Trial and error in France's innovation policy: an activities-based approach of the restructuring in France's innovation system

Mafini DOSSO
Centre d'Economie de La Sorbonne (CES)
University Paris 1, Panthéon-Sorbonne
mafinidosso@gmail.com

Eu-SPRI Conference, 12-13 June 2012
Karlsruhe, Germany

Theoretical background: National Innovation Systems (NISs)

- **Traditional empirical approaches of NISs**
  - Descriptive and country-specific approaches (Freeman 1987, Nelson 1993, Lundvall et al. 2005, Fagerberg et al. 2009)
  - Typology-based studies (Amable & al.1997, Balzat &Pyka 2005, Balzat 2006)

⇒ Lack of a clear theoretical approach to address the role of national and local governments

- **The Activities-based perspective of NISs** (Edquist & Chaminade 2006, Edquist & Hommen 2008, Edquist 2011)
  - Activities influencing innovation *(non-exhaustive)* :
    - **Knowledge inputs**
    - **Demand-side factors**
    - **Provision of constituents**
    - **Support services to innovative firms**
  - Division of labour between public and private actors

⇒ Heuristic dimension ,consistent with multidimensional and dynamic nature of innovation
Useful point of entry into policy analysis + comparisons of NISs

Aim of the paper

- **Retructuring of France's NIS**: from the **traditional mission-oriented** to a more **systemic approach** of innovation policy (IP)
  - Activities-based perspective ⟹ Knowlegde inputs to innovation and Provision of constituents (networking, provision of institutions)

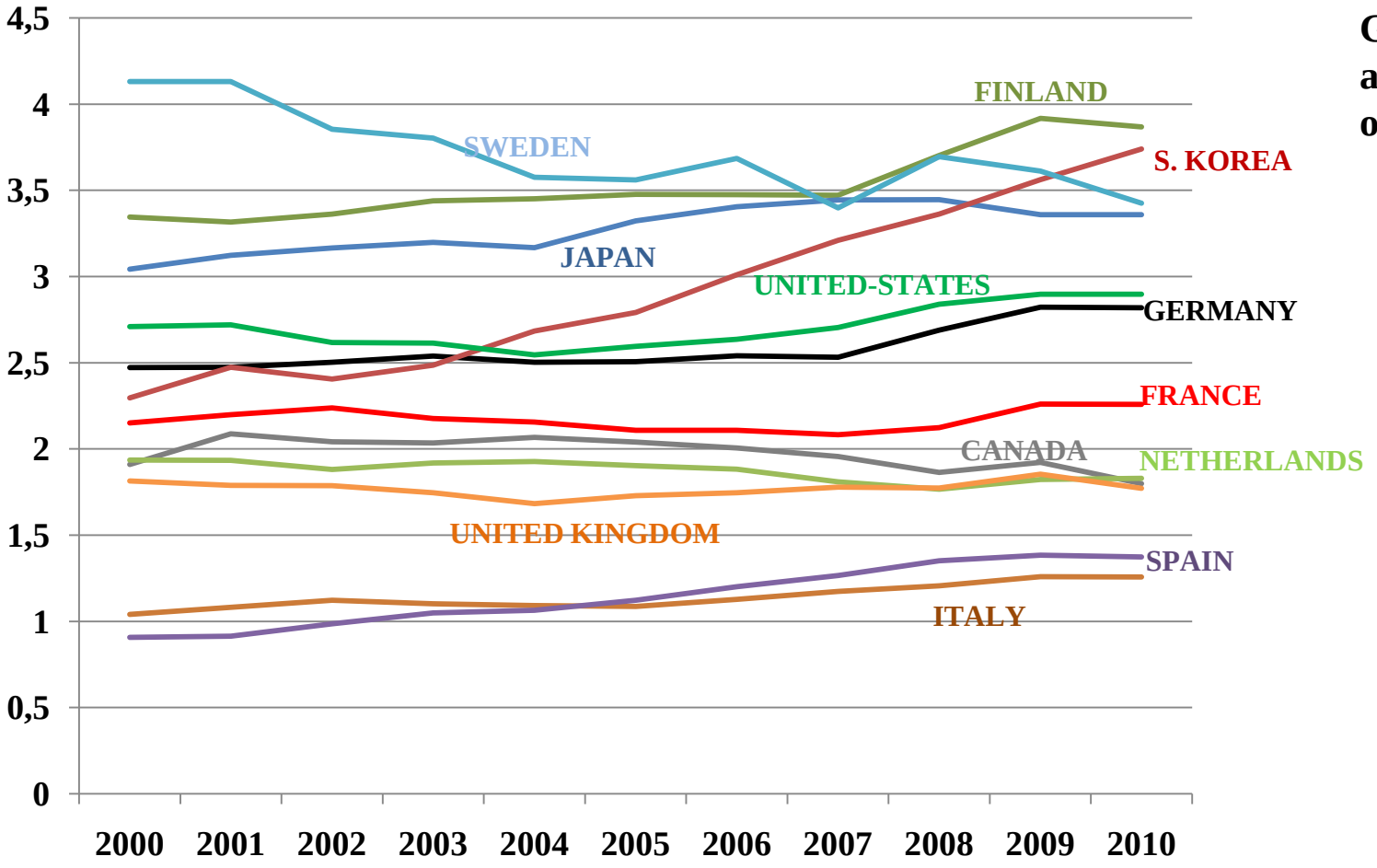
- **Transitional phase** of the French innovation system

