June 15, 2005

Global Perspectives on Entrepreneurship Policy

Proceedings of a Pre-Conference Session of the International Council for Small Business Annual Meeting

Sponsors:

U.S. Small Business Administration Office of Advocacy

National Federation of Independent Business Research Foundation

United States Association for Small Business and Entrepreneurship

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Contents

Introduction

In 2005, the International Council for Small Business (ICSB) held its 50th annual meeting in the United States, after holding the previous two in Northern Ireland and South Africa. In cooperation with this event, the Office of Advocacy, the National Federation of Independent Business (NFIB) Research Foundation, and the United States Association for Small Business and Entrepreneurship (USASBE) co-sponsored a pre-conference session, "Global Perspectives on Entrepreneurship Policy." The afternoon session focused on public policy issues that pertain to entrepreneurs around the world. Participants focused on international comparisons and research on such issues as the cost of entry for a new firm, workforce regulations and costs, regulatory burdens, technology transfer and innovation, and small business financing.

Special thanks to Joan Gillman, USASBE executive director; Dianne Welsh, USASBE president; Sandra King of ICSB; and Chad M. Moutray, chief economist, Office of Advocacy.

Thomas M. Sullivan
Chief Counsel for Advocacy
U.S. Small Business Administration

William Dennis
Senior Research Fellow
NFIB Research Foundation

Jeffrey Cornwall, director of the Belmont University Center for Entrepreneurship and discussants and sessions chair of the ICSB annual meeting.

Denny Dennis, NFIB Research Foundation; Thomas M. Sullivan, chief counsel for advocacy, U.S. Small Business Administration.

Acknowledgments

These conference proceedings contain summaries of each panel and speech from the June 17, 2005 pre-conference session. The summaries are followed by the authors' slide presentations or extended remarks. The compilation of these proceedings was a joint effort of the Office of Advocacy. For more information, contact Rebecca Krafft at rebecca.krafft@sba.gov or (202) 205-6224.

Editor:	Rebecca Krafft
Assistant Editor:	James Heisey
Writers:	Brian Headd James Heisey Joe Johnson Chad Moutray Charle Ou Radwan Saade Victoria Williams
Photographer:	Rob Kleinsteuber

Panel 1, 12:45 p.m.

An International Perspective on the Costs and Problems of Business Entry

The moderator, William "Denny" Dennis, of the NFIB Research Foundation, opened the discussion by suggesting that a study of the impediments to business entry into the marketplace is more fruitful than focusing on subsidies or reforms. This is in large part because impediments are bound to affect small businesses now or in the near future. The panel shed light on three important determinants of entrepreneurial growth: providing a global comparison of impediments to entry, analyzing the role of perceived rather than observed administrative complexity on entrepreneurial entry, and verifying that entrepreneurial activity is linked to economic freedom and economic growth.

Simeon Djankov, manager of a World Bank research project entitled "Doing Business in 2006," presented a global perspective on impediments to new entry. Djankov's report presented evidence showing that the length of time required to set up a business ranges from as little as two days in some countries to as many as 153 days in others. The large variation is not due to the economic status of the country, but is linked to the presence or absence of an advocate for business. Djankov confirmed the widely held notion that an increase in complexity of the business entry process leads to an inevitable increase in the number of businesses opting out of the formal economy. In conclusion, Djankov

Participating on the panel on the problems facing new entrants were (from left) Jeffery McMullen, Simeon Djankov, Andre Van Stel, and Denny Dennis.

Simeon Djankov, senior economist, The World Bank.

Andre Van Stel, research fellow, Max Planck Institute.

suggested that easier entry has benefits and believes that his study provides evidence of the correlation to policymakers.

