



# Agricultural development traps in Central Asia

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# A snapshot of IAMO

- Founded in 1994 in Halle, Germany
- Member of Leibniz, an association of non-university research centers
- Core funding from Federal & State budgets, ~ 4,6 mln. € annually
- 3 academic departments
- 112 colleagues, approx. 20 nationalities
- 36 PhD students

## Key tasks:

- Economic research on the agricultural & food sector in Central & Eastern Europe, Central Asia, China
- Training & promotion of young researchers
- Being a forum of academic exchange



# Organisational structure

Foundation Board

Directorate

Scientific Advisory Board

## Departments

Administration,  
Central Services  
and Technical  
Support

External  
Environment for  
Agriculture and  
Policy Analysis

Agricultural  
Markets,  
Marketing and  
World Agricultural  
Trade

Structural  
Development of  
Farms and Rural  
Areas

Policy Reforms and Institutional Change

Structural Change and Business Growth

Employment and Livelihoods

Competitive Strategies and Market Requirements

Main Research Areas

Staff Department

Public Relations,  
External Funds and  
Research Management

IAMO Graduate School

China International Research Group

Coordination Group  
Research

Internal Working Groups

Interest Groups

# My presentation

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1. Agricultural development traps in Central Asia
  - What is a development trap
  - The water governance trap
  - The agricultural diversification trap
  - The entrepreneurship trap
2. Policy implications
3. The role of the social sciences
4. Future research directions
5. Funding options

Acknowledgements:

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Forschungsgemeinschaft



Bundesministerium für  
Ernährung, Landwirtschaft  
und Verbraucherschutz

# What is a trap?



# 3 modes of water governance in Central Asia

## Collapse:

- Frequent droughts
- Widespread food insecurity
- Degraded natural environment
- Political conflict
- ...

## Status Quo:

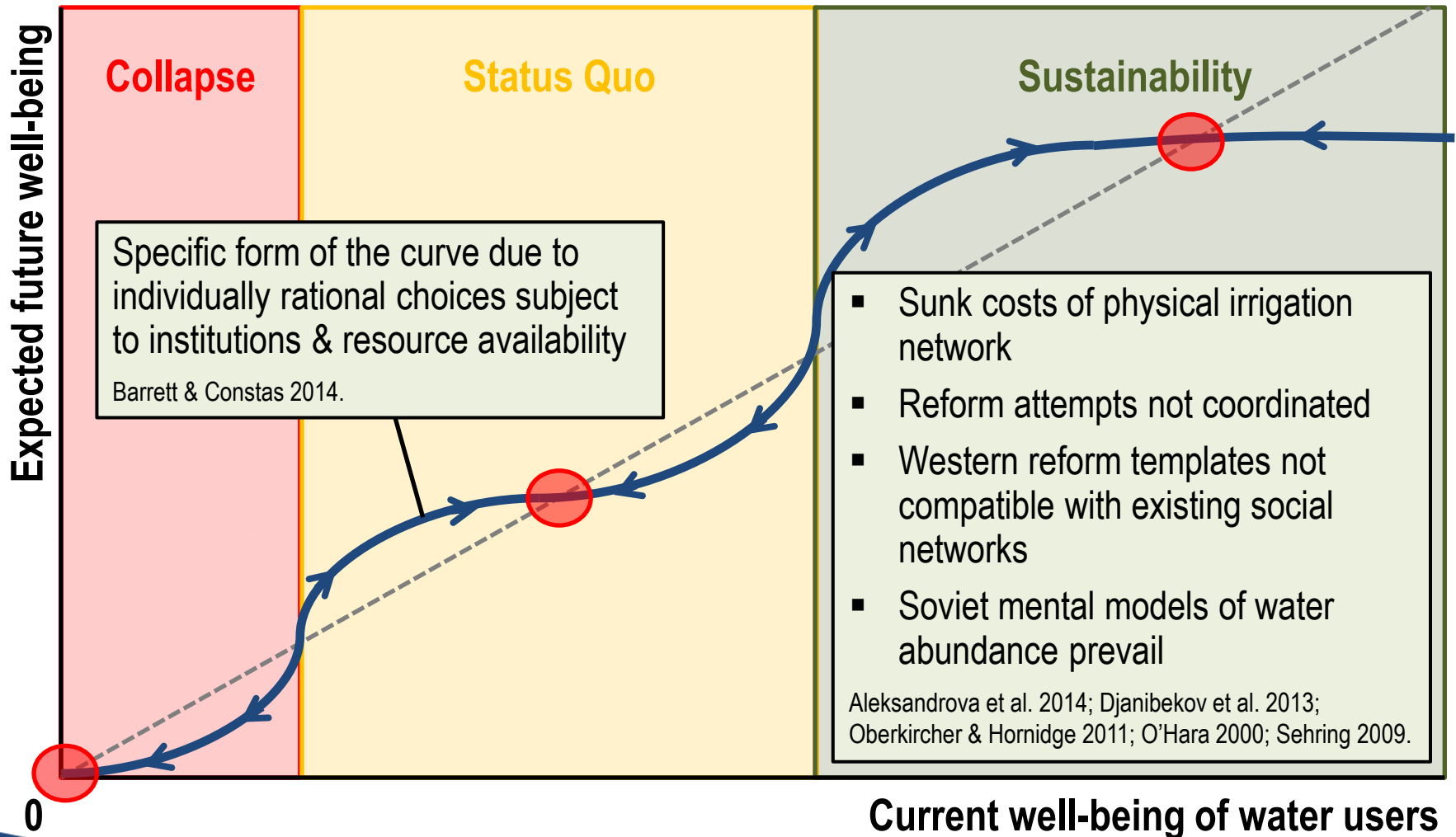
- Irrigated agriculture a main source of employment, food security, export revenue
- Dominance of a few water demanding crops (cotton, rice)
- Dilapidated water infrastructure
- Salinization of soils & water
- Uncertainty over climate change-induced variations in water availability, droughts
- Little real change in rules of water administration after independence
- Water a transboundary political issue

