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Entrepreneurship, Innovation and Employment

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An Overview of Research issues in Entrepreneurship and Economic Development

1. The Entrepreneurial Economy
2. The Role of Innovation and Entrepreneurship in Models of Economic Growth
3. Measuring Entrepreneurship
4. Types of Entrepreneurship and Economic Development
5. Entrepreneurship, Employment and the Indirect Supply-side Effects of New Firm formation

Innovation Since World War II

- Small entrepreneurial firms
  - Responsible for half of all innovation
  - Credited with 95 percent of all radical innovation

The Entrepreneurial Economy (Audretsch and Thurik 2000, 2001)

- In the last two decades, industrialized regions experienced considerable industrial re-structuring, changing from traditional manufacturing towards new technologies
- Entrepreneurship and small firms have played a particularly important role due to greater flexibility towards radical innovation and to the fading significance of scale economies in many sectors
- Persistently high unemployment and limited economic growth have triggered policy-makers into turning to entrepreneurship and self-employment as ways to foster economic progress and reduce unemployment

Disadvantages of Large Corporations (Christensen and Rosenbloom 1995)

- Characteristics of giant corporations in the face of radical innovation
  - Hierarchical in structure
  - Leadership and management from the top down
  - Rewards/incentives for “the largest” (assets, budgets, etc.)
- Cause of downfall
  - Slow to change archaic strategies
  - Slow to change outdated culture
  - Slow to recognize and incorporate entrepreneurial reasoning

Issues in Entrepreneurship and Economic Development

- What is the role of entrepreneurship in generating growth?
  - Physical capital?
  - Human capital?
  - Innovation?
- Does entrepreneurship generate more employment?
  - New, small firms grow at an average rate above that of incumbents, but have a much larger chance of failure
  - Excess entry may drive incumbents out of the market, leading to unemployment
  - So, unless new entrants bring about positive indirect supply-side effects (spillovers) through innovation and increased competitiveness, higher start-up rates are unlikely to lead to employment growth

Innovation and Endogenous Growth

- Neoclassical growth models (Solow 1956, Cass 1965) looked at growth as being driven by the accumulation of physical capital, labor and exogenous waves of knowledge/technology
- Endogenous growth theory (Romer 1986, 1990; Lucas 1988; Rebelo 1991) has provided two fundamental contributions:
  - The formation of knowledge and human capital takes place in response to market opportunities
  - Investment in knowledge is associated with large and persistent spillovers to other agents in the economy – *i.e.* the marginal productivity of knowledge capital does not diminish as it becomes available to more users – as knowledge is accumulated through R&D and human capital investments, growth may go on indefinitely

Main Features of Endogenous Growth Models

- Knowledge.based growth models have three cornerstones:
  - Spatially constrained externalities (spillovers of knowledge)
  - Increasing returns in the production of goods
  - Decreasing returns in the production of knowledge
- Knowledge is produced in one period and used as an input in subsequent periods
- A firm can only appropriate a portion of the knowledge it produces (partial excludability), so all firms benefit from spillovers originating in aggregate R&D investments
- Knowledge can also be perceived as non-rival (Romer 1990), thus it can be used by many firms simultaneously, so R&D investments also increase R&D productivity
- Hence, there is scope for growth-enhancing economic policies financing R&D in order to compensate for underinvestment from the private sector

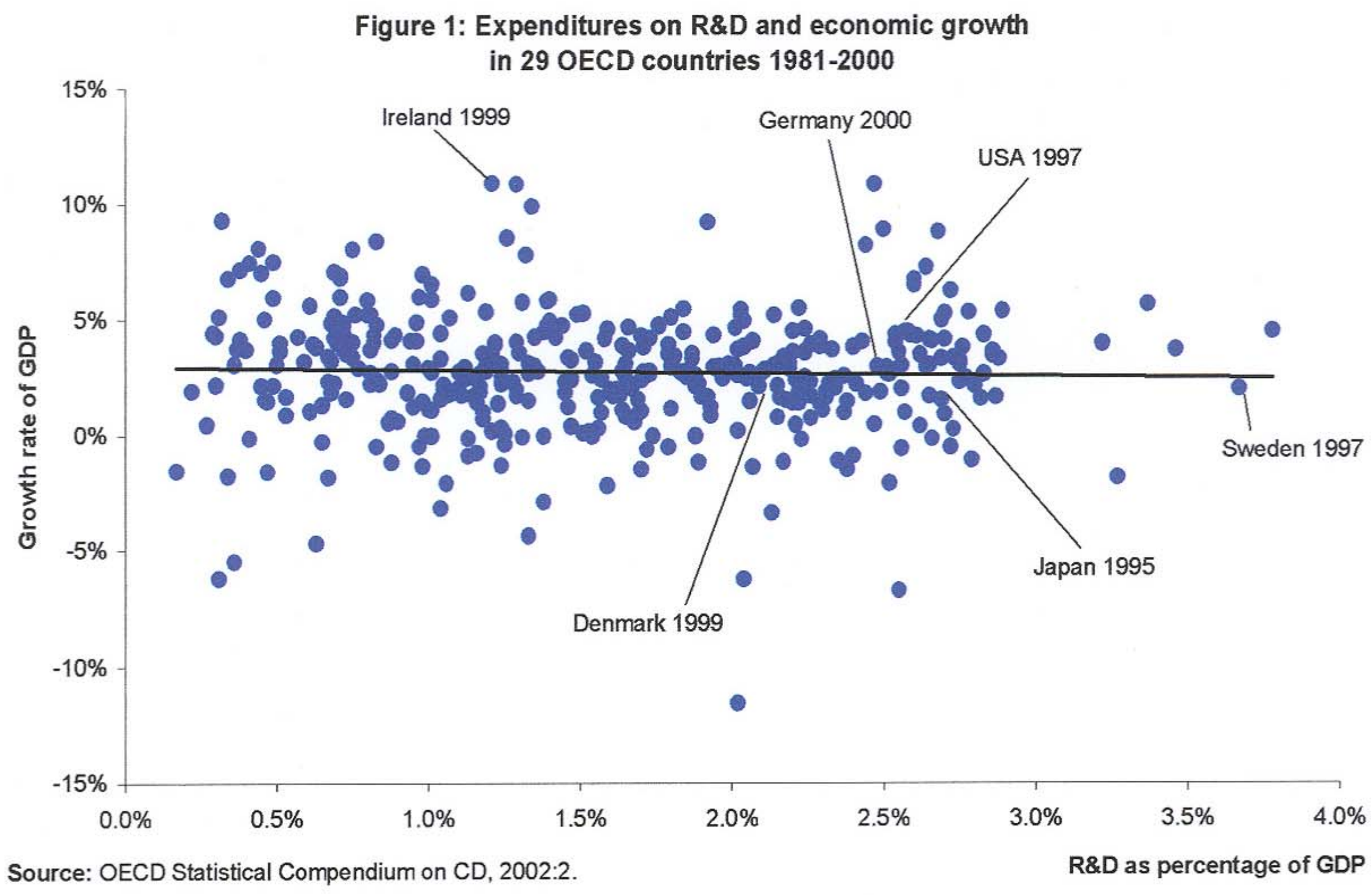
Knowledge Spillovers in Endogenous Growth Models

- The first wave of endogenous growth models treated the spillover process as exogenous, paying little attention to how spillovers occur
- This was to some extent remedied in a second wave of models (Segerstrom 1991, 1995; Aghion and Howitt 1992; Cheng and Dinopoulos 1993)
- “Neo-Schumpeterian” models of endogenous growth design new firm entry as an R&D race where a fraction of R&D efforts will turn into successful innovations
- However, these models predominatly address cumulative and not radical innovation, through quality improvements in existing products (“quality ladders”) and are more appropriate to depict the activities of large firms, rather than entrepreneurial efforts

Empirical Evidence

- Empirical evidence supporting endogenous growth models is ambiguous at best, particularly with regard to increasing returns to R&D investment:
  - There is little evidence of a positive relationship between R&D effort and GDP growth rates
  - Countries with very high investments in R&D and human capital (Sweden, Japan, Germany) experience persistently low growth rates
  - Difficulties in empirical analysis of endogenous growth has been documented by, among others, Jones 1995; Barro and Sala-i-Martin 1995; Aghion and Howitt 1998)

