

# An International Quantitative Framework for the Analysis of Entrepreneurship and the Growth of Young Firms

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**FORA-Eurostat  
Workshop on Entrepreneurship Indicators:  
R&D and Technology  
October 31<sup>th</sup>, 2008**

# Outline

- **Why a WPIA micro-data project about Entrepreneurship?**
- **Proposed directions of investigation:**
  - **The inventing and patenting activities of new firms**
  - **The funding of new firms**
- **First analyses using French data**
- **OECD WPIA Roadmap for the next months...**

# Why a Micro-Data Project about Entrepreneurship?

- Interest expressed in the topic by WPIA delegates (survey launched at the beginning of 2008)
- A fruitful field of micro-level analyses...  
**which furthermore** seem of **particular economic / policy relevance**
- Indicators that are **not (yet) available at an aggregate level**  
e.g. very few empirical evidence about entrepreneurship – see the need for the OECD-STD's Entrepreneurship Indicators Project

**OECD WPLA**

**Entrepreneurship and  
the Growth of Young Firms**

# **PROPOSED DIRECTIONS FOR INVESTIGATION**

## Proposed directions of analysis:

### Inventing and patenting activities of new firms (1)

- **Description of new firms' innovation through patent information:**
  - Distribution of patent filings by age
  - Description of the characteristics of the inventions: scope, radicalness, etc.
- **The timing of inventive activities and the life cycle of the firm:**
  - Determinants of patenting / inventive activities in relation with firm age
  - Inventive performance and firm survival (duration analysis)
- **[Impact of VC intervention on young firms' innovative activities? See also below]**<sup>7</sup>

## Inventing and patenting activities of new firms (2)

**Main requirement: longitudinal database including start-ups since their birth, to be matched with Patent information**

- France (INSEE-CREST): Exhaustive business registers
- US: Integrated Longitudinal Business-Level Database at the Census Bureau (Davis, Haltiwanger, Jarmin, Krizan, Miranda, Nucci, Sandusky)
- Sweden (Löf and Andersson): use of a panel of 20 000 manufacturing firms with 1-25 employees over 2000-2004.

**Complementary:**

Accounting / R&D / Skills information?

**Alternatively:** any data source containing firm-level information (in particular about innovation) together with information about firm age, **provided the population of young firms is covered**

Proposed directions of analysis:

## Financing the activities of new firms (1)

- **Compiling indicators about the financing structure of new ventures**  
(when the information is available: venture capital, bank loans, government)
- **Evaluation of country specific targeted devices [optional]**  
(Venture capital intervention, soft credits, public financing of R&D projects specifically targeted at SMEs...)

# Data Requirements for the analysis of the **Financing structure of new firms (2)**

## **Main requirement:**

- Balance sheets of young firms
- Detailed firm-level financial information
- Information about firm age

## **Information required for the optional extensions:**

Specific to the programme considered., e.g. for the evaluation of VC intervention:

- Capital IQ database (Standard and Poors, Mc GrawHill)  
see Davis, Haltiwanger, Jarmin, Lerner and Miranda 2008
- Venture Xpert (Thomson) – see Da Rin and Penas 2007
- Venture One / Venture Source (Dow Jones)

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**FIRST ANALYSES USING  
FRENCH DATA**

# French OECD-CREST Experiment

- Preliminary experience concerning the **first topic**.
- **Data sources** for the descriptive statistics presented:
  - **OEB applications / with SIREN ID numbers**  
(based on previous work at Insee)
  - **Exhaustive business registers** (new standards of the firm demography): date of creation, employment
- Data sources for further on-going analysis:
  - Exhaustive tax files (industry affiliation, employment, turnover)
  - LIFI/Diane files, Annual Business Survey: information about ownership and mergers / acquisitions