## Sustainability scenario:

- Improved water-use efficiency (revised norms, water storage, irrigation technology, pricing, ...)
- Crop diversification
- Perennial crops
- Rehabilitated soils
- Reliable trade options
- ...

Based on Aleksandrova et al. 2014; Bucknall et al. 2003; Martius et al. 2012; Sehring 2009.

# The water governance trap



# The agricultural diversification trap

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Imagine farmers can organise their production in 2 ways:

- STATUS-QUO focus on cotton, wheat, rice
- DIVERSIFY into vegetables, potatoes, maize, sorghum

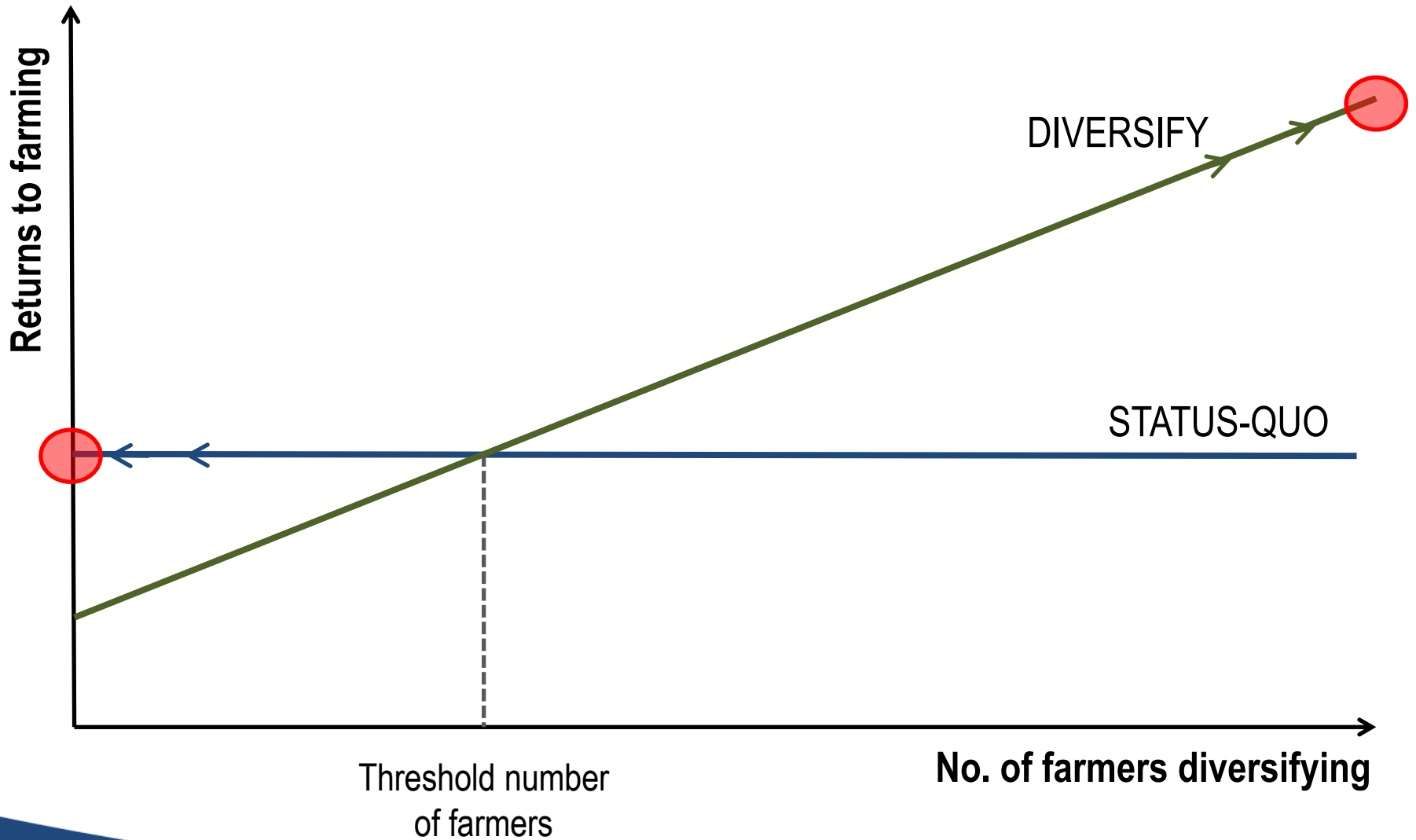
Assume returns to DIVERSIFY **increase** with the number of farmers diversifying because of:

- High fixed costs in setting up a new value chain
- Making upstream- & downstream-traders interested requires critical mass of producers
- Positive learning externalities reduce risk exposure

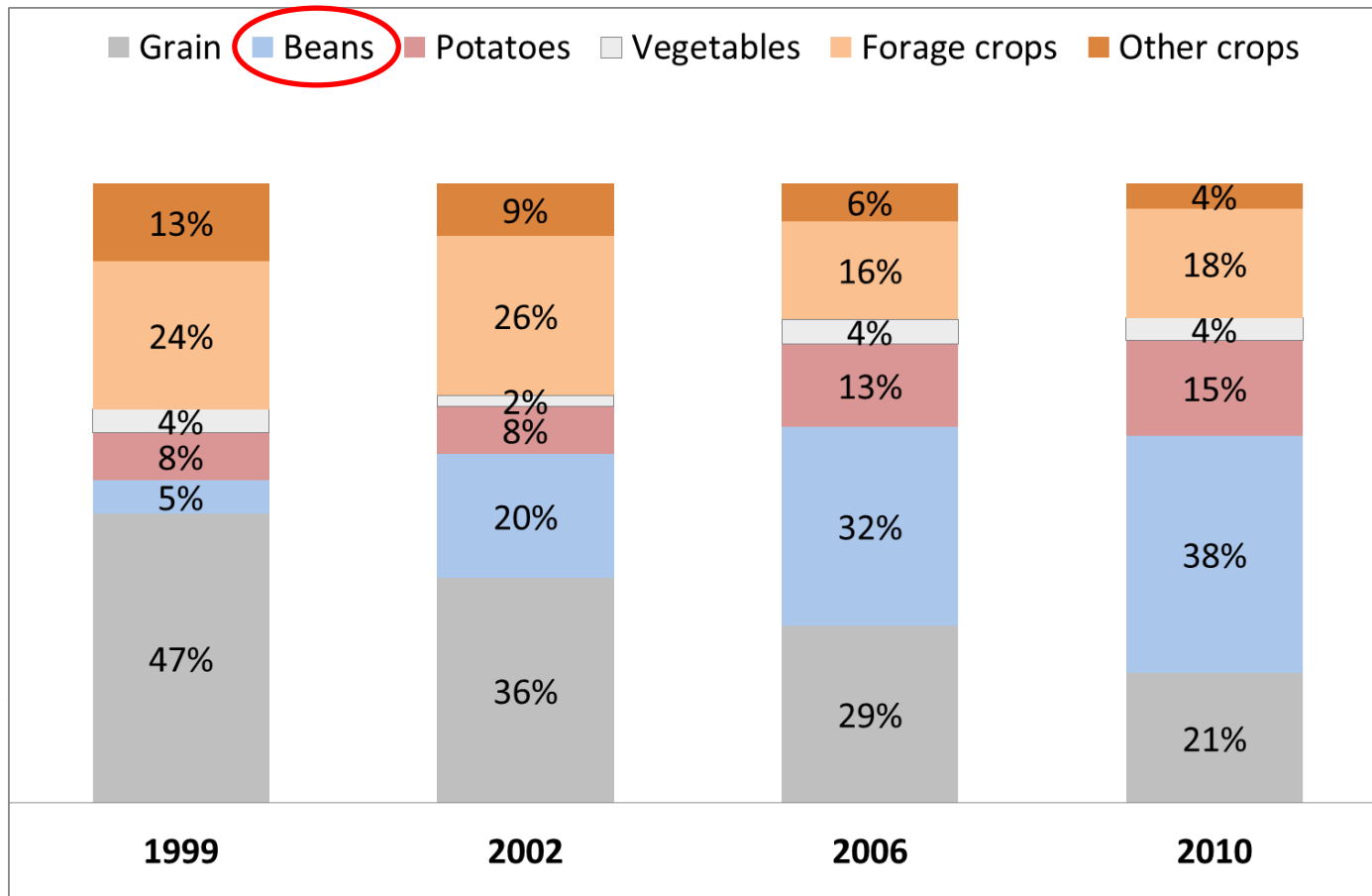
Based on ideas in Bobojonov et al. 2013; Petrick & Carter 2009.