R&D Expenditure and Growth



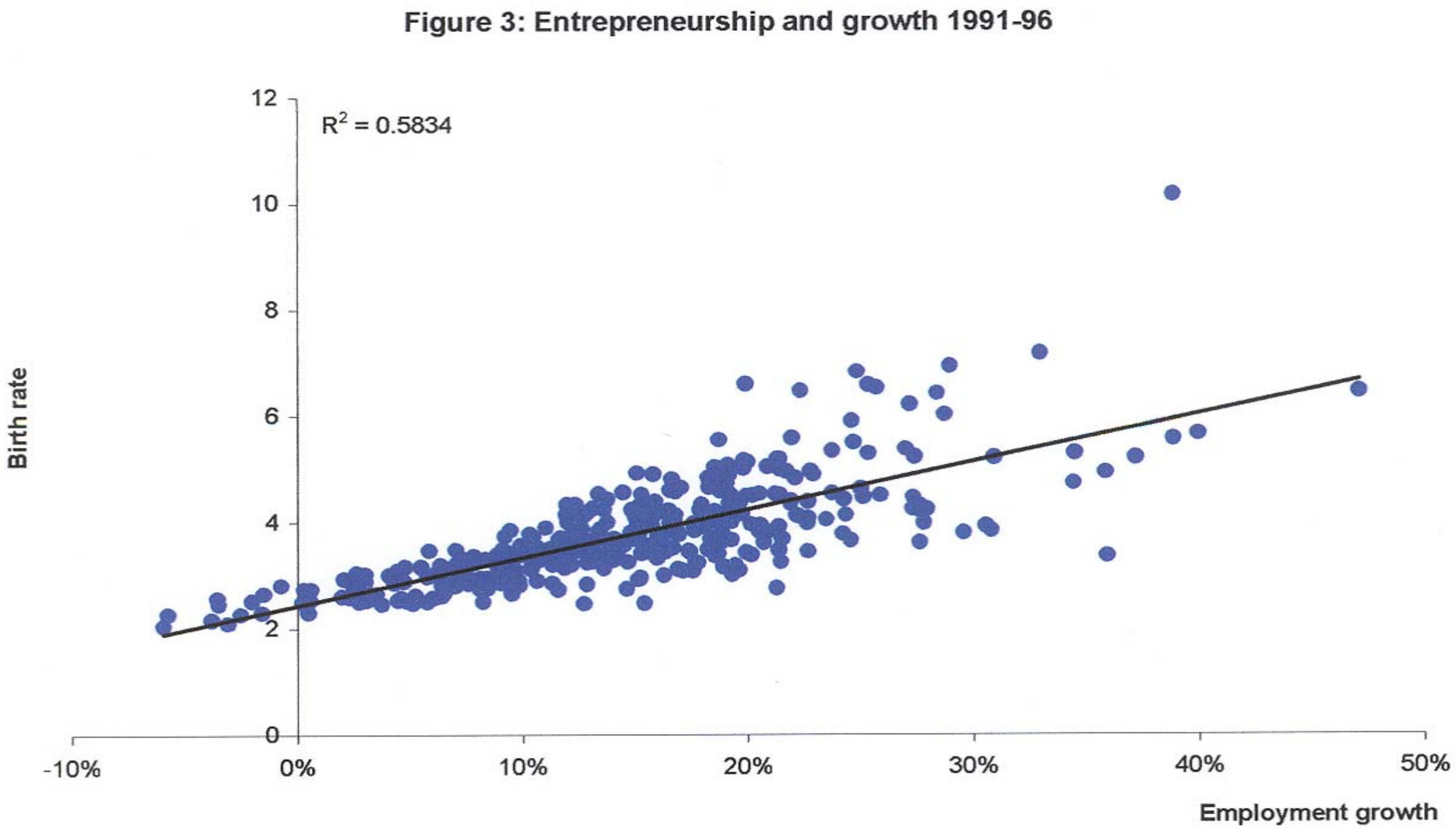
Entrepreneurship and the Knowledge Filter

- One possible reason for the lack of empirical evidence is that spillovers do not occur automatically from R&D investments
- There is a “filter” in the transmission mechanism that determines the rate at which the knowledge stock created by R&D is converted into economically useful firm-specific knowledge
- In the Schumpeterian view, entrepreneurship plays a major role in the conomic exploitation of knowledge, thus providing a means to permeate this filter (Acs, Audretsch, Braunerhjelm and Carlsson 2005)

The Role of Entrepreneurship in the Mechanics of Economic Growth

- Converting new ideas into economic growth requires turning new knowledge into commercial opportunities, and turning these into viable businesses – the nexus between opportunity and enterprising individuals is crucial for economic growth (Shane and Eckhardt 2003)
- Uncertainty and high transaction costs inherent to knowledge generate divergences in the assessment of the expected value of new ideas (Arrow 1962) thus leading agents with entrepreneurial skills to start new firms as a form of appropriating the expected returns from their knowledge which are not recognized by others – this, in turn, generates new spillovers that would be impossible had this knowledge not been commercially exploited
- Hence, the lack of entrepreneurial skills (i.e. a set of aptitudes, insights and opportunities that is not uniformly distributed among individuals) in agents owning technical, marketeable knowledge may hinder growth (Michelacci 2003)

Entrepreneurship and GDP Growth

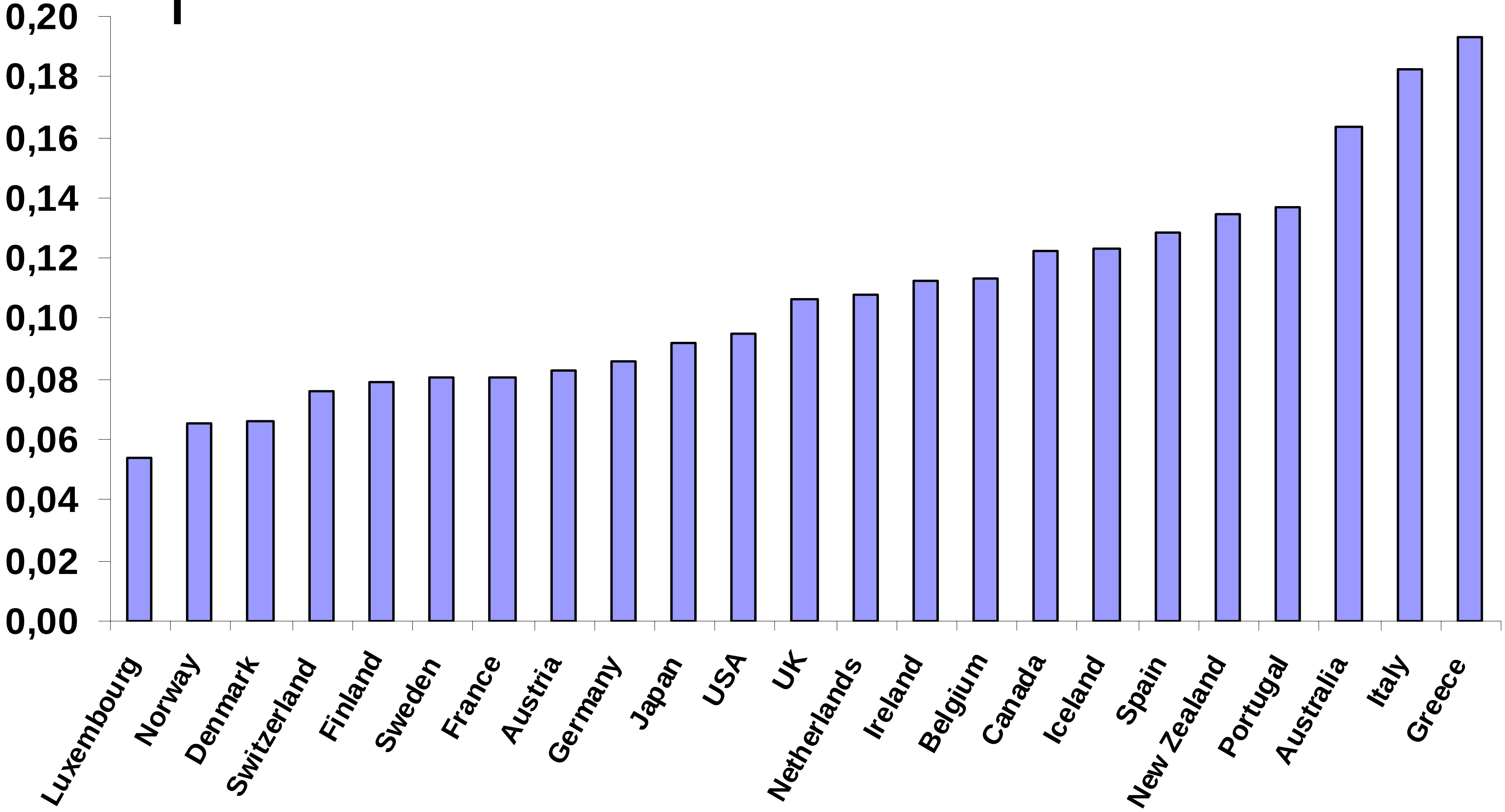


Source: Acs and Armington, 2002.