  ⟹ Trial and error in IP

- **Policy recommendations** ⟹ coherence of IP

Activities influencing innovation in France from the 2000s

Knowledge inputs to innovation (1)



Knowledge inputs to innovation

R&D EXPENDITURES

- Funding of **GNRD** in 2008: **Administrations (1% of GDP)** to **business-funded RD (1,18%)**
- **GERD** of **ADMs** (2004-09)
  - STATE: **46% → 42%**
  - HE sector (CNRS & institutes, *Grandes Ecoles* and Universities): **50% to 54%**
- **GERD** of **PROs** in 2008 :
  - 9 EPST = **58%** (CNRS = 59%, INRA = 15% & INSERM =14%)
  - 14 EPIC = **42%** (CEA = 62%, CNES = 13%)

HUMAN RESSOURCES (2000-08):

Private sector : R&D ≈56% **-** Researchers ≈ **49%** to **56%**

HIGHER EDUCATION (2000-08)

- **Public expenditures** (State, local auth. & others ADMs) > **70%**
- **Overall expenditures** = 1.4% of the GDP in 2007

Reorganization of the public research system in the 2000s

- Instability in the CNRS in the 2000s
  - 3 founding decrees
  - 4 ruling teams
  - New units (LRC & ERL in 2007)
  - 2007 & 2009: Extension of the President's powers
  - 2008: **CNRS HORIZON 2020** :

