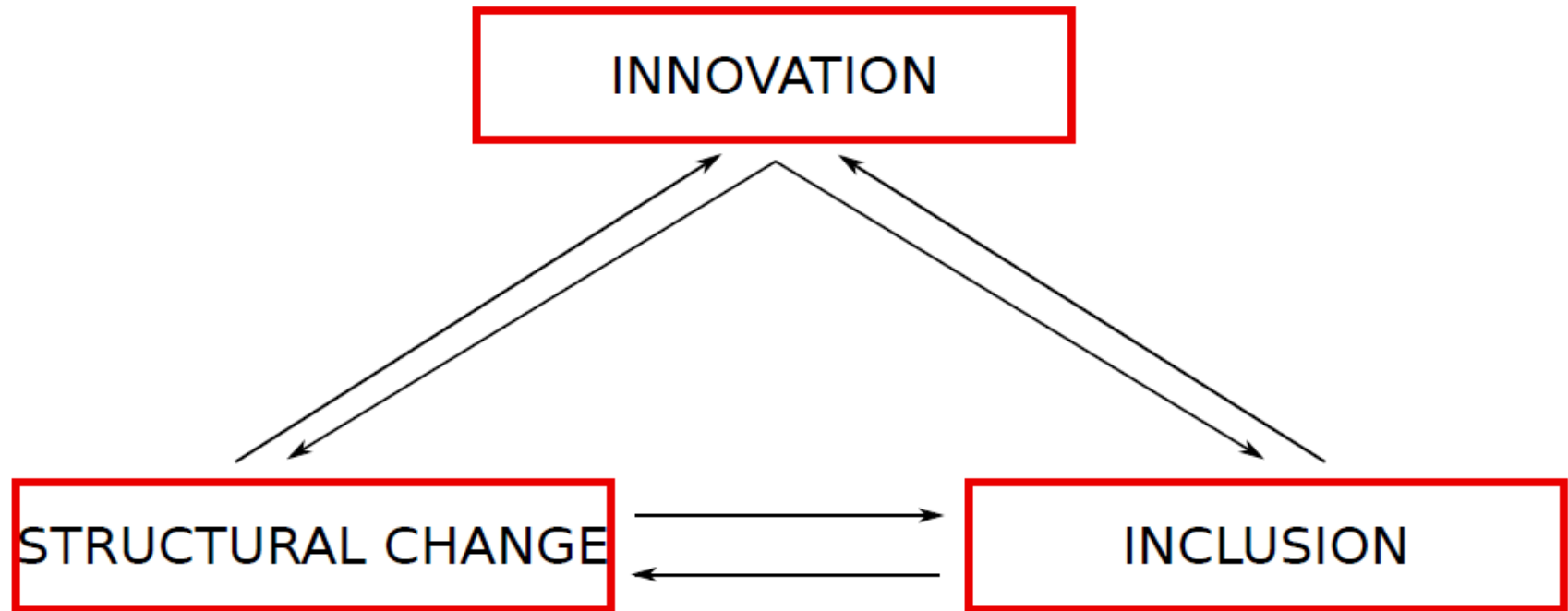
# The heart of the matter

- **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)