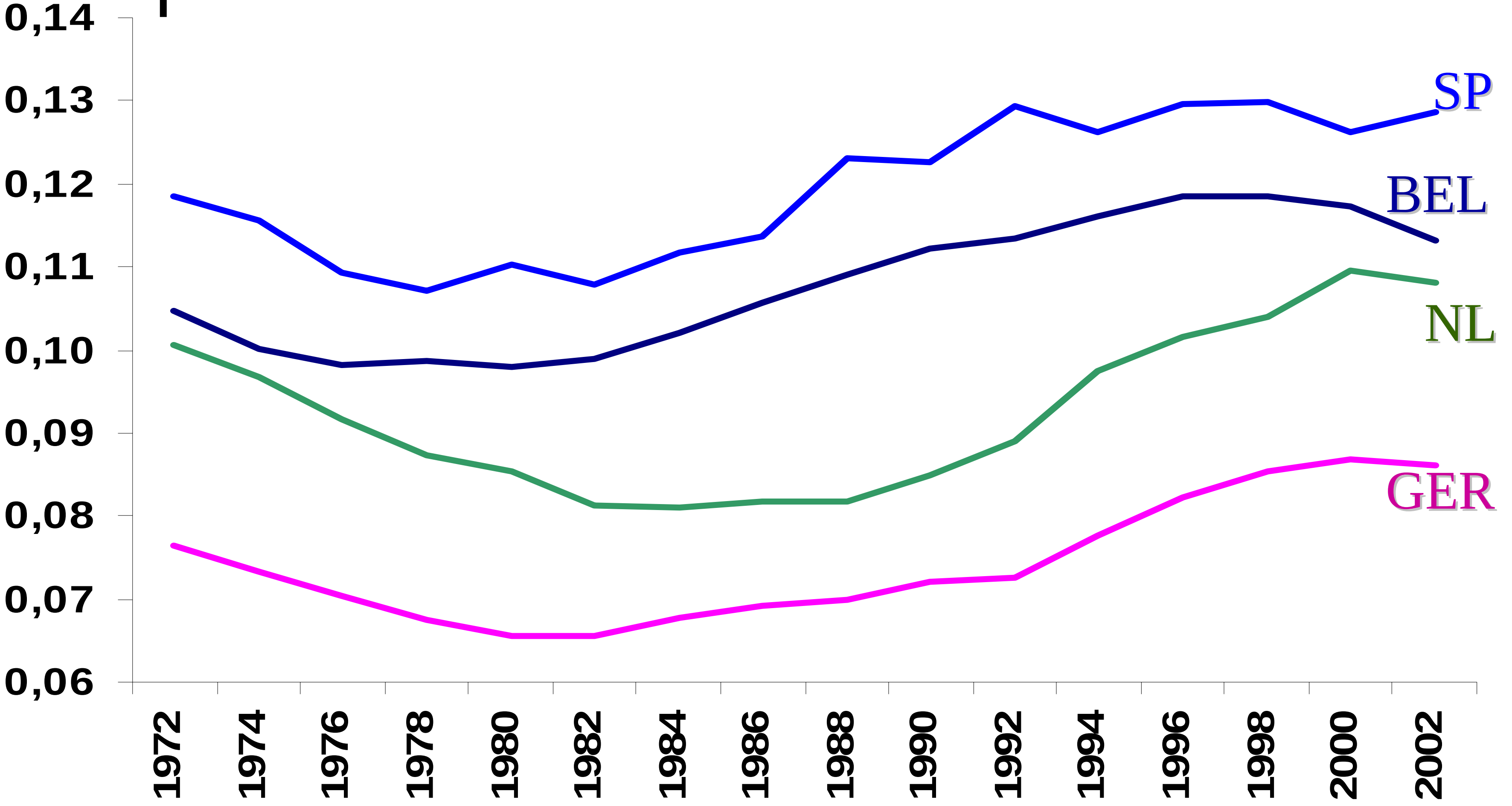
Measuring Entrepreneurship

- Business Ownership Rates: percentage of business owners in the labor force
- Start-up Rates: proportion of start-ups vis-a-vis
  - Total firms in the economy (business stock approach)
  - Labor force (labor market approach)
- Global Entrepreneurship Monitor (GEM): surveys covering adult population
  - Total entrepreneurial activity: percentage of adults owning or actively trying to start a business
  - Opportunity-based Entrepreneurial Activity: entrepreneurial activity to take advantage of a business opportunity
  - Necessity-based Entrepreneurial Activity: entrepreneurial activity because there are no better choices for work