# Concerns about Statistical Quality:

## Matching the OEB 97/00 with Business Registers

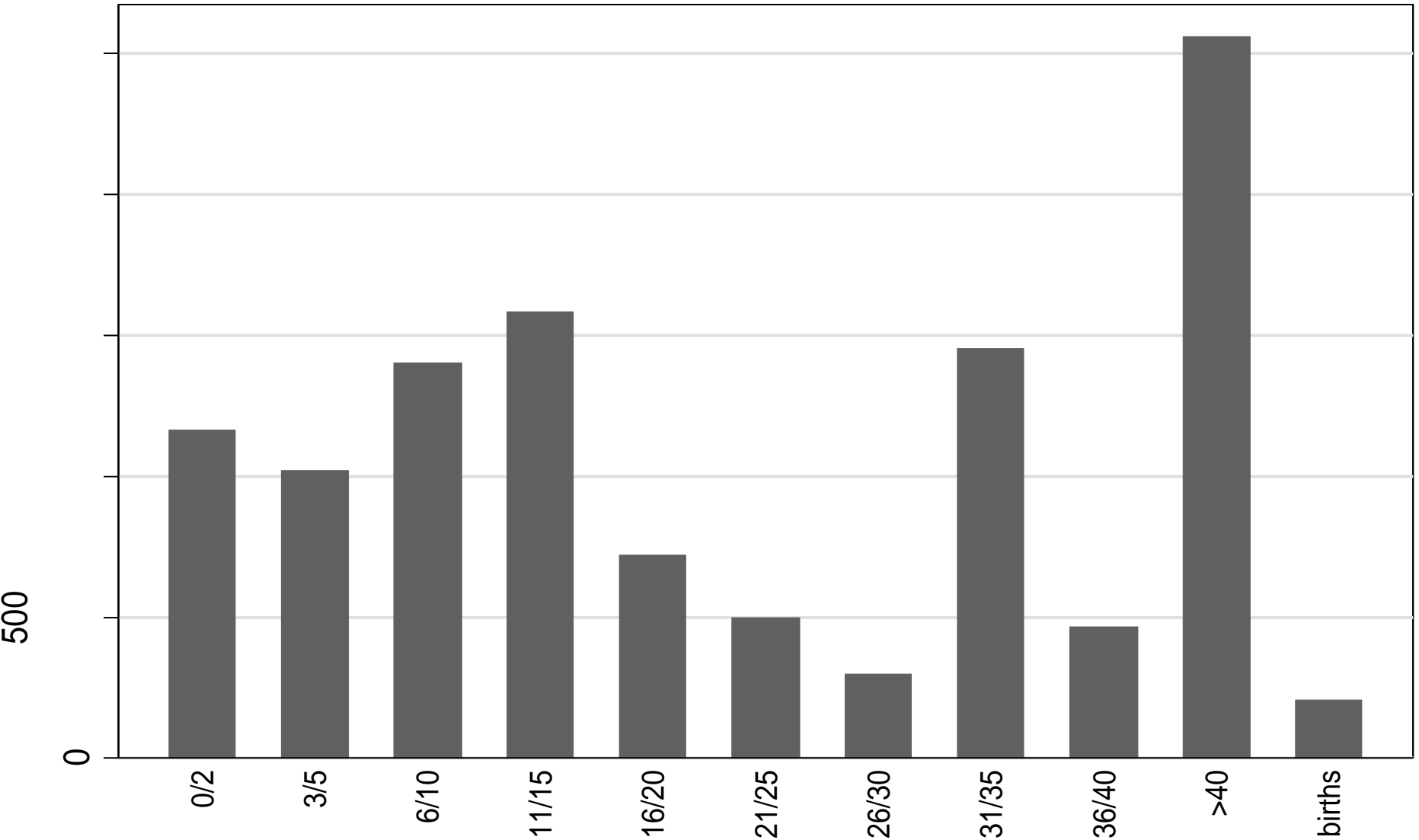
The age information available in BR provides a quality check of the matching between the OEB file and the French BR.

Source: C. Lelarge, OECD-CREST

Number of Years	Number of Firms in OEB file	Firms Lost in Matching with BR	%	Age is Inconsistent	... After Firm Birth	Final Dataset
<b>1</b>	2923	208	7.12	364	254	2461
<b>2</b>	655	64	9.77	73	50	541
<b>3</b>	274	29	10.58	27	22	223
<b>4</b>	300	39	13	26	22	239
<b># Firms</b>	<b>4152</b>	<b>340</b>	<b>8.19</b>	<b>490</b>	<b>348</b>	<b>3464</b>

