

# Property rights in the knowledge economy: an explanation of the crisis

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## ***Outline of the argument***

- Some roots of the recent crisis may be found in the global convergence towards a model characterized by strong private property rights on knowledge and an extremely limited role attributed to “open science”
- The crystallization of this ownership structure of the knowledge economy due to institutional complementarities:
  - At the firm level, gives rise to a “**property rights paradox**” that impedes an allocation of rights congruent with the intrinsic characteristics of knowledge
  - At the global level, inhibits investments and widens the **global imbalances** between savings and investments
- The main policy suggestion is that an exit from the current crisis is related to a **transformation of property relations** and to a **reduction of inequality** through the public sharing of knowledge

## ***The “property right paradox” of the knowledge economy***

- The knowledge-intensive characteristics of the present economy should favour small size firms, managed, or even owned, by the people working in them.
- By contrast, firms size as well as traditional forms of capitalist ownership show little sign to undergo a substantial change in contemporary knowledge-intensive economies
- Why we do not observe a radical shift towards the allocation of organizational rights to workers?

***Physical-capital-intensive economy***  
***vs.***  
***Knowledge-intensive economy***

- In a physical-capital-intensive economy
  - Even if a multiplicity of equilibria is always possible, the capital-hiring-labour solution is likely to prevail.
  - An **high relative intensity of physical capital** should be correlated to a **high intensity of high-agency-cost capital**.
  - This would make the labour-hiring-capital solution very expensive in terms of agency costs.
- In a knowledge-intensive economy:
  - Disembodied **knowledge** capital is a **non-rival good** and the marginal cost of its use should be negligible.
  - **Knowledge** is mostly **embodied in individuals**
  - This should imply that **the labour-hiring-capital solution should have lower agency costs** than the capital-hiring-labour solution.

## ***The missing element: knowledge privatization***

- The favourable trend for the labour-hiring-capital arrangement is based on the idea that knowledge is **a public good** and therefore a global common available to everyone.
- However, knowledge is a public good in the sense that it is a **non-rival good** but **exclusion** of others from intellectual ownership is well possible.
- Knowledge privatization influences the relative profitability of alternative property rights allocations
- The typologies of firms that tend to prevail in the knowledge economy will crucially depend on the role and the **relative weights of the institutions of open science and the degree of private IPRs** protection
- The **private ownership of knowledge** may be even more damaging for the labour-hiring-capital solution than the ownership of large quantities of physical capital.

# *The implications of knowledge privatization*

- **Non-rivalry**

- jf agents can hold exclusive monopoly rights on knowledge, the use of the latter is going to be rather expensive and it is likely to **increase the agency costs of labour-hiring-capital firms** even in comparison to those which make an intensive use of physical capital.

- **Embodied knowledge**

- the knowledge intensive economy may **restrict its human capital intensity to the individuals who have IPRs**.
- the hazard of investing in human capital specific to particular IPRs is greater than that of investing in human capital specific to certain machines.

- **Size matters**

- each additional unit of knowledge which is owned produces more than proportionally **opportunities to exploit the complementarities** with the others and makes it even more valuable to produce or acquire from small firms additional knowledge
- the greater the concentration of knowledge, the **lower the unit cost of defending the exclusive ownership** rights on each unit of knowledge

# Privatized knowledge and human capital

These effects have self-reinforcing properties

↑ accumulation of IPRs  $\Leftrightarrow$  ↑ investment in human capital

And, vice-versa

↓ accumulation of IPRs  $\Leftrightarrow$  ↓ investment in human capital

We are likely to have **vicious and virtuous circles** of **cumulative causation**, leading to asymmetric and increasingly divergent investment patterns in human capital.

## ***From the firm- to the macro-level***

- The extent of knowledge privatization currently characterizing the so-called "knowledge economy" prevents the shift a property rights allocation congruent with the intrinsic nature of what has become the most important factor of production in the knowledge-intensive economy.
- This property rights allocation, in turn, hampers incentives to invest in human capital by workers, leading to a self-reinforcing equilibrium whereby the prevailing property rights allocation within the firm tends to perpetuate itself.
- The same sort of **institutional complementarities** that block the micro-level change in the property rights structure of firms **crystallize a property rights equilibrium at the macro level**, i.e. in the allocation of property rights among countries, again with profound impacts on investment.
- This state of affairs, in turn, tends **to deepen global imbalances** in the allocation of intellectual capital that may have enduring effects on the ability of the economy to recover from the crisis.