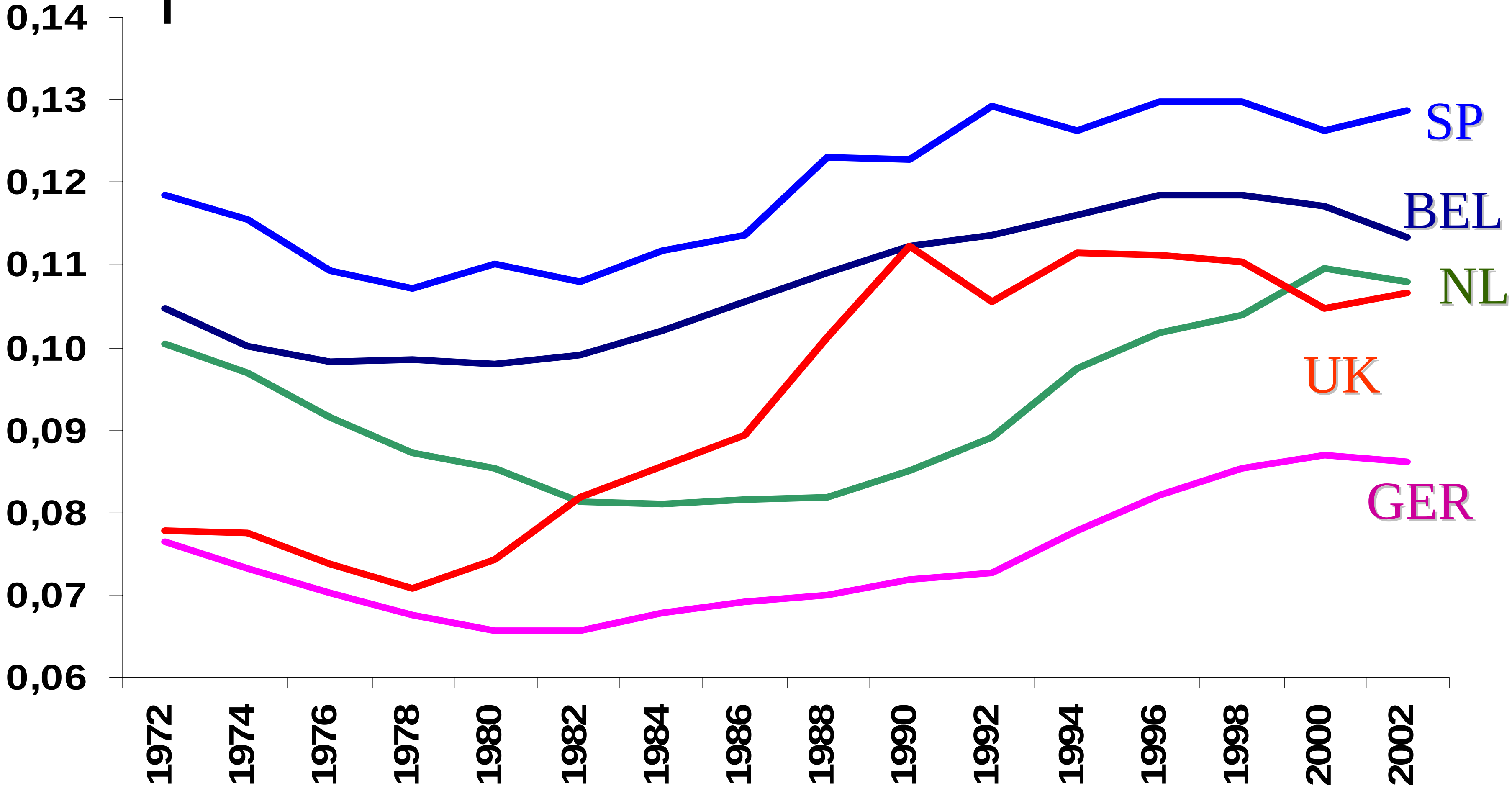
Business Ownership in OECD



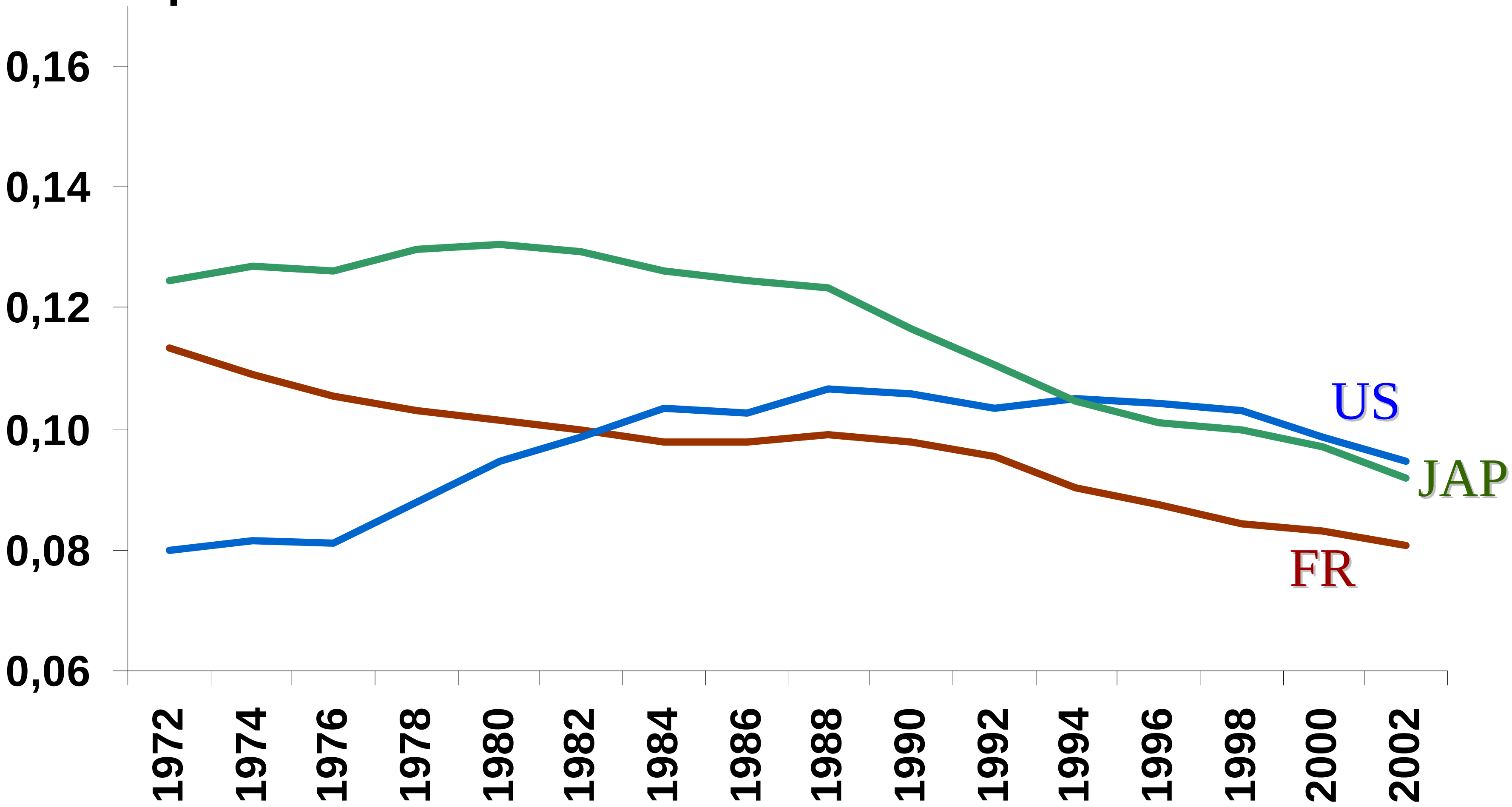
Business Ownership Patterns



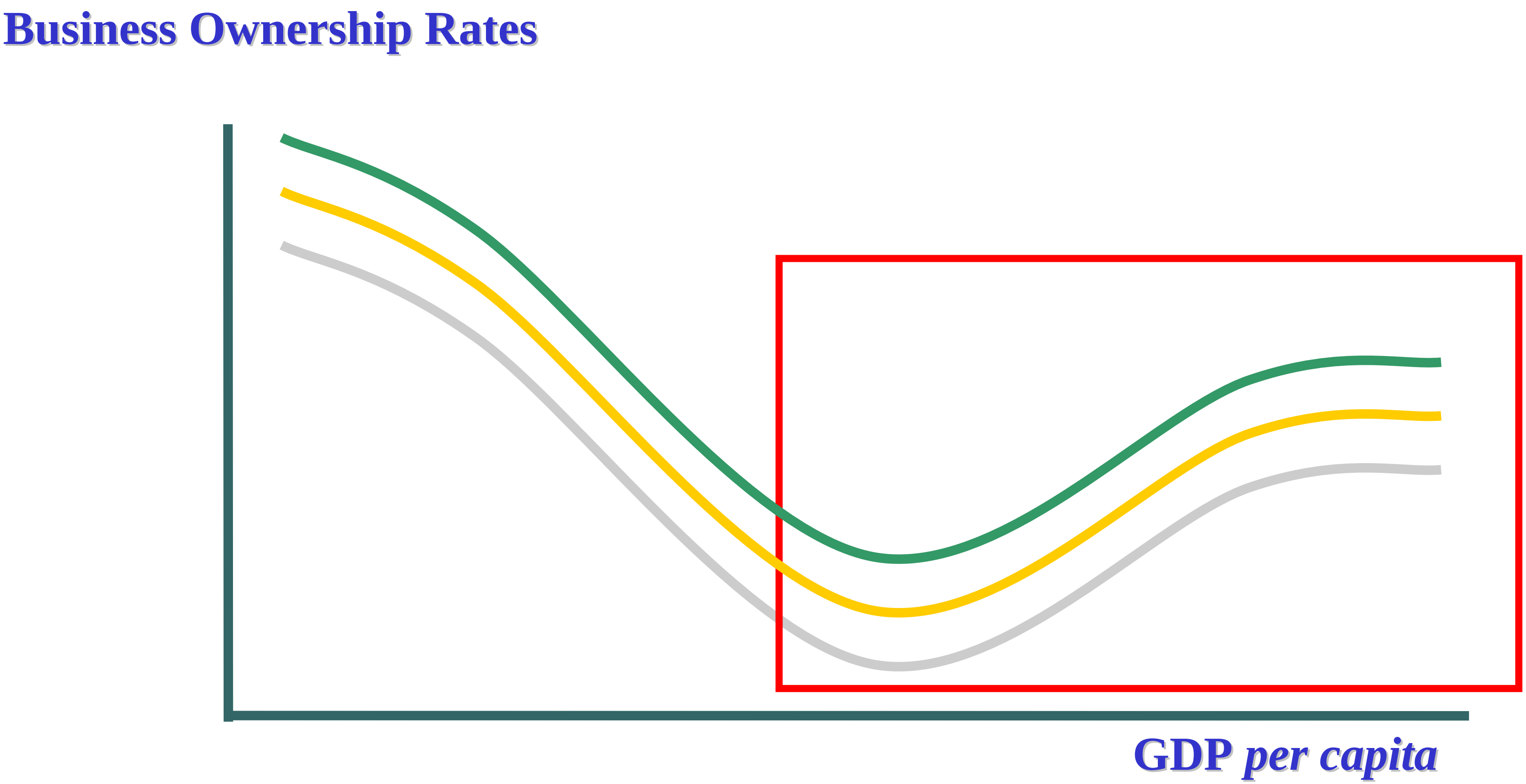
Business Ownership Rates: the Case of the UK