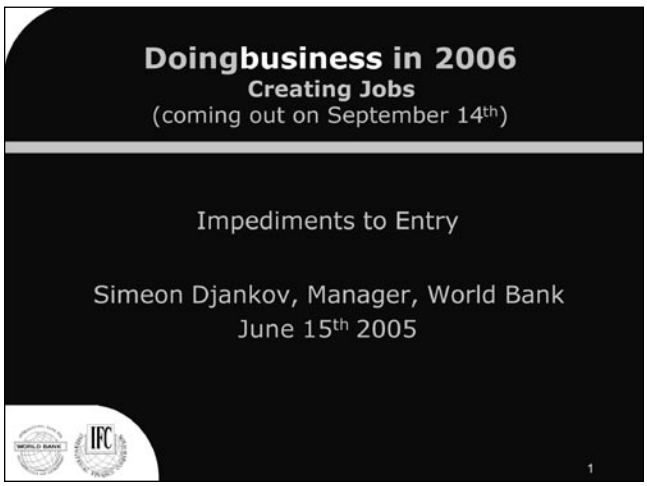
André van Stel, of the Max Planck Institute, presented a model linking business ownership and perceived administrative complexity. There is novelty in this approach. While an extensive literature on the link between administrative complexity and business entry exists, its principal focus is on removing impediments. The link between business entry and perceived complexity has a different solution: improved communication to reduce the discrepancy between actual and perceived administrative complexity.

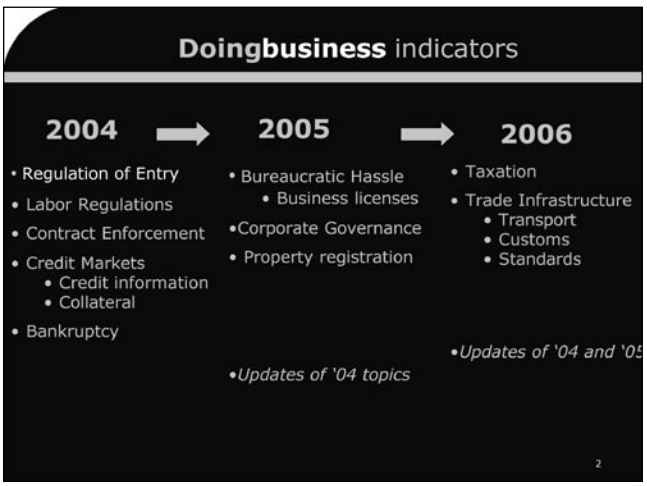
Jeffery McMullen, assistant professor, Baylor University.

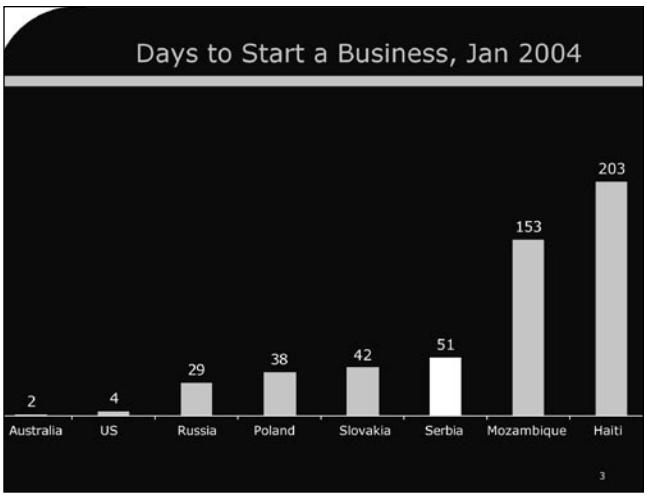
Jeff McMullen, of Baylor University, discussed the antecedents of entrepreneurial activity, looking particularly at the role of the rate of economic freedom and gross national product. McMullen validated the widely held notion that the national level of entrepreneurial activity reflects general macroeconomic conditions, using a model that was run on a sample of 37 countries. Which aspects of economic freedom mattered most? The model determined that this depends on the motivations behind the entrepreneurial activity.