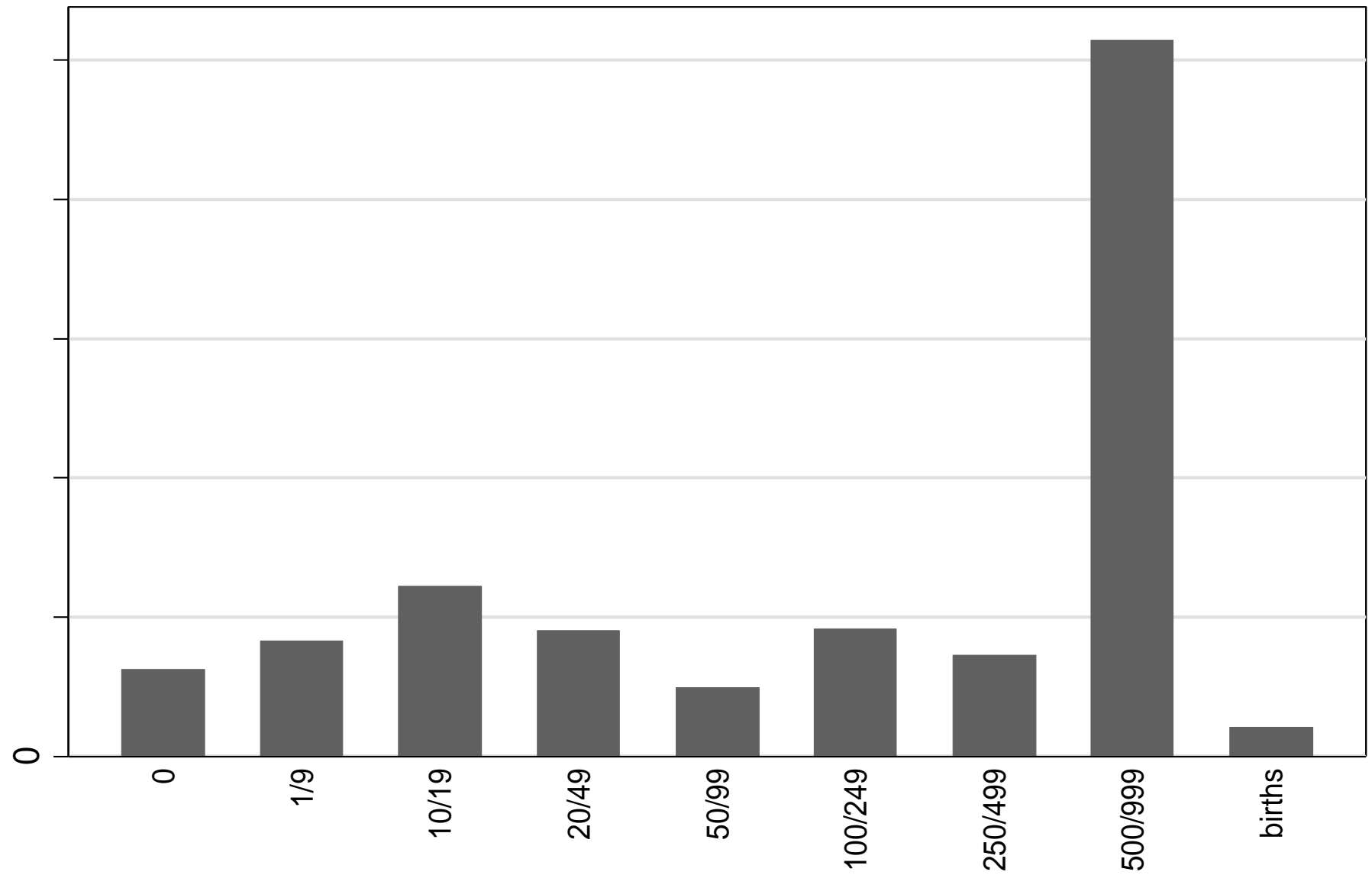
# OEB Patents and Firm Age: 98-00

Source: C. Lelarge, OECD-CREST



# OEB Patents and Firm Size: 98-00

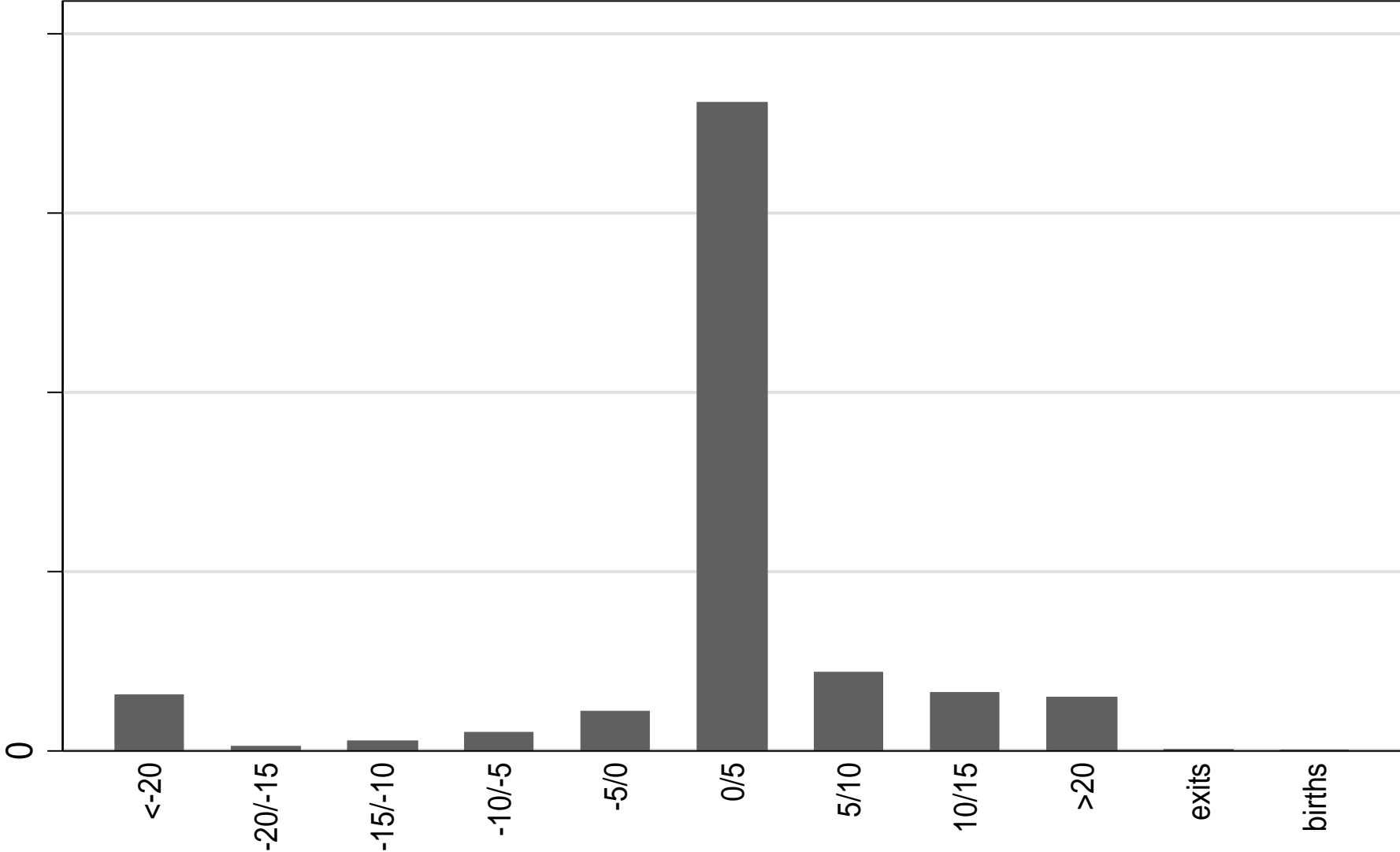
Source: C. Lelarge, OECD-CREST



# OEB Patents and Firm Growth: 98-00

(Turnover GR)

Source: C. Lelarge, OECD-CREST



# A few preliminary results from the regression analysis

- Regression analysis =  
Descriptive statistics « **other things else equal** »
- Simple **descriptive** models (at the firm level):

# **Patents** =

*F*(firm size, firm age, industry affiliation)