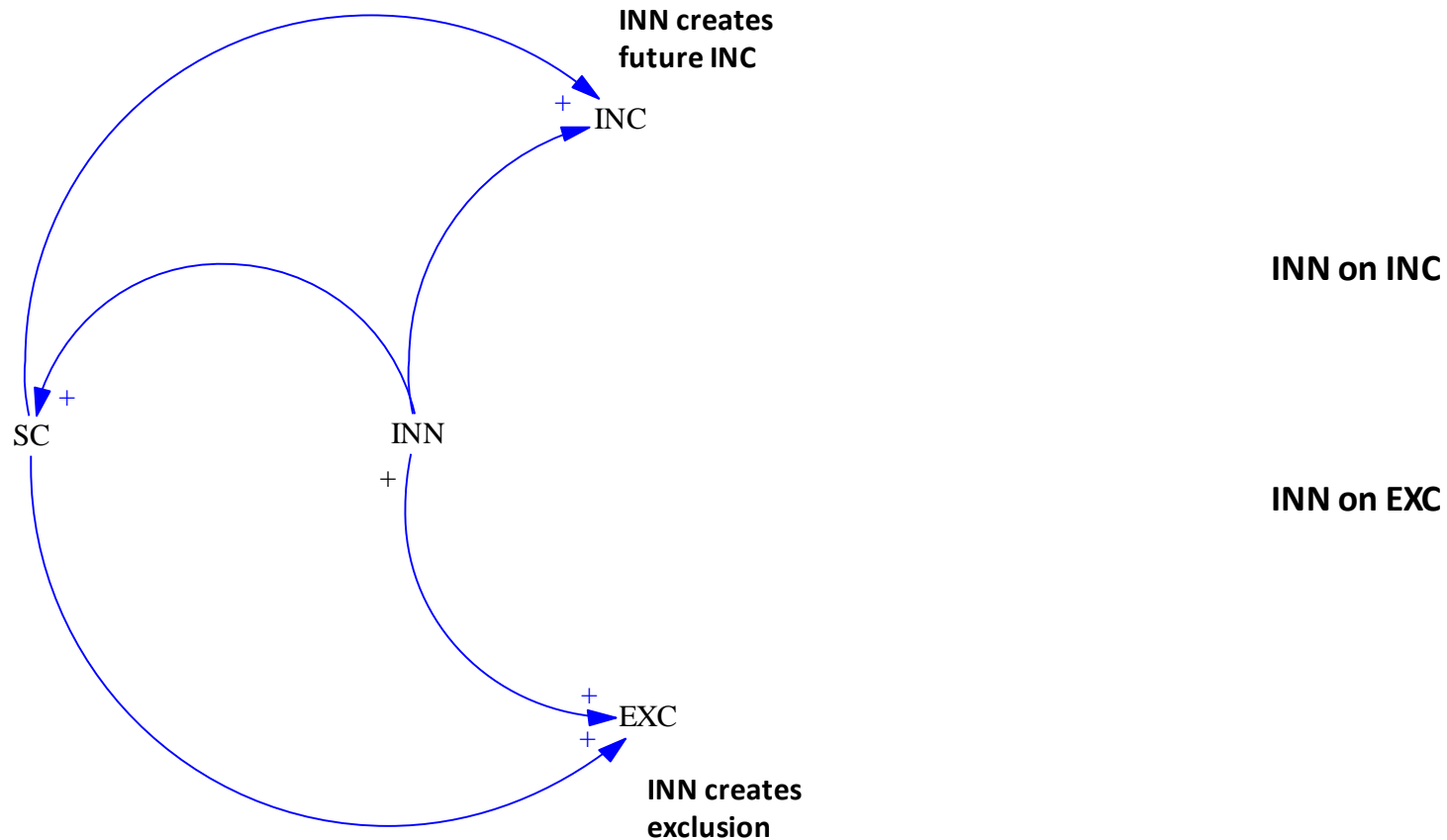
- **WHAT:** Theoretical map to understand how a number of **variables, actors, and interactions** affect
  - the diffusion of a given innovation (INN)
  - outcomes of structural change (SC) and inclusion (INC)
  - and their trade-offs: inclusive structural change?
- **HOW:** Investigate the role of a 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