# ***Why do we observe the current (excessive) extent of knowledge privatization?***

- **Geopolitical changes associated to the Cold War**
  - The free circulation of defence-sponsored knowledge after the Cold War created the preconditions for the rise of the knowledge economy (Visco, 2009)
  - absent traditional geo-political barriers, a private need to restrict access to crucial knowledge assets arose exactly at a time when the public and private benefits from their unrestricted circulation were becoming most apparent (TRIPS)
- **Economic integration**
  - In an open economy, the degree of knowledge “closeness” chosen by governments tends to be excessive because of **externalities**
  - The effect of **private lobbies** reinforces this tendency
  - Over-upstreaming reinforces private IP that acts as a **global tariff** protecting the most technologically advanced countries (which are also the most powerful ones).
- **Misleading intellectual rethoric**
  - It implicitly assumes a **linear relationship** between the degree of "closeness" (i.e., appropriability) of knowledge and investment in new knowledge production
  - It implicitly assumes that the **institutions of open science work for free**

# Knowledge privatization and the global allocation of IPRs

- Global IP protection **influences the global division of labour** and the **comparative advantage of different countries**, diminishing investment opportunities in countries characterized by lower IP intensity
  - it favours countries with a greater “initial endowment” of IPRs;
  - It favours countries producing more intensively intellectual resources easily amenable to IP protection

# Knowledge privatization and investment

- Far from being linear, the relationship between the degree of “closeness” and investment is more likely to be described as an **inverted-U**.
  - For low degrees of "closeness", short-term incentives to invest increase because of the increased appropriability of the benefits from one's innovation.
  - However, as the degree of "closeness" increases, the extent of blockage to the productive utilization of knowledge also increases, with the result that investment may be hampered.
  - The extent of blockage is higher, the more **upstream** is the knowledge protected by IPRs