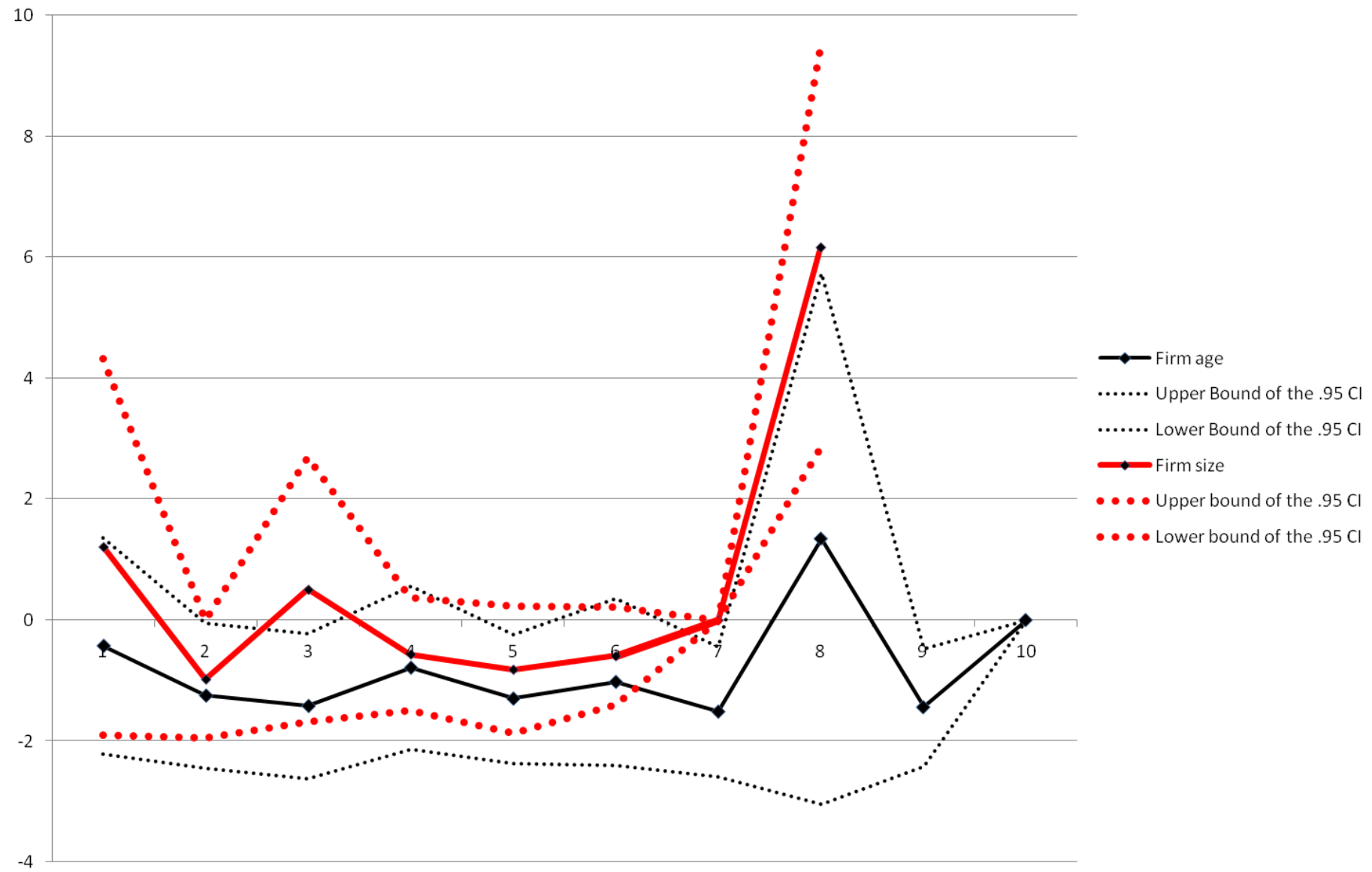
Av. patent characteristics =

*F*(# patents, firm size, firm age, indus. affiliation)