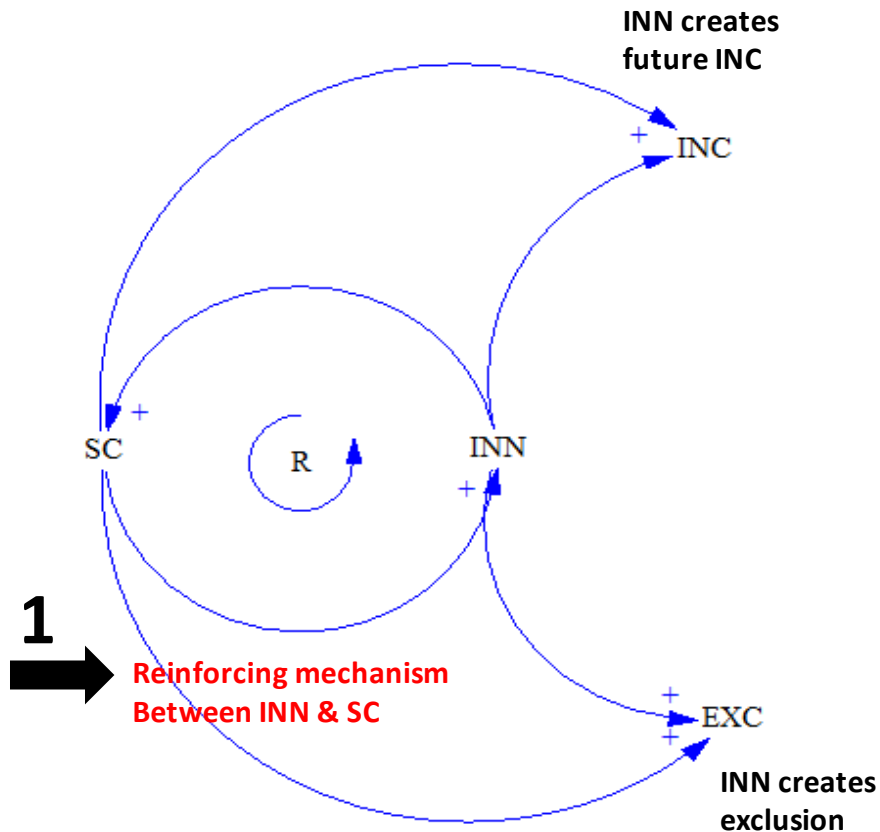
**INN: innovation; SC: structural changes; INC: inclusion; EXC: exclusion**