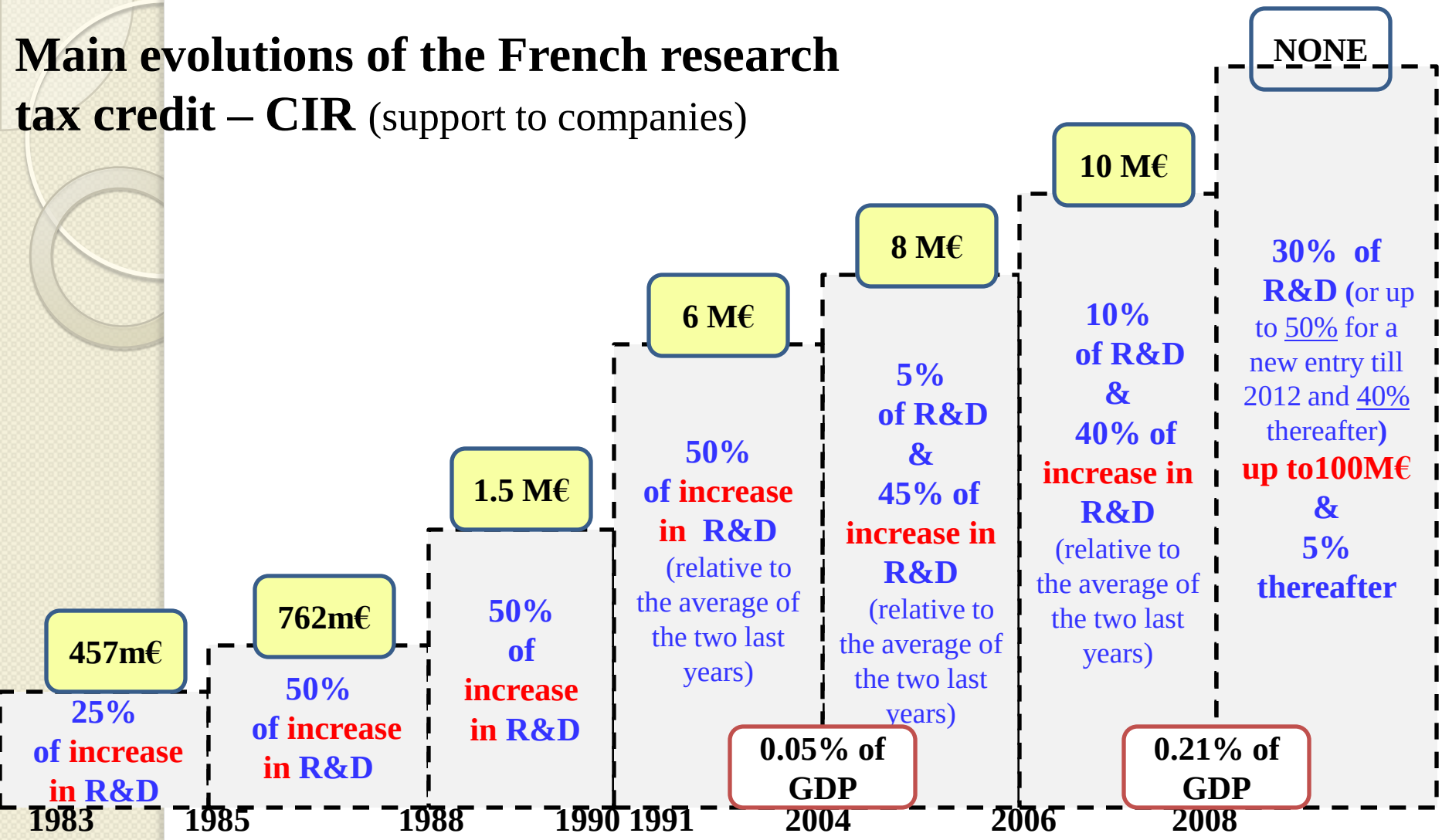
    Greater role as a funding agency → Balance with research operator role & coordination with **ANR**

    10 institutes → interdisciplinary research, coordination with existing instit.

    Evaluation by the **AERES** => Futur of the *CoNRS*

  ⟹ **Institutional inertia → Slow down the transition of French IS**
- INSERM → 10 institutes in 2009
- INRETS + LCPC in 2011 → **IFSTTAR** (transport, development & networks)

Main evolutions of the French research tax credit – CIR (support to companies)



Depreciation allowances, Patent fees
Staff and operating costs
R&D subcontracting in France

+ Depreciation of patents

+ Standardisation
+ Expenses for standardisation

+ Patent defense fees
+ Technology watch expenses
+ R&D subcontracting in EU (2005)

Examples of additional eligible expenses

Notes: Personal elaborations-Direct Aid is stable in the 2000s (0.15% of the GDP) – M€ for millions, m€ for thousand euros

Provision of constituents (3)

Networking → Attractiveness & International visibility

- **RRIT** (1999), networks for technological innovation & research
  - Private funding (average above 50%), Public funding: MESR+MINEFI → ANR
  - No formal *ex-ante* selection of technologies, by mid-2000s few evaluated
  - 14 on 1999-2002 → 16 in 2007, most integrated into ANR thematic pg.
- **CNRT**, national centres (PROs &Large firms labs) : 20 labeled on 2000-06, no evaluation (IGF 2007)
- **Regional level:**
  - **CRITT**, regional centres (209 in 2004, 131 in 2006, State-Region contracts), evaluation in 2003 → measuring results & effectiveness? (IGF 2007)
  - **Labels** : **CRT (**41 in 2006, 74 by 2011), **PFT (**84 on 2000-06), **CDT** (25 by 2011)
  - **RDT** (22 in 2012)
- **European programmes** (FPs, ETP, JTI, thematic programmes…)