## Understanding some roots of the present crisis...

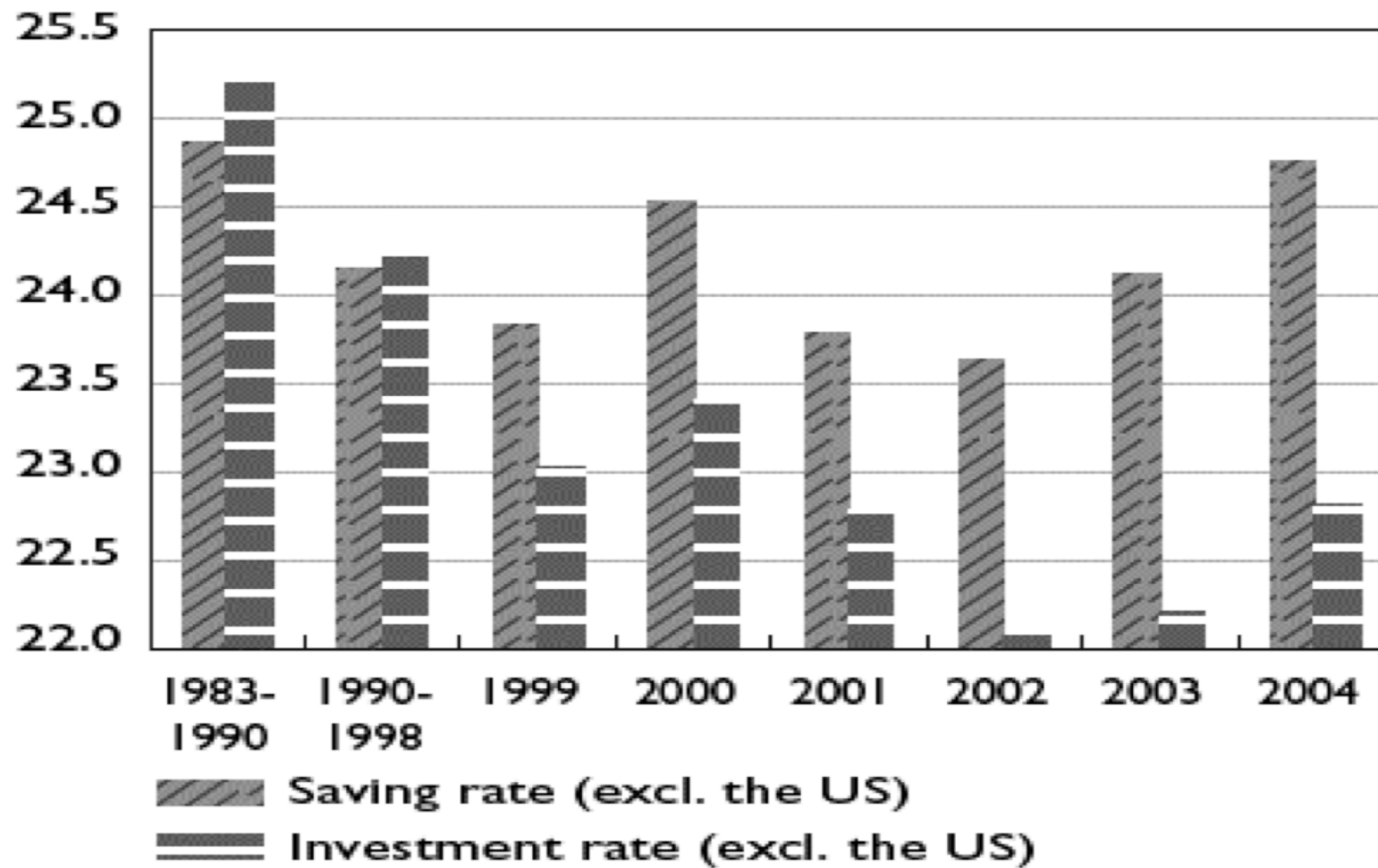
- The emergence of the crisis is often attributed to the existence of **“global imbalances”** and particularly to a **“global savings glut”**
- Existing data support the hypothesis that the present crisis may be understood as an **“investment strike”**
  - stable saving rate in emerging Asia excluding China over the last two decades (downward trend over the 90s and only a slight rebound after the year 2000)
  - in East Asia investment rates have experienced a drop of more than 10 percentage points of GDP since the mid-90s and have only modestly recovered since, mainly on the basis of a sharp increase in public investment

## Understanding some roots of the present crisis...

- Such investment strike is to be partly attributed to a **progressive closure of investment opportunities** linked to the over-propertization of knowledge:
  - the scant investment performance observed in the second half of the '90 in East Asia, Japan and Europe - countries with a limited initial IPRs endowment and a knowledge base characterized predominantly by bottom-up knowledge - may be rationalized as a consequence of lack of access to IPRs
  - The decline in investment experienced in the most IP-rich country - the US - in spite of a secularly low cost of capital may find an explanation in the effect of the inverted-U relationship between privatization and investment