# Patent Applications and Firm Age/Size

Source: C. Lelarge, OECD-CREST

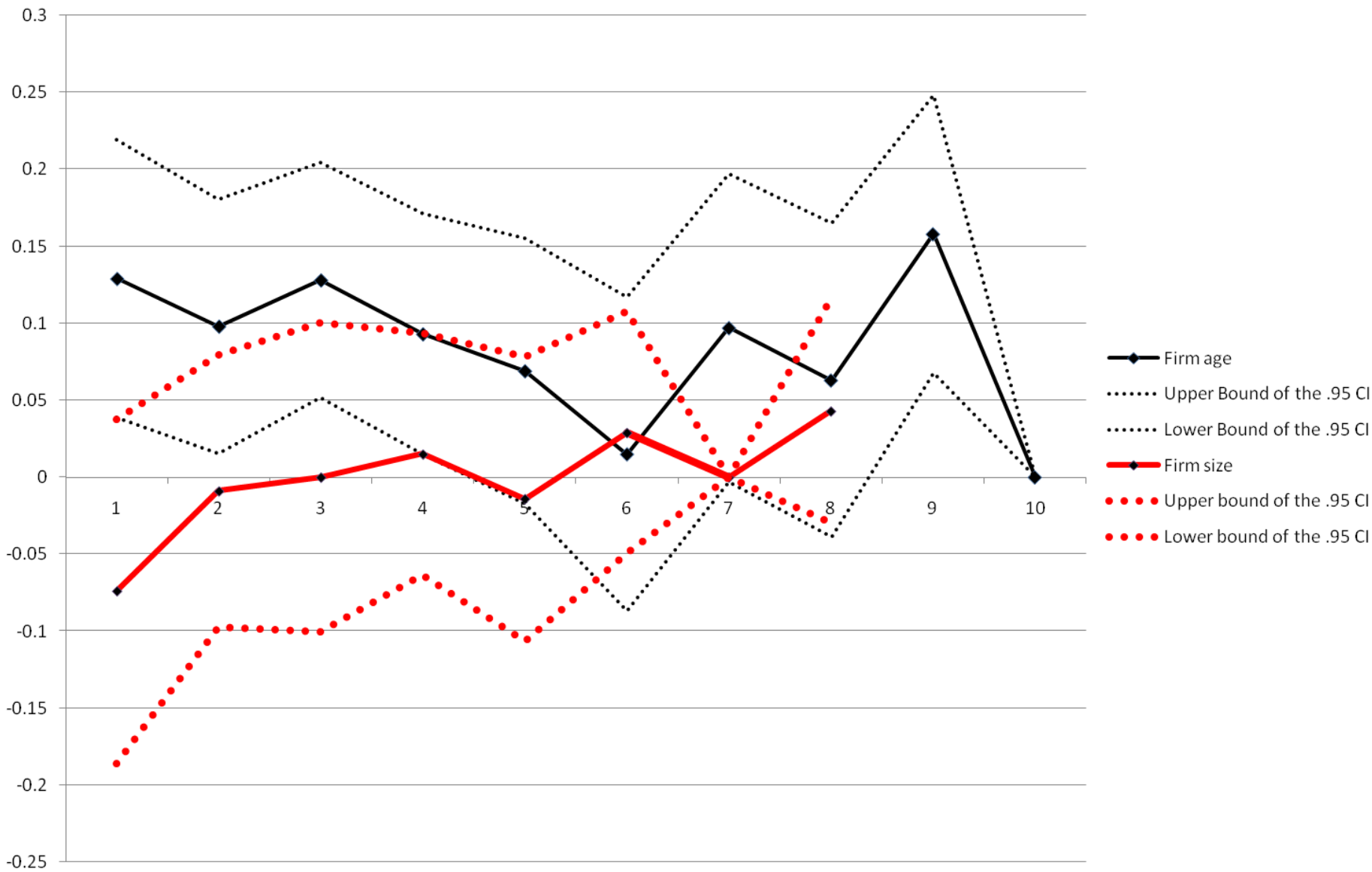




# Techn. Radicalness and Firm Age/Size



Source: C. Lelarge, OECD-CREST