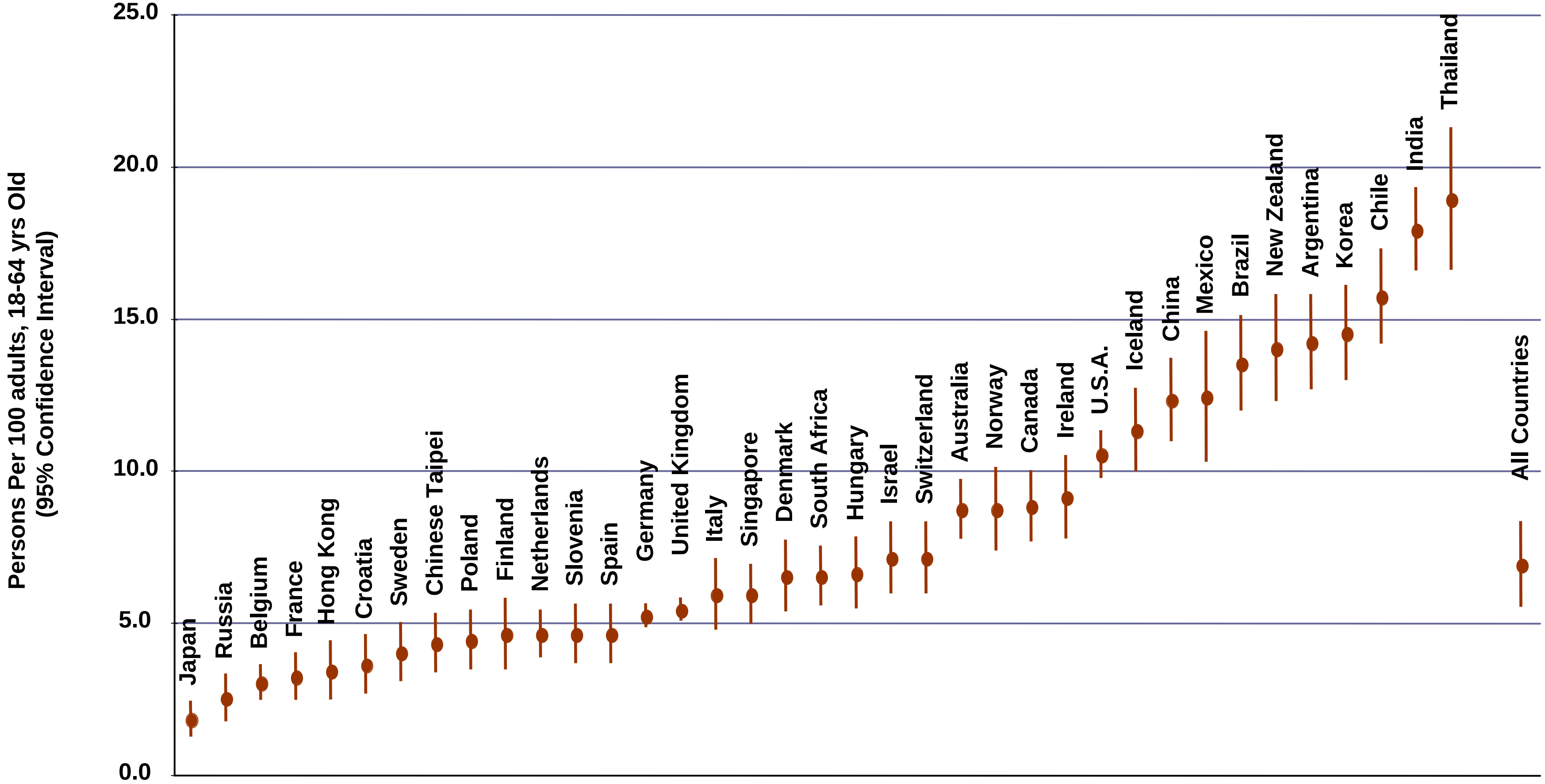
Business Ownership Rates: America and Japan