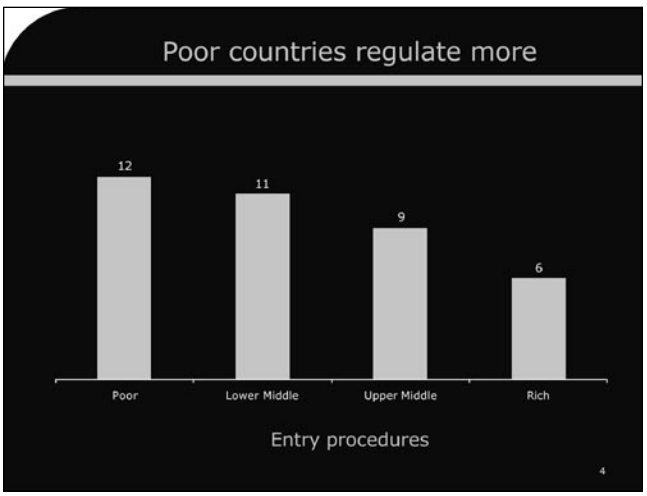
Regulation as an Impediment to Entry in Developing Countries

Simeon Djankov
Senior Economist
The World Bank

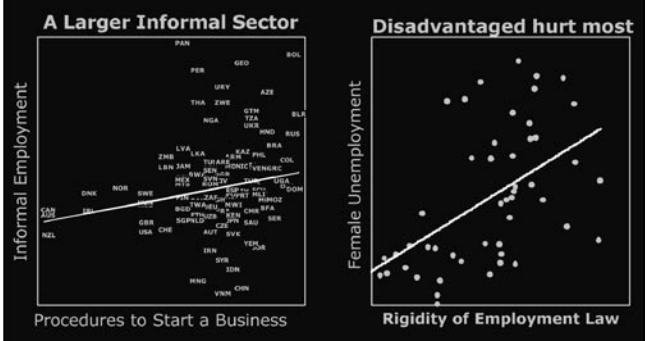








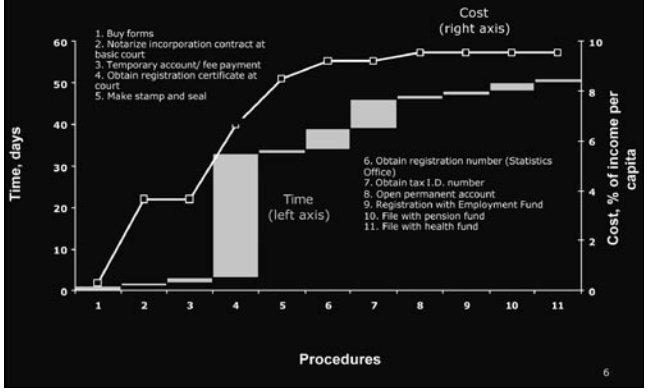
The result? The other path



Partial scatter plots controlling for income per capita. Relationships statistically significant at 5% level.

5

Business entry in Serbia, Jan. 2004



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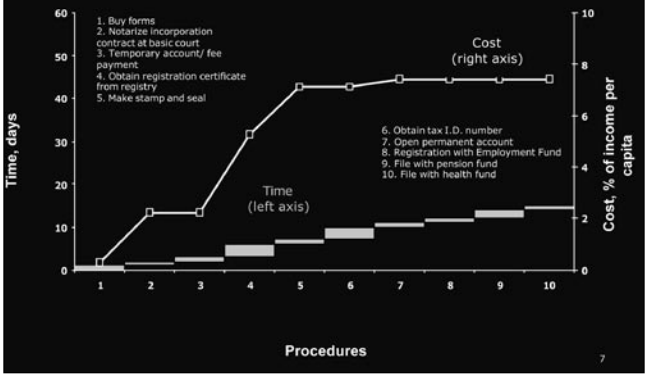
Business entry in Serbia, Jan. 2005



7

Pay-off from Easing Entry

- In Serbia, the number of new companies registered jumped 42% between first quarter of 2004 and first quarter of 2005
- In Vietnam, by 28%
- In Romania, by 22%
- In Estonia, by 19%
- In Belgium, by 16%
- In Spain, by 10%
- In Latvia, by 8%

8

The Relationship Between Perceived Impediments and Business Entry in OECD Countries

Andre Van Stel
Research Fellow
Max Planck Institute

Linking business ownership and perceived administrative complexity

André van Stel	Max Planck Institute, Jena
	Erasmus University Rotterdam
	EIM, Zoetermeer
Viktor Stunnenberg	Erasmus University Rotterdam