# Longitudinal Analysis

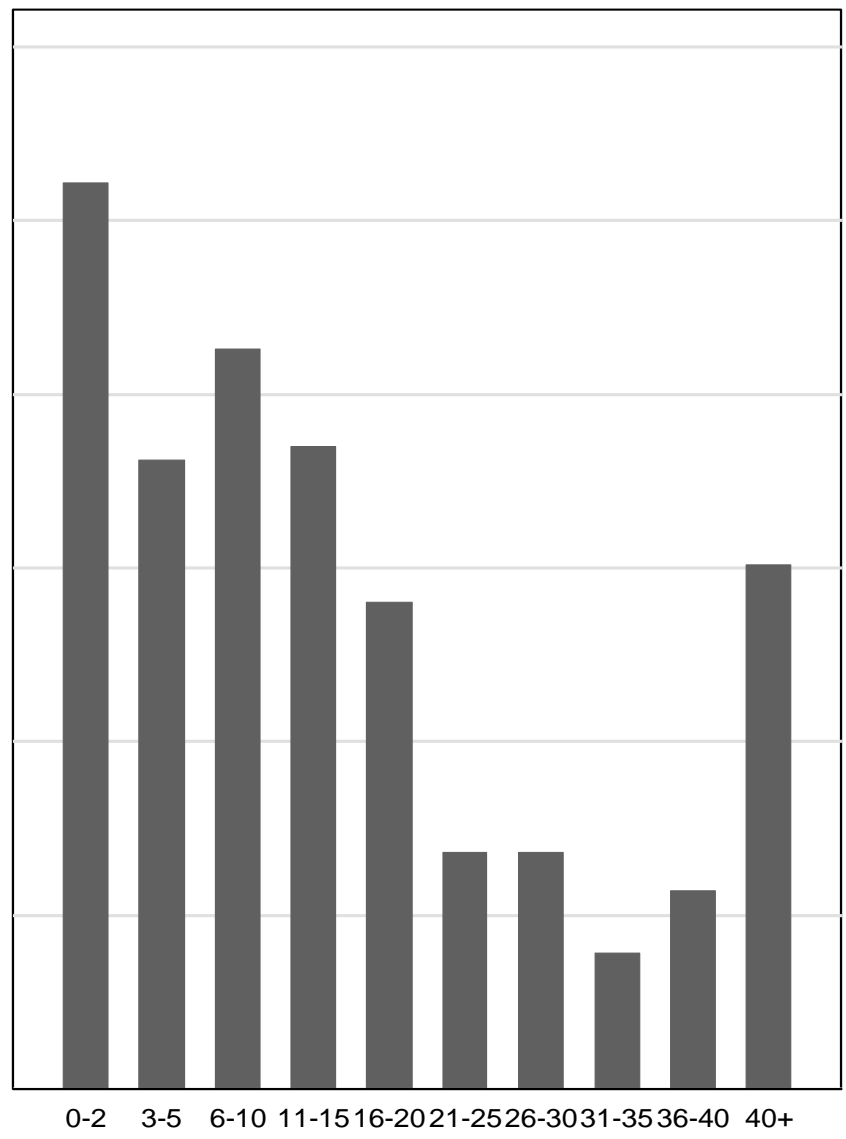
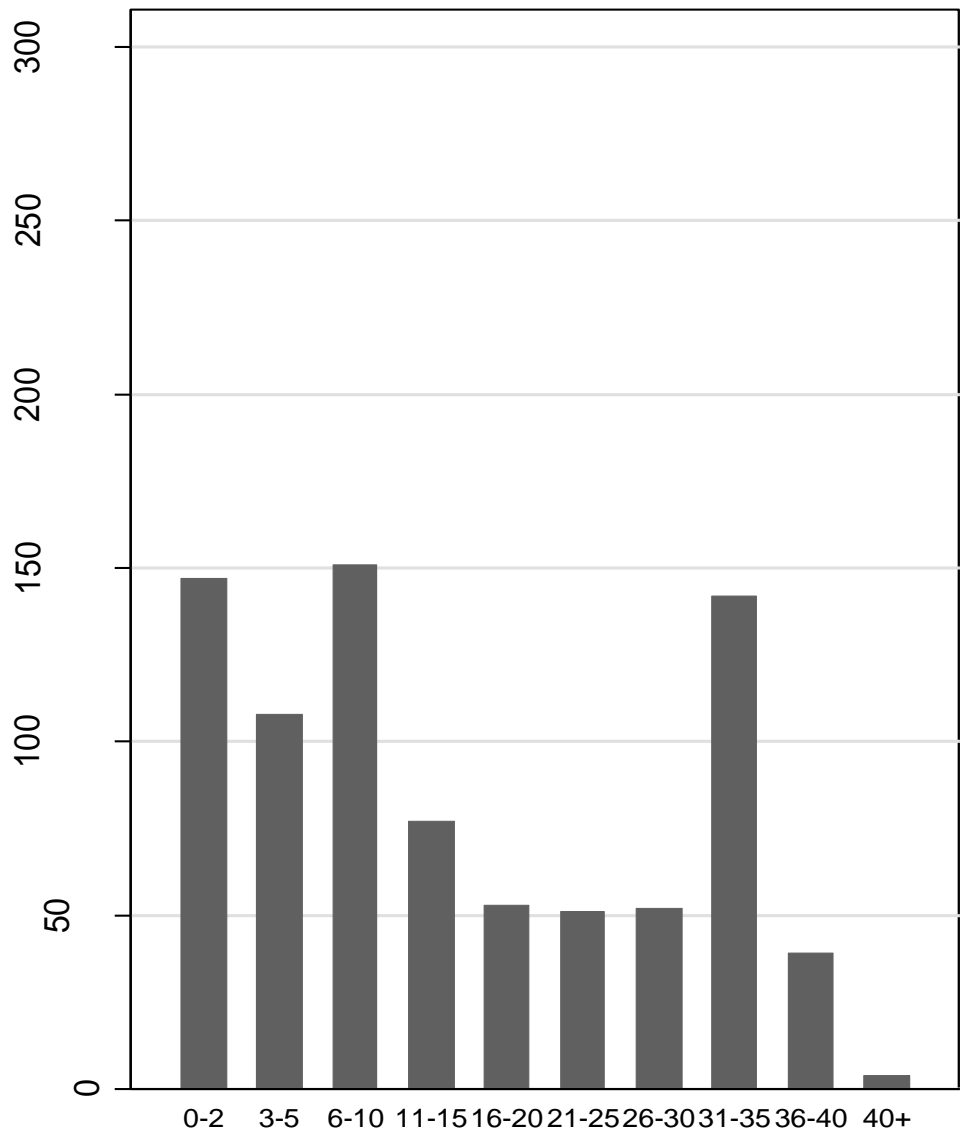
**Relying on an additional dataset relating to the 1990's,**