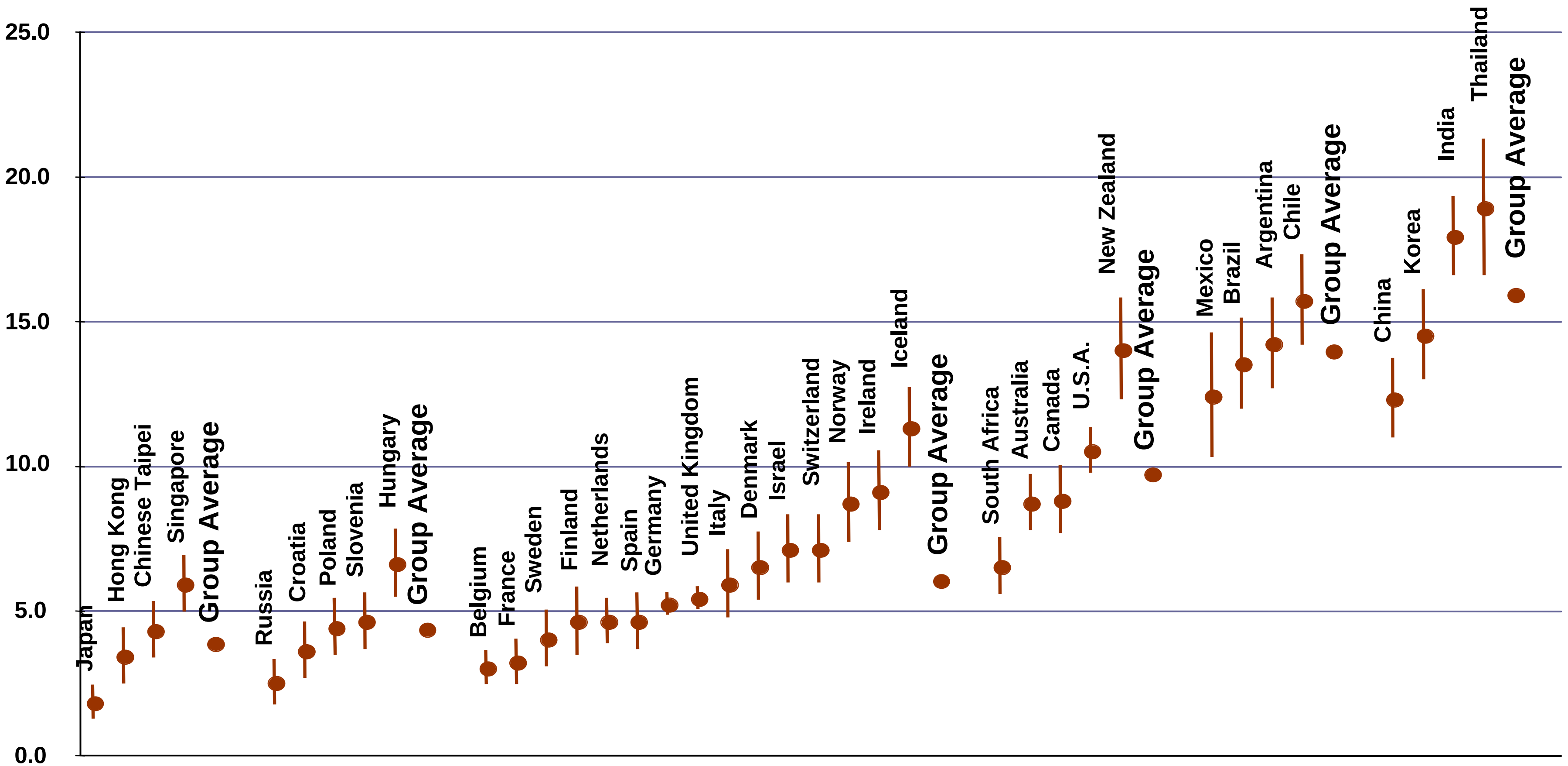
Business Ownership and Wealth



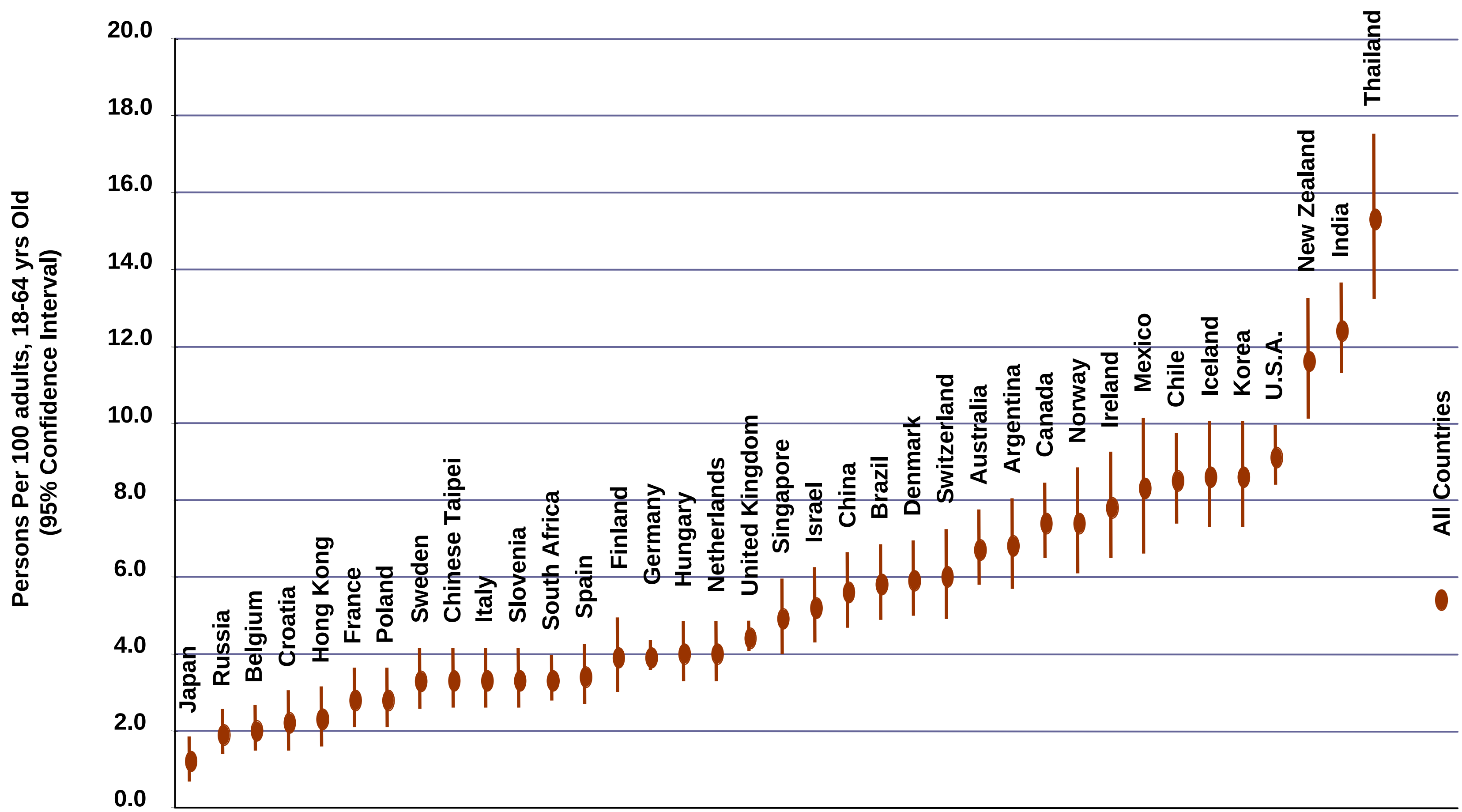
Total Entrepreneurial Activity by Country– GEM 2002



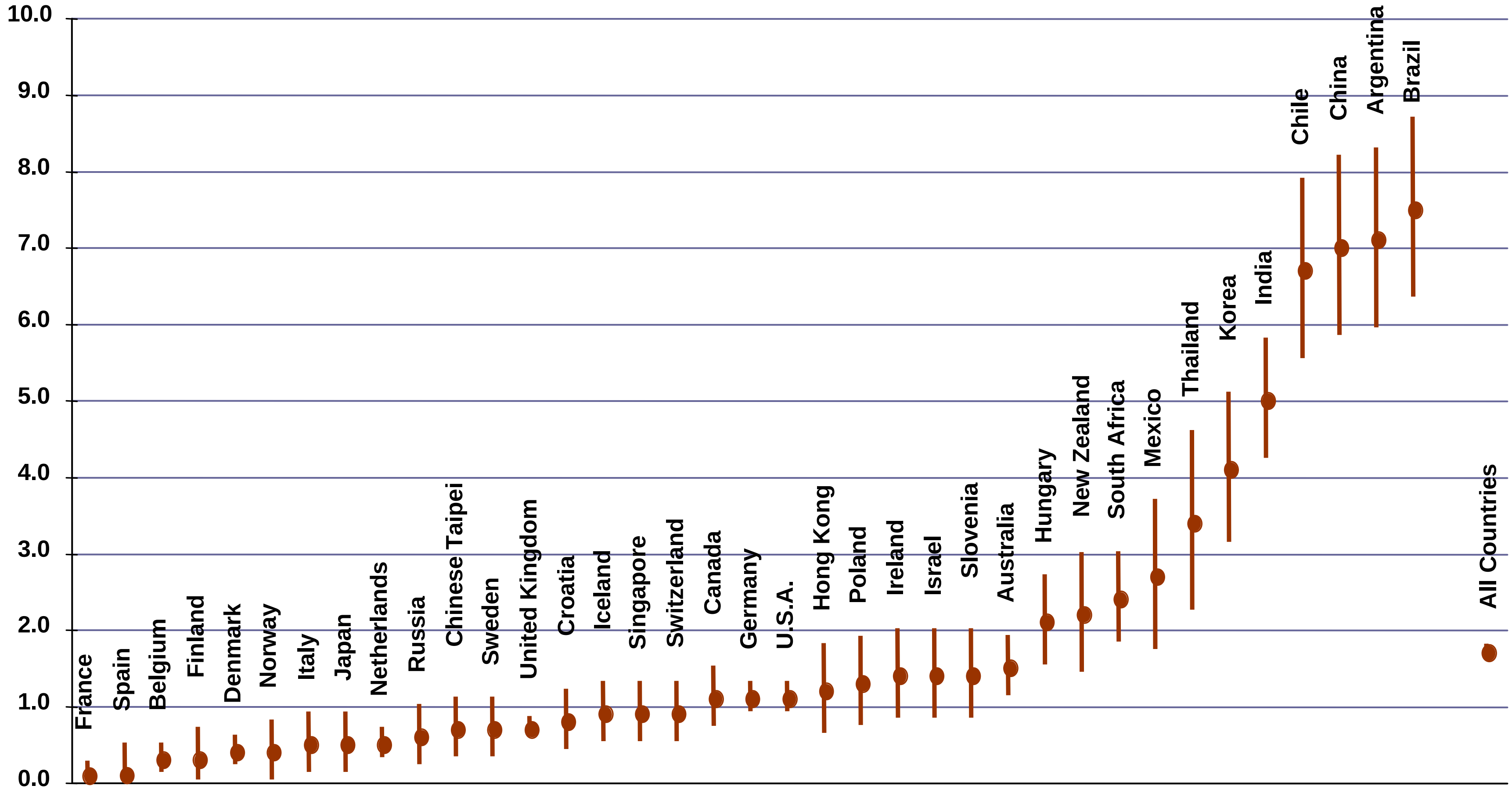
Total Entrepreneurial Activity by Global Region – GEM 2002