# The agricultural diversification trap



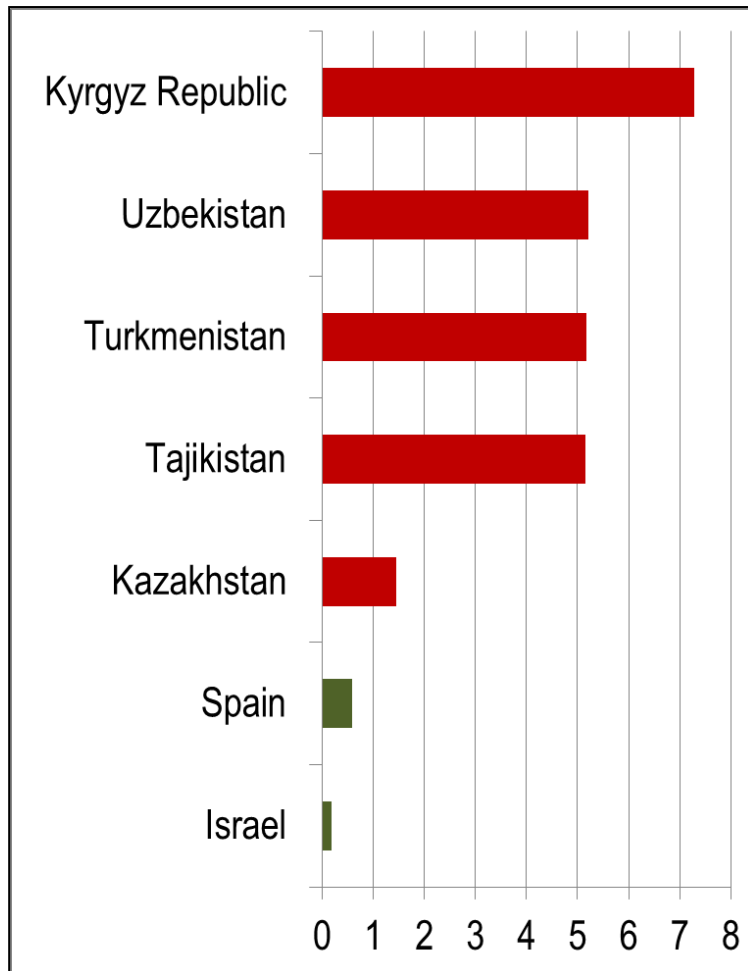
# Land use dynamics by crop in Talas (Kyrgyz Rep.)