# Pathways from Innovation to Outcomes



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

# Dynamic relations in innovation pathways



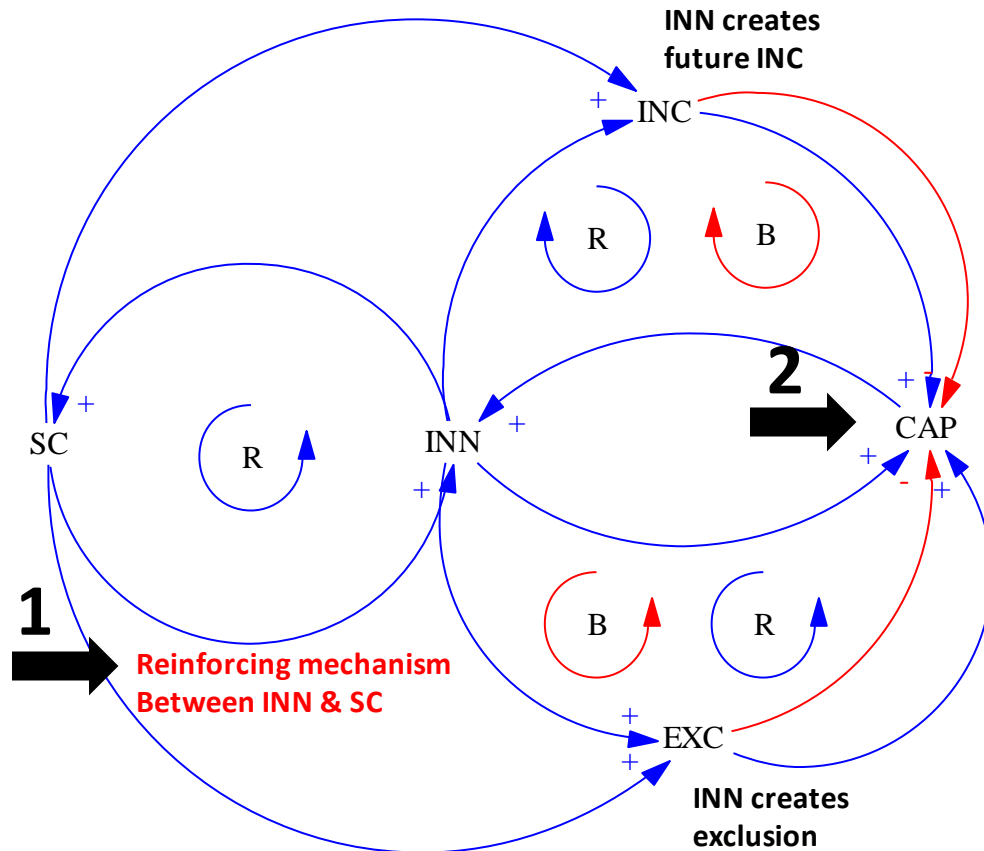
**R:** reinforcing mechanism

INN on INC

INN on EXC

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# 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