**It is possible to compare the patenting behaviour between 1990 and 2000**



# OEB French Patenting Firms: 1990 / 2000

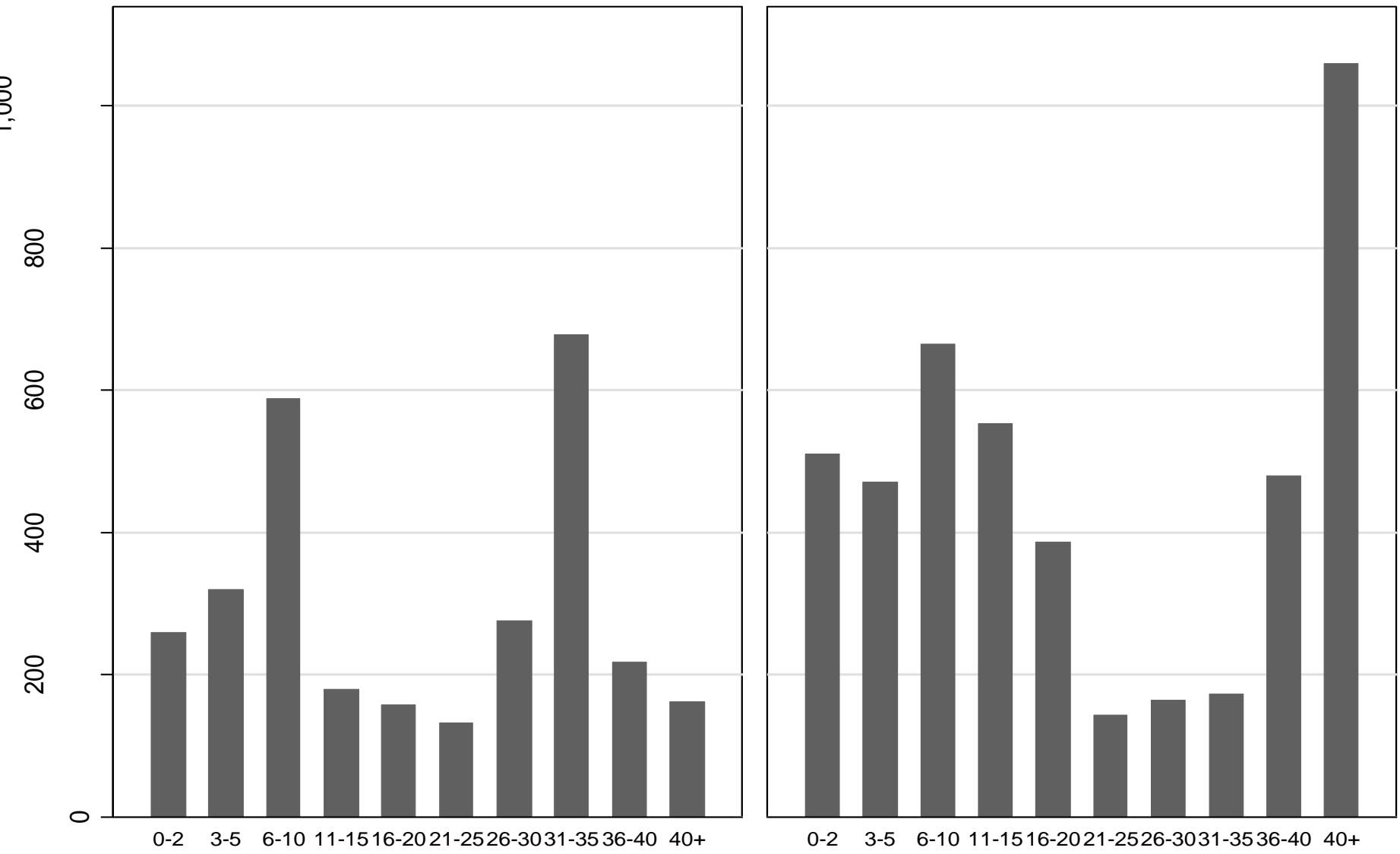
Source: C. Lelarge, OECD-CREST





# OE B French Firm Patents: 1990 / 2000

Source: C. Lelarge, OECD-CREST



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**WPIA ROADMAP**

# Entrepreneurship and the Growth of New Firms

**Participating countries:** Finland, France, Germany, Spain, Sweden, Switzerland, US

**Possibly participating:** Australia, (Austria), Canada, Czech. Rep., Israel, Japan, Netherlands, New Zealand, Poland, Portugal, UK

Precise Analytical Question	What is the novelty?	Data requirements
Inventing and patenting activities of new firms	New thematic, new data, new information	- (Longitudinal) database including new ventures - Matched patent information
Specificities of the financing structure of new firms	Harmonized information across OECD countries	- Detailed firm-level financial information - Matched information about firm age

# Timetable (Preliminary)

- **OECD Workshop, February, 2009:**  
Data issues
- **Kauffman Foundation Workshop,  
June, 23 and 24th, 2009:**  
Discussion of indicators and models
- **OECD WPIA meeting, 2009:**  
First results
- **2010: Final results**

Thank you!

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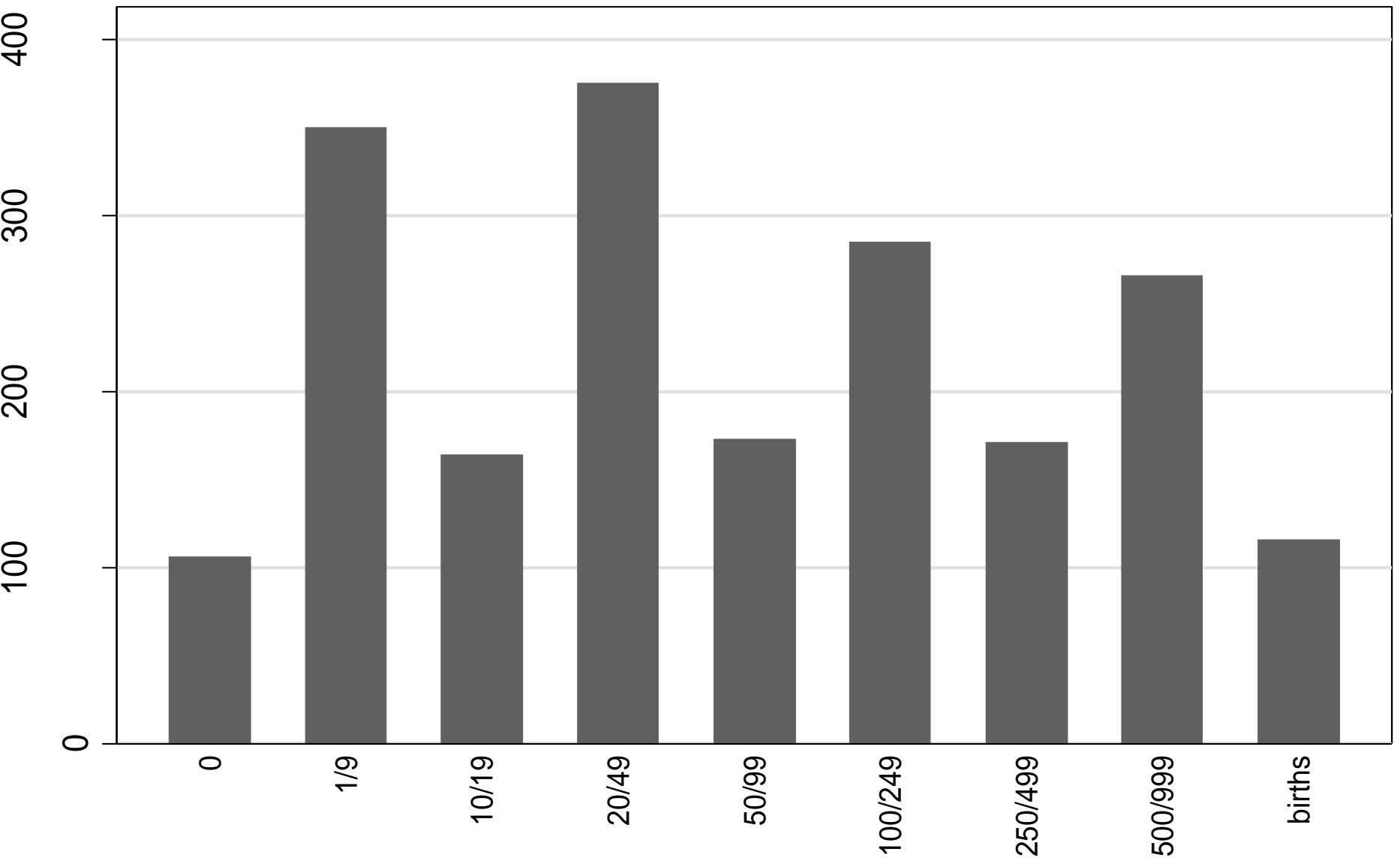
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# Back-Up