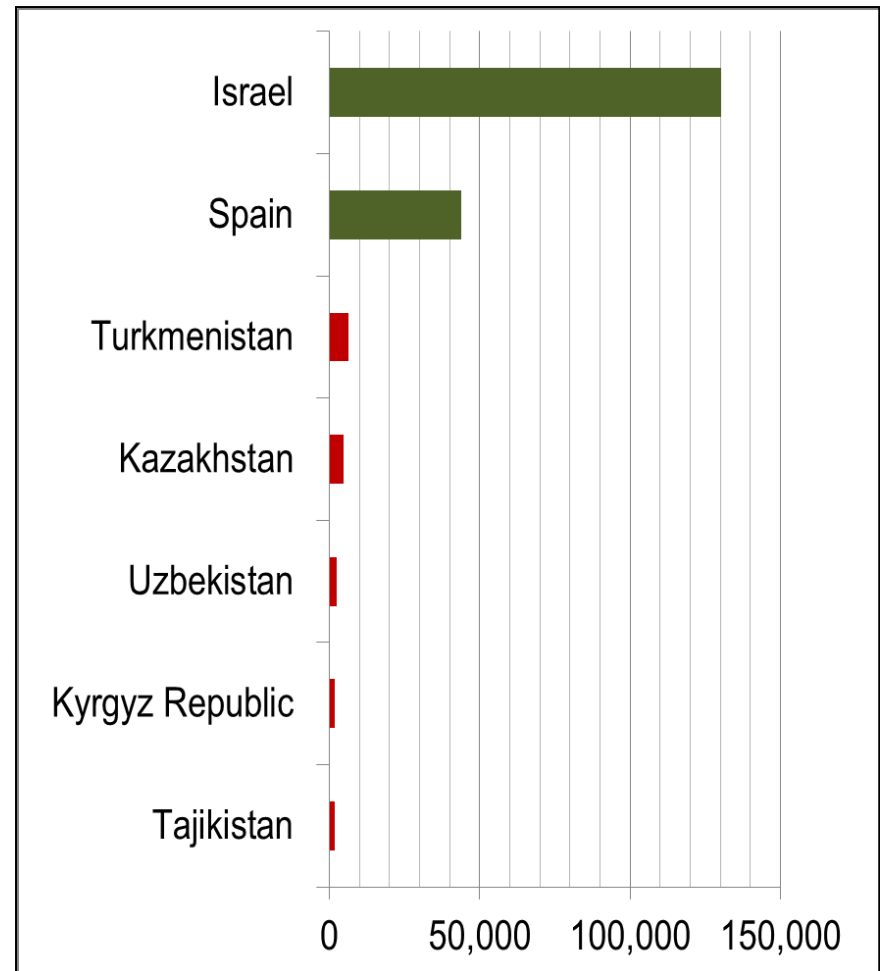
Source: Tilekeyev 2013, University of Central Asia.

# Water wasting & disguised unemployment in agr

## Water use (m<sup>3</sup>) per US\$ agr. GDP



## GDP per agr. worker (US\$)



Data for 2012 or latest available. Sources: FAO Aquastat, ILO, World Bank.

# The entrepreneurship trap

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**Hypothesis: Development of the non-agricultural sector provides jobs to farmers & pulls them out of water-consuming activities.**

Imagine 2 types of entrepreneurs:

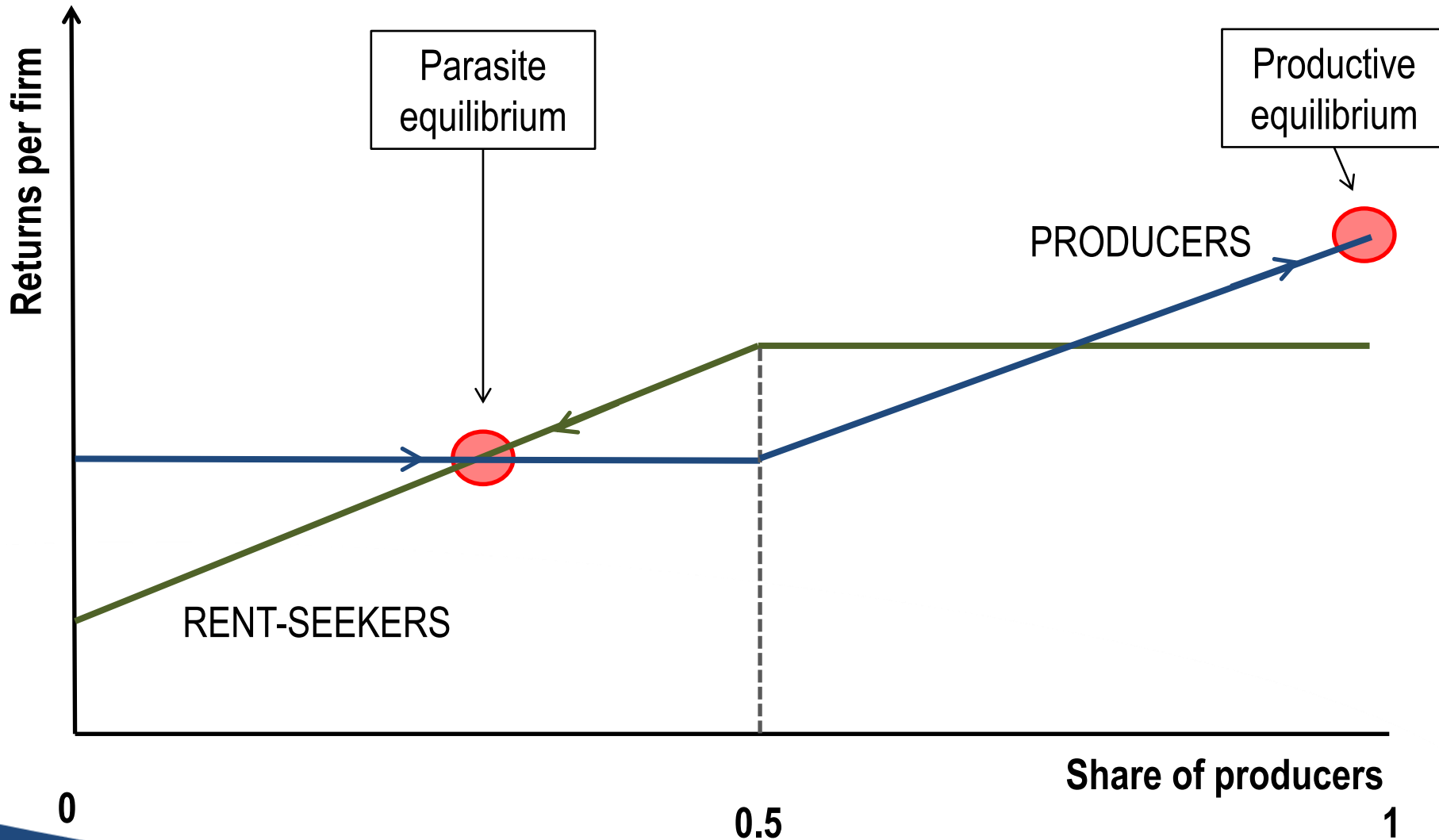
- PRODUCERS create value,
- RENT-SEEKERS live on the proceeds of others, e.g. petty corruption, organised criminals, political insiders, Mafia, “parasites”

Assume returns per firm **increase** with an increasing share of PRODUCERS in the economy:

- For RENT-SEEKERS: as long as there are more rent-seekers than producers, because the likelihood of finding a rent-seeking target goes up
- For PRODUCERS: once there are more producers than rent-seekers, because the likelihood of extortion falls

Based on ideas in Mehlum et al. 2006; Varis 2014.

# The entrepreneurship trap



# Commonalities among examples

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- Existence of **multiple equilibria**
- Attracting states are dynamically stable, or self-reinforcing
- Traps cannot be left by marginal perturbations of the system
- Outcomes are **historically contingent**, or path dependent
- Local homogeneity potentially coexists with global heterogeneity
- There are “**good**” & “**bad**” equilibria
- Pareto inferior (“bad”) situations may persist for a long time
- **Vulnerability** may be defined as a threshold-sensitive probability of falling into a worse state
- **Resilience** may be defined as the ability to stay in a “good” equilibrium Barrett & Constanas 2014

# Policy implications

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## Three main policy approaches:

1. Shift to new equilibrium by large resource transfer (“big push”)
2. Insure vulnerable groups against downside risks (e.g. by social policies)
3. Change underlying parameters of dynamic evolution, i.e. conduct fundamental institutional reforms

## Practical consequences:

- Marginal improvements (e.g. induced by donor projects) unlikely to overcome self-stabilising traps
- Grave shocks may have lasting consequences
- Potential coordinator role for the government, but
- Massive information & incentive problems to be expected
- Change unlikely unless a sufficient fraction of actors behave differently

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**THANK YOU!**

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