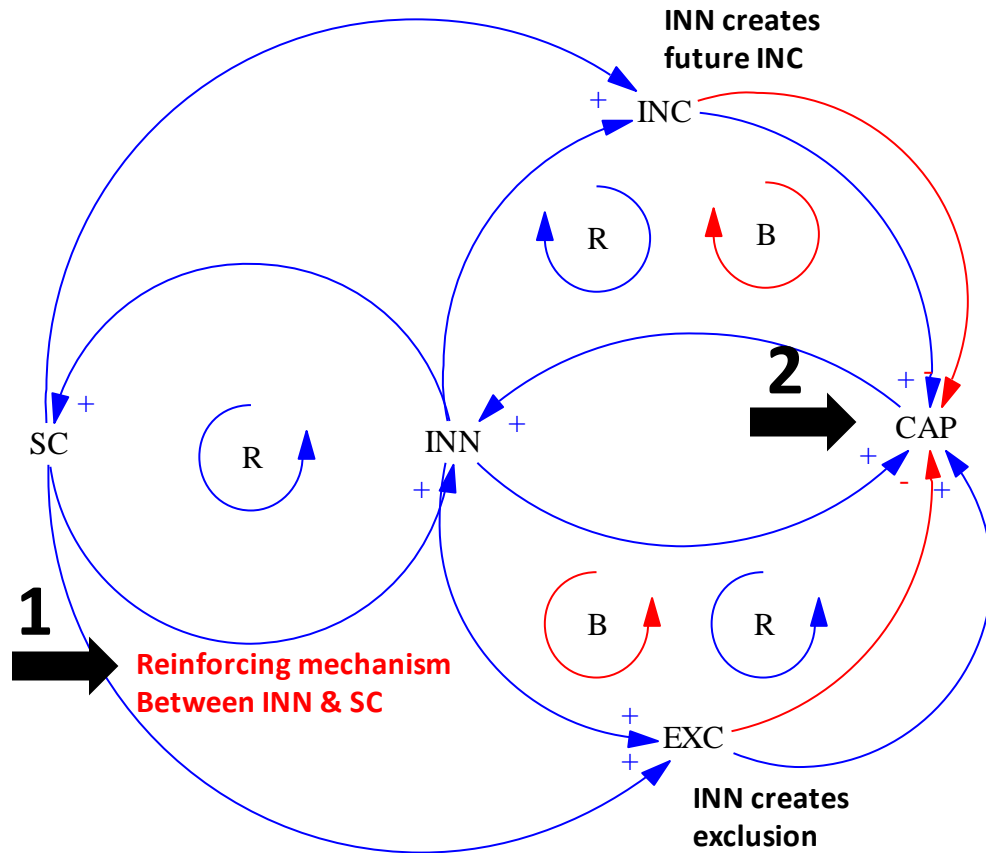
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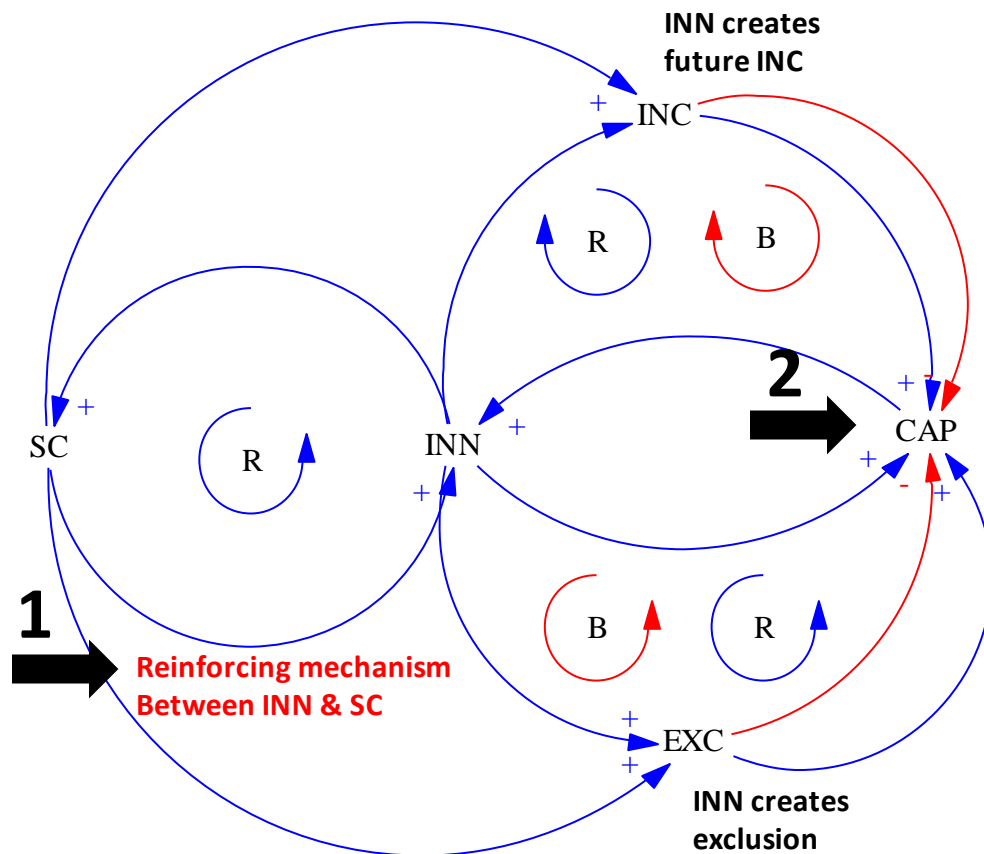
### INN on INC → INN

- Improve capabilities, **positive effect** on future innovation
- Capabilities are dispersed, **no impact** on further innovations