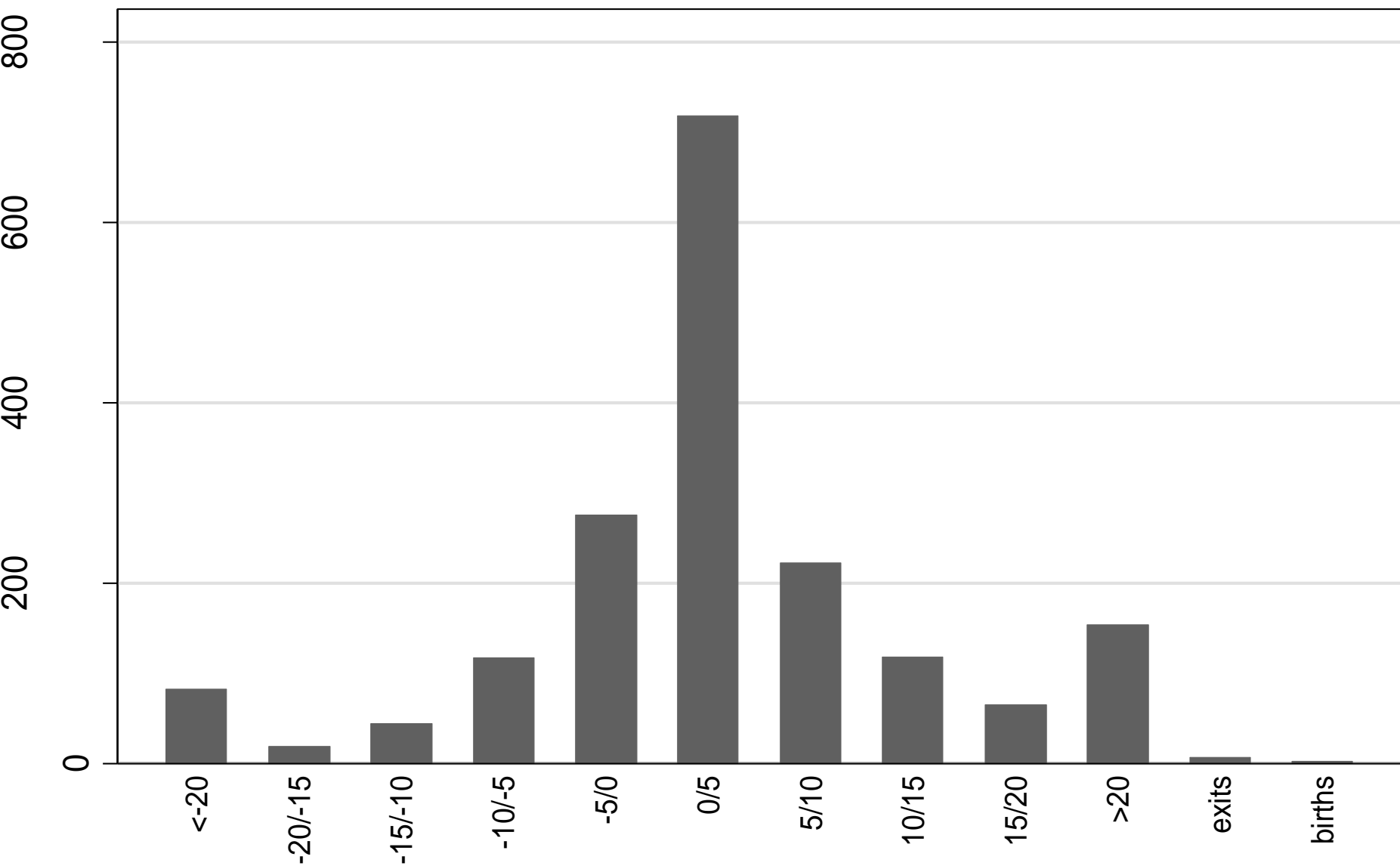
# OEB Patenting and Firm Age: 98-01

Source: C. Lelarge, OECD-CREST



# OEB Patenting and Firm Size: 98-01

Source: C. Lelarge, OECD-CREST





# OEB Patenting and Firm Growth: 98-01 (Turnover GR)

Source: C. Lelarge, OECD-CREST