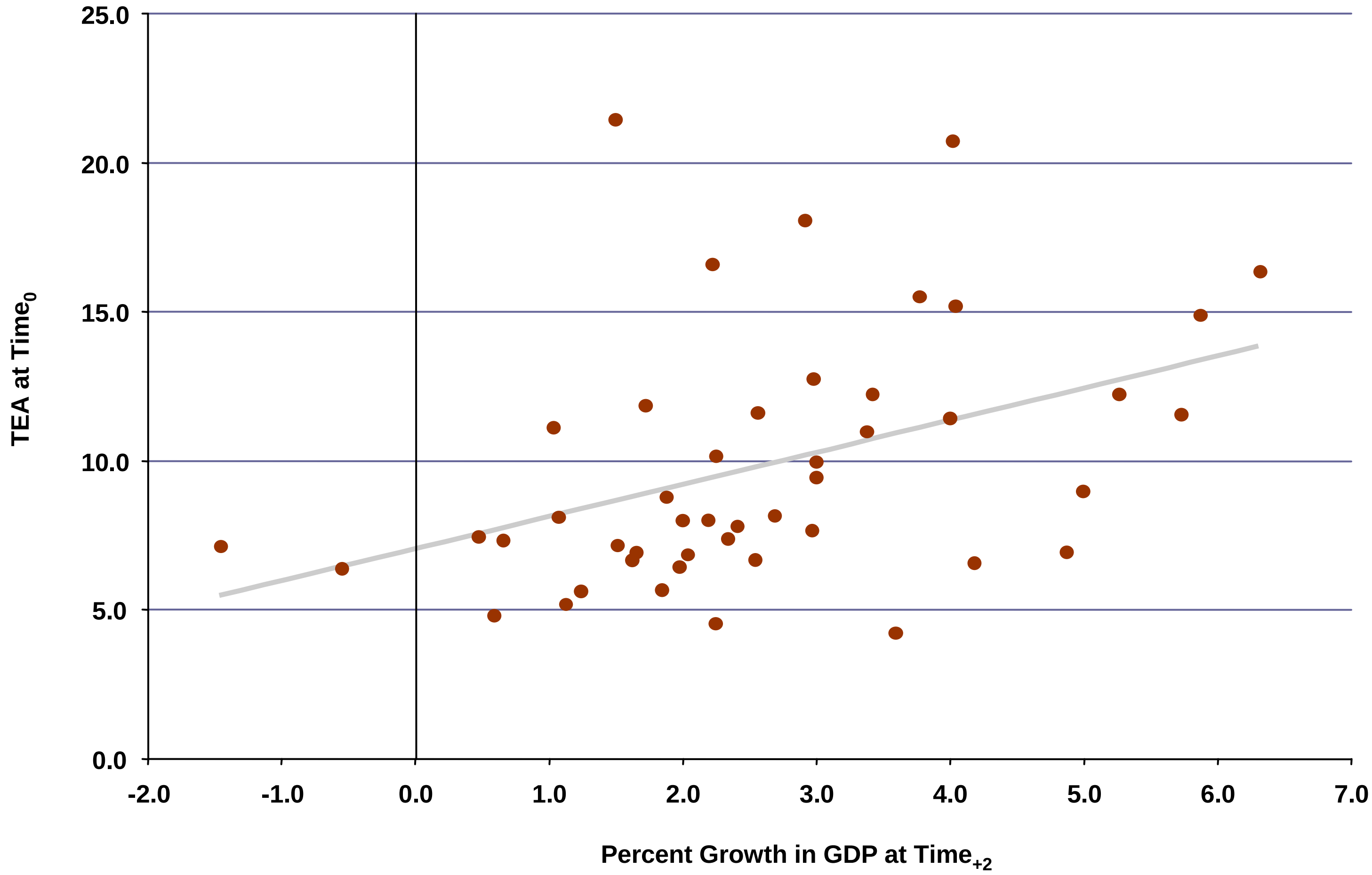
Opportunity-based Entrepreneurial Activity by Country – GEM 2002



Necessity-based Entrepreneurial Activity by Country – GEM 2002

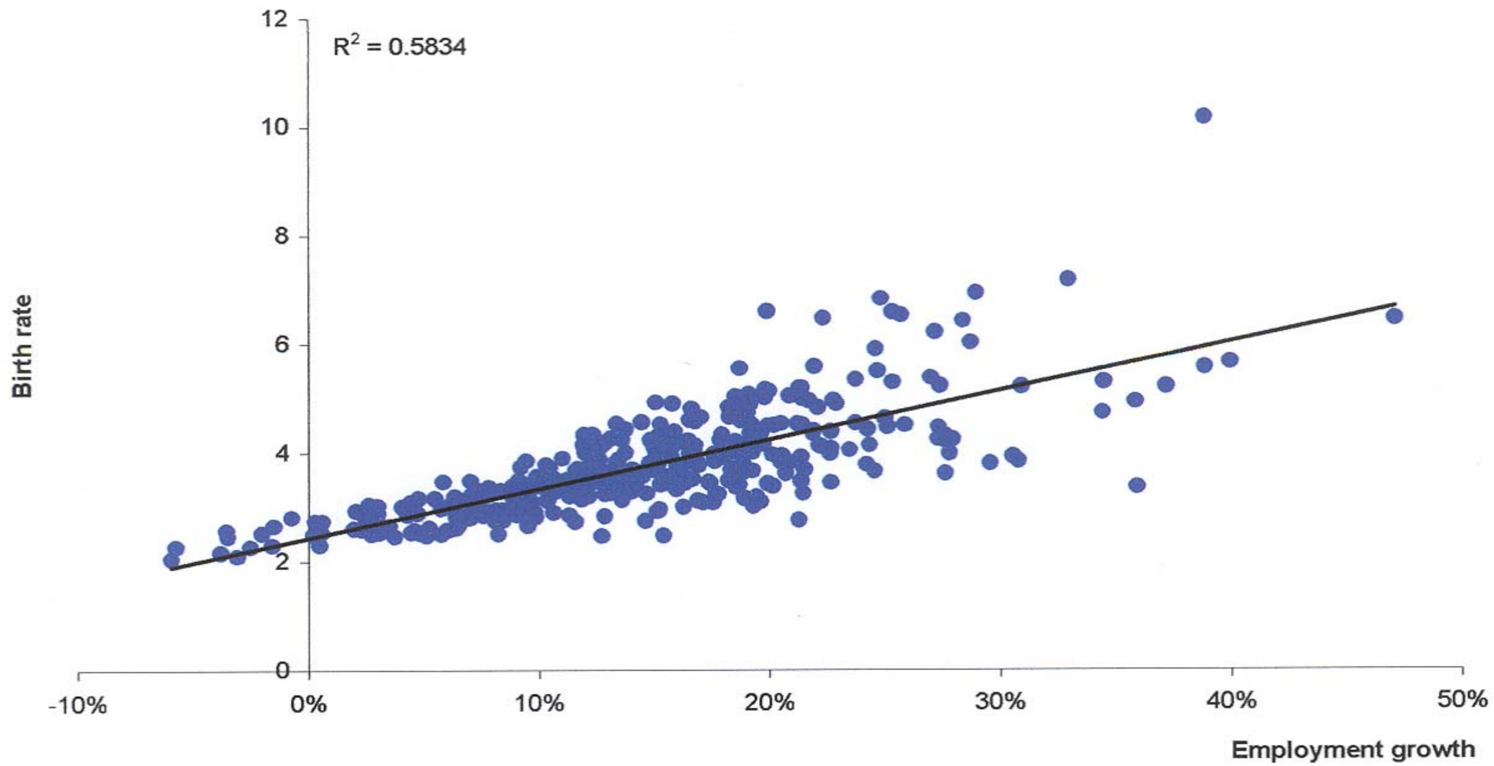


Total Entrepreneurial Activity and Subsequent Economic Growth



Entrepreneurship and GDP Growth - Reprise

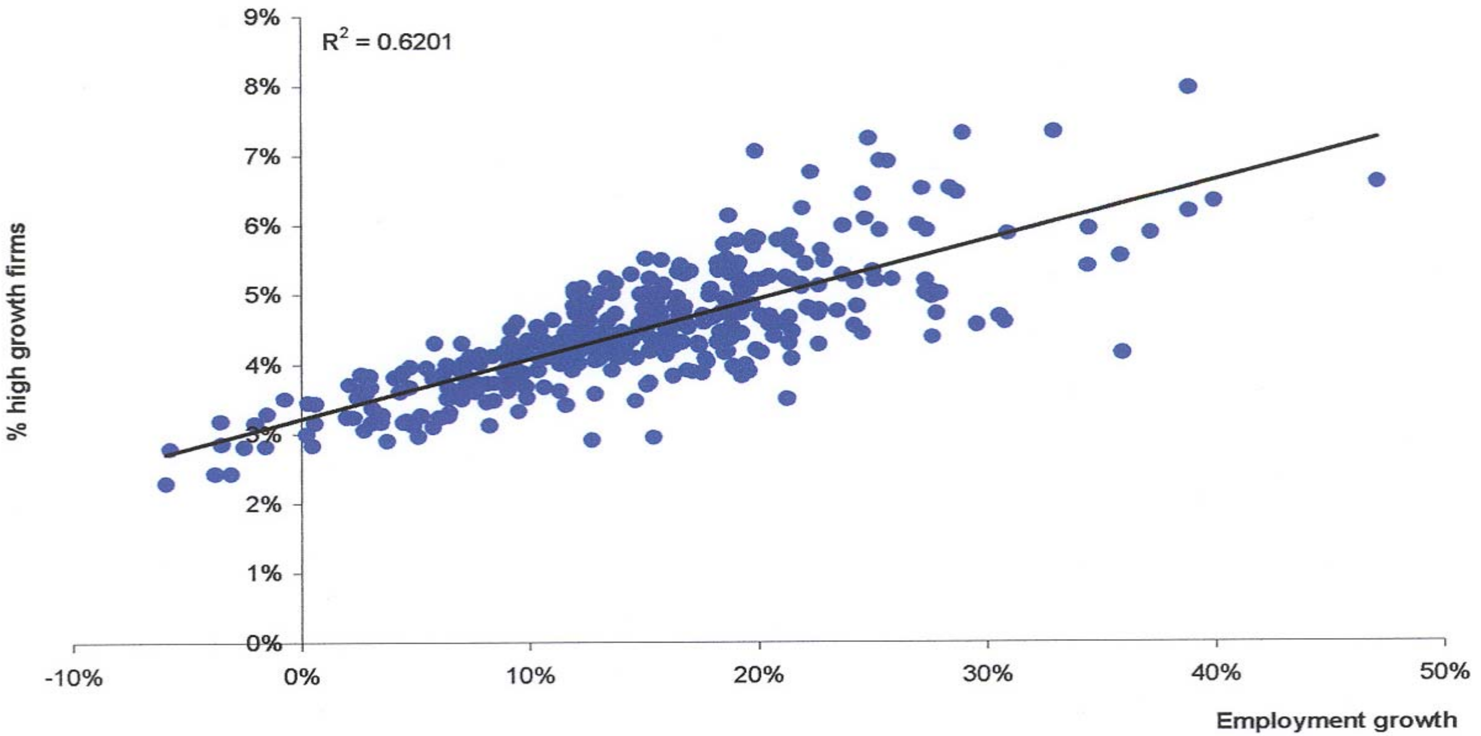
Figure 3: Entrepreneurship and growth 1991-96