NETWORKING

- **Competitiveness clusters (2005)**
  - **2 phases:** 2005-08 & 2009-2012 (*Pole 2.0*)
  - **66/105** selected (2005) → **71** (2010)
  - 2 national evaluations (2008, 1 in progress)
- **RTRA/RTRS**, Thematic networks **(2006)**
  - Main actors: HE and Research institutions
  - In 2011, 13 RTRA and 9 RTRS
- **PRES**, Higher education and research poles **(2006)**
  - 23 PRES (May 2012)
  - **SATT**, Accelarating TT companies: 9/15 by end 2011 (90% of Exploitation of public research program of the *Investissement d'avenir*) and **CVT** (5%)

⟹ **Multiple and overlapping institutional structures**

Provision of constituents

Provisions of institutions

- **AII (2005)** → Renewal of *Grands programmes* → Integrated to Oseo (2008)
- **Pact for Research (2006)** → HCST, PRES, AERES, RTRA
- **LRU,** Law for the autonomy of Universities **(2007)** → Coordination issues
- **LME,** Law for the modernization of the economy **(2008)**
- **SRI (2007-2013)** → in some case low operational role of regional agencies + overlapping with State-Region contracts
- **National Research and Innovation Strategy (MESR, 2009)** → **3 priority areas**: Health and biotech, Environment & eco-technology, IT & nanotech.
- ***Investissements d'avenir*,** National loan **(35 bn€, 1.5 bn for 2009-11)**
  - **Priority areas of investments:** HE (11bn€), Research (7.9bn), Industry & SMEs (6.5bn), Sustainable development (5.1bn), Digital economy (4.5bn)
  - **2010-2011, 72 calls :** ANR, ADEME, CDC
  - By August 2011, **368 selected**

PRIMARY ROLE IN French NIS

MAIN ACTORS OF FRANCE'S NIS

Orientation and design of R&D and Innovation policies and strategies

HCST (Higher Council for Science & Technology, 2006),
Academy of sciences, **Academy of technologies** (2000)

MESR (MIRES, CSRT…), **MINEFCe** (*previously MINEFI*),
MRP (*inc. Ministry delegate for SMEs, innovation and digital economy,…*2012), **Other Ministries**, **Regional authorities**
(*councils, strategic orientation committees of ARIs…)*

Implementation of R&D and I strategies *(selective funding, loans guarantee , technical assistance, evaluation,…)*

ANR (*project-based funding for research,* 2005),
OSEO *(innovation in SMEs,* 2005),
Other agencies (**ANRT ADEME, ANRS, INCa…**)
Regional agencies (*operationnal committee of ARIs…*)
DATAR (regional development, 2009)

AERES (*evaluation of research and higher Education,* 2007)

R&D performance, knowledge creation, transfer, and innovation

FIRMS

Competitiveness clusters, **RTRA**, RTRS,CNRT CRITT, Carnot, IRT, SATT, CVT,PT,GIP TT,…

CNRS ?

RESEARCH ORGANIZATIONS

Mixed units, PRES

UNIVERSITIES,

GRANDES ECOLES

Conclusion & Policy recommendations

- **On going transition of France's IS** → Emergence of new (or partially) structures + persistent elements/structures of the traditional model
- **Several good practices**

Further improvements

- **Time coherence of IP** → Instable environment
  - Avoid ***back and forth moves*** by a more systematic use of *ex-ante* evaluations of IP & international comparisons (e.g. AERES)
  - Pursue or implement systematic *ex-post* evaluation
- **Systemic, institutional coherence**
  - Future role of CNRS (research operator & funding agency?) → coordination with national agencies
  - Numerous & overlapping public-private related structures => Reduce visibility of the supporting system
  - LRU law and PRES → Coordination of autonomy & cooperation
  - National vs Regional policies → Improve coordination

Thank you for your attention

French Traditionnal model of innovation

- **1970s and 1980s:**
  - High commitment of the French State (Top-down appraoch in innovation policy, *Grands programmes*)
  - Prevalence of large public firms notably in complex systems and systemic products, defense-related (*aeronautics, nuclear power, power plants, other transport, telecommunications…)* + large private firms *(bleaching and dyeing, chemicals…)*
  - Public research: CNRS, mission-oriented institutes + very low university research
- **1990s:** gradual, but partial, retreat of the State, restucturing in large firms
  - Persistence of large firms' leadership
  - Increasing, but very limited support to SMEs innovation
  - Slight increase in university R&D but still central role of EPST (CNRS + mission-oriented research institutes)

Total researchers per thousand total employment- International comparisons