### INN on EXC

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

# Dynamic relations in innovation pathways



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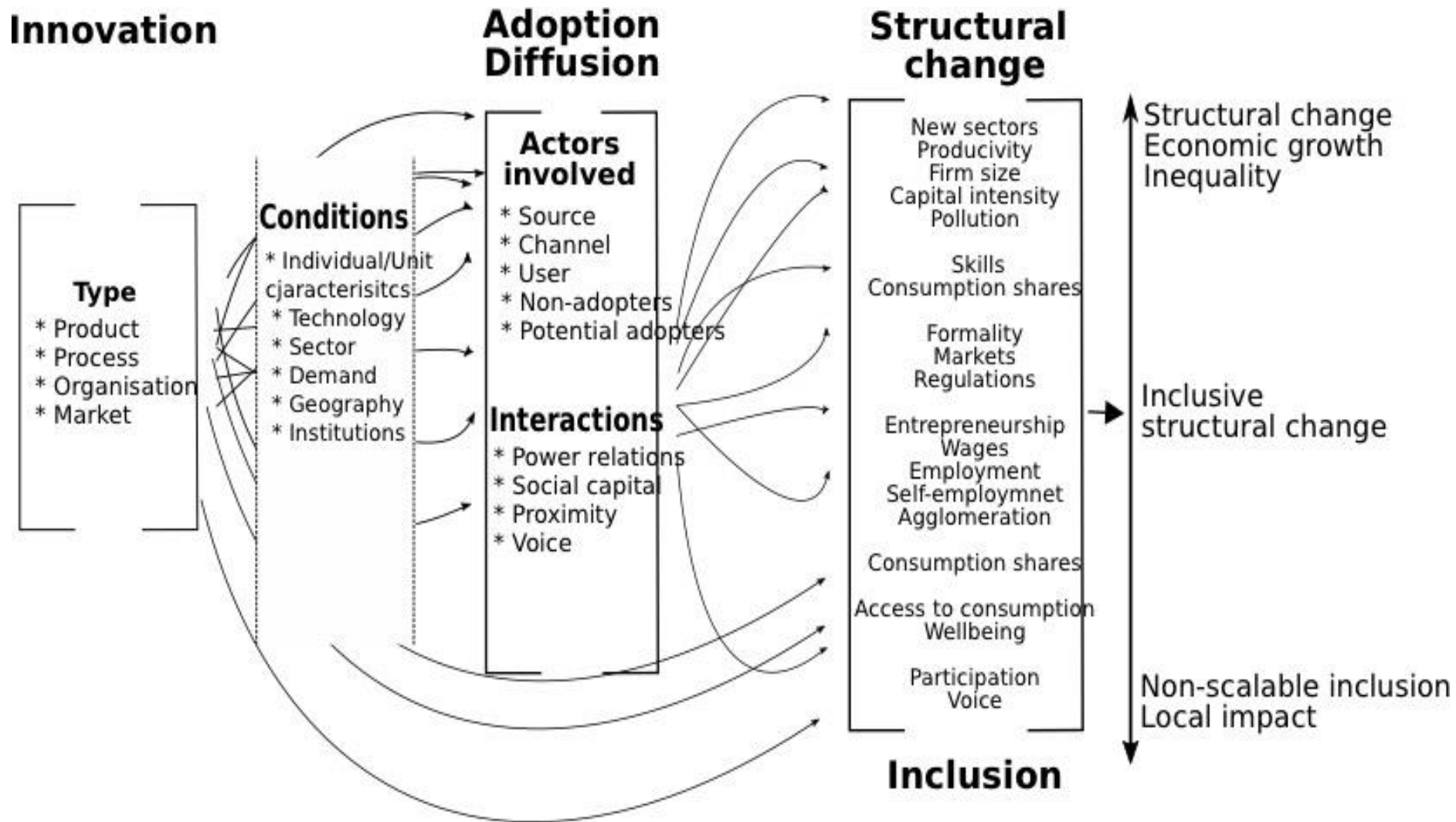
- Improve capabilities, **positive effect** on future innovation
- Capabilities are dispersed, **no impact** on further innovations

### 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**

INN: innovation; SC: structural changes; INC: inclusion; EXC: exclusion; R: reinforcing mechanisms {a positive shock in one variable induces a positive effect in the other variable; B: balancing mechanisms {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 → + SC]** emergence of new sectors, increases in productivity and firm size, capital intensity, entrepreneurship, and changes in consumption patterns
- **[SC → + 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)

# Under-researched and unknown dynamics

- **[INC → INN?]** 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)
- **[INC → SC?]** Which forms of inclusion scale up to structural change?
  - E.g. access to goods and finance (frugal)
  - Grass-roots innovation?

# How to ensure a virtuous INN → SC → INC → INN?

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, grassroots 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?