Source: Acs and Armington, 2002.

High Growth Entrepreneurship and GDP Growth

Figure 4: Entrepreneurship and growth 1991-96



Source: Acs and Armington, 2002.

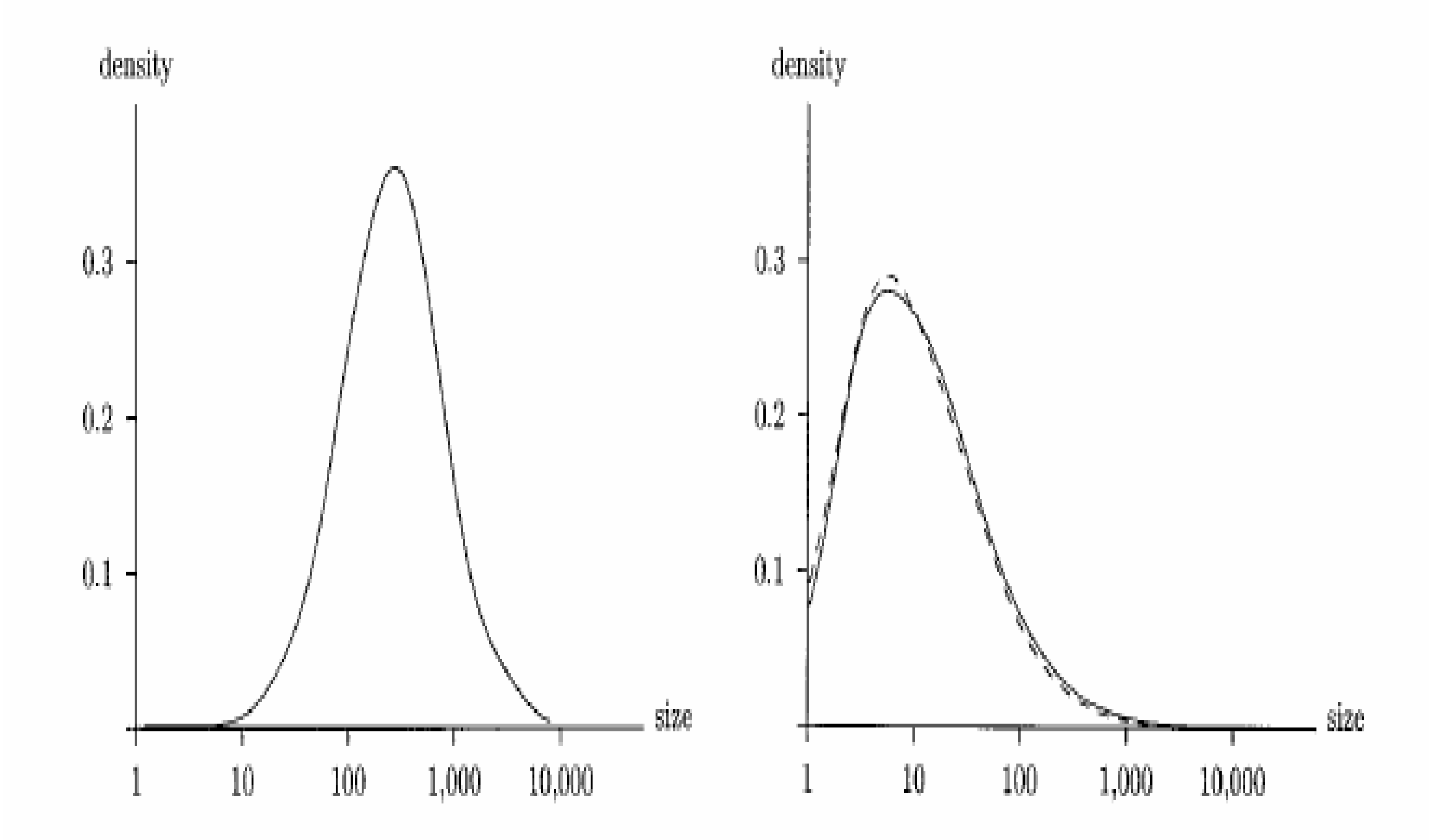
The Link between Entrepreneurship, Growth and Employment

- By serving as a conduit for new ideas to permeate the "knowledge filter" in the economic growth mechanism, entrepreneurial activity should lead to increases in employment
- Entrepreneurial opportunities increase with a "pull" effect produced by economic growth and hence higher rates of business start-ups should correlate with lower unemployment
- However, increased unemployment should lead to an increase in start-up activity on the grounds that the opportunity cost of not starting a firm has decreased ("push" effect) – hence there is "reverse causality"
- The unemployed tend to possess lower endowments of human capital and entrepreneurial talent required to start and sustain a new firm, so a predominance of necessity-based entrepreneurship is unlikely to promote growth much
- Public policy encouraging business ownership usually focuses on the unemployed, while promoting growth requires a focus on opportunity-based entrepreneurship

Small Firms, Growth and Employment: the Micro Level – Gibrat's Law

- Gibrat's Law: firm growth is independent of size – "The probability that the next opportunity is taken up by any particular active firm is proportional to the current size of the firm" (Sutton 1997)
- If Gibrat's Law holds, shifting employment from large to small enterprises should have no impact on total employment, since the expected growth rates of both types of firms are identical
- However, there is strong and systematic empirical evidence suggesting that Gibrat's Law does not hold across a broad spectrum of firm sizes – in fact, smaller firms have higher growth rates than their larger counterparts (Geroski 1995)

Firm Size Distribution and Gibrat's Law



Entrepreneurship and Employment Growth (Baptista, Escária and Madruga 2005)

- Besides creating new jobs when they are established, new firms grow at an average rate above that of previous incumbents, but have a much larger chance of failure
- Excess entry may drive incumbents out of the market, leading to unemployment
- Unless new entrants bring about positive indirect supply-side effects (spillovers) through innovation and increased competitiveness, higher start-up rates are unlikely to lead to employment growth
- These impacts are unlikely to be simultaneous in time, so the overall effect of entrepreneurship on employment will probably occur in cycles

Indirect Supply-side effects from New Firm Formation (Fritsch and Mueller 2004)

- Efficiency effects: by threatening or intensifying competition, factual or potential new entrants provide an incentive for incumbent efficiency
- Acceleration of structural change: high turnover of firms tends to speed up the adoption of innovations by the industry, increasing productivity
- Amplified innovation: new firms have a greater probability of introducing radical innovations that impact all the economy
- Greater product variety and quality: innovation brought about by new entrants increases the probability of finding a better match for customers' preferences, thus increasing general welfare and providing the basis for further, cumulative, innovations

Direct and Indirect Effects of Entrepreneurship on Employment