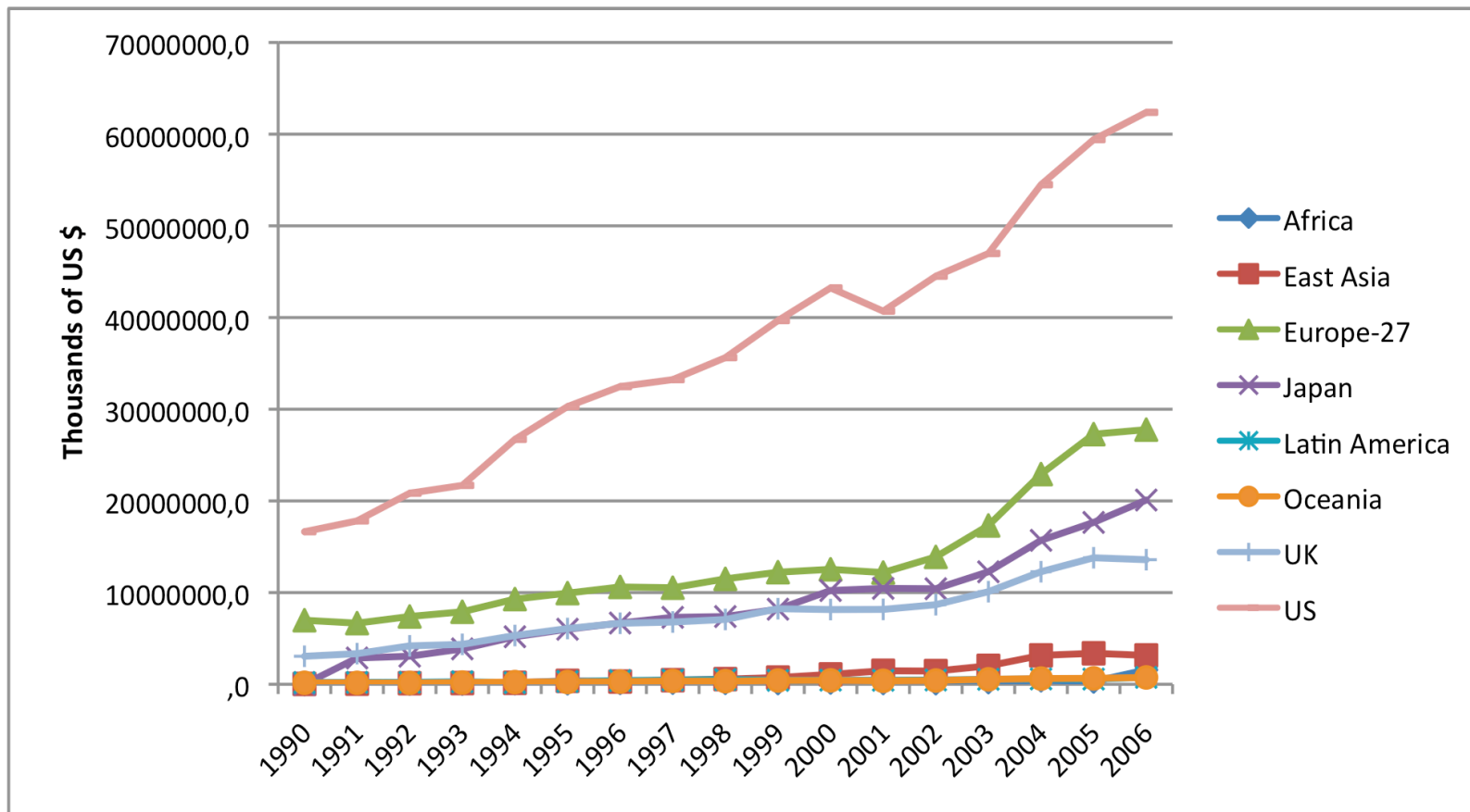
## World Savings and Investment rates, % of world GDP

[Source: Moëc and Frey, 2006, pag. 3]



# A rough indicator...

**Receipts of royalty and license fees by geo-economic areas (BoP, current US\$)  
over the period 1990-2006 [WB, 2008]**



Source: own elaboration on WB data

## ***Overcoming the crisis: public knowledge and the "super-multiplier"***

- We propose a long-run and a short-run policy solution:
  - In the **long run** the architecture of a future post-crisis global economy should have new global institutions favoring open science and open markets;
  - In the **short run**, a keynesian-style policy based on the acquisition and PD release of existing IPRs may generate an investment “super-multiplier” due to the non-rivalry of knowledge



## ***Properties of the “super-multiplier”***

- While the IPR is paid at its private value, it is transferred into the public arena where it has a greater public good value and decreases costs for many producers.
- The owners of IPRs receive fresh funds but having sold the old IPRs, they face tough competition. Thus, they invest in the production of new intellectual assets, which boosts aggregate demand.
- A monopoly price for the intellectual asset is replaced by the lower (zero) competitive price, which again has a positive effect on aggregate demand.
- The “anti-commons” problem is eased and more innovative investments are stimulated.

**Thank you for your attention!**

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