Research question

- What are the determinants of entrepreneurship?
- Investigate effect of
  - Risk tolerance
  - Perceived lack of finance
  - Perceived administrative complexity
- Empirical analysis of 18 OECD countries
- Focus on administrative complexity

Variables Eurobarometer at macro level

- Risk tolerance: % (strongly) disagree with statement
  One should not start a business if there is a risk it might fail.
- Lack of financial support: % (strongly) agree with:
  It is difficult to start one's own business due to a lack of available financial support.
- Administrative complexity: % (strongly) agree with:
  It is difficult to start one's own business due to the complex administrative procedures.

Administrative complexity in 18 OECD countries

Iceland	0.544	Norway	0.761
Netherlands	0.655	Greece	0.762
Austria	0.683	Spain	0.768
USA	0.685	Belgium	0.799
Finland	0.711	Italy	0.810
United Kingdom	0.721	Sweden	0.819
Ireland	0.731	France	0.822
Luxembourg	0.754	Denmark	0.846
Germany	0.761	Portugal	0.869

Source: Flash Eurobarometers 134 and 146

Difference perceived / 'actual' administrative complexity

- Variable 'administrative burden for startups' in Global Competitiveness Report:
  - Survey among firms instead of population
  - Among others: number of days / permits required to start a new firm
- Correlation with perceived adm. compl.: 0.53

Model

$$E_{it} = \alpha + \beta_{1,t-L} + \gamma_1 (U_{i,t-L} \cdot U_{i,t-2L}) + \gamma_2 (E_{i,t-L} \cdot E_{i,t-2L}) + \varepsilon_{it}$$

$$\varepsilon_{i,2002} = \beta_0 + \beta_1 RT_{i,2002} + \beta_2 LF_{i,2002} + \beta_3 AC_{i,2002} + \varepsilon_{i,2002}$$

E = business ownership rate: number of business owners (unincorp. as well as incorp.) as a fraction of labour force

Source: COMPENDIA

Results

	lag				
	6 years	8 years	10 years	12 years	14 years
Constant	0.025 (0.9)	0.066 (1.6)	0.153*** (3.5)	0.155*** (3.4)	0.153** (2.5)
Risk tolerance	-0.018 (1.0)	-0.054* (2.1)	-0.081** (2.9)	-0.113*** (3.9)	-0.105** (2.7)
Lack of finance	-0.023 (0.8)	-0.004 (0.1)	-0.040 (0.9)	0.001 (0.01)	-0.000 (0.0)
Administrative complexity	-0.003 (0.1)	-0.047 (0.8)	-0.099 (1.6)	-0.117* (1.9)	-0.119 (1.4)
R^2	0.18	0.28	0.53	0.57	0.39
N	18	18	18	18	18

Related research

- Grilo and Thurik (2004, 2005):
  - Negative relation between perceived administrative complexity and self-employment at the MICRO level
- Van Stel, Storey, Thurik, Wennekers (2005):
  - Negative relation between 'number of days required to start a new firm' (GCR) and young business rate (GEM) at the country level

Preliminary conclusions

- Negative effect of perceived administrative complexity on entrepreneurship
- Policy:
  - reduce administrative burdens
  - communicate existing administrative regulations to population

The Role of Economic Freedom and GDP

Jeffery McMullen
Assistant Professor
Baylor University

Antecedents of Entrepreneurial Activity: The Role of Economic Freedom and GDP

Ray Bagby, Baylor University
Les Palich, Baylor University
Jeff McMullen, Baylor University

ICSB: GLOBAL PERSPECTIVES ON ENTREPRENEURSHIP 1

Entrepreneurship and Economic Growth

- The 2002 GEM (Global Entrepreneurship Monitor) Report concludes:
  - Consistent with previous GEM studies, national economic growth is associated with heightened levels of entrepreneurship.
  - Specifically, correlations between entrepreneurial activity in one year and growth in GDP two years later were significant and positive.
  - Though the exact causal mechanisms have not been established, future research should reveal just how the two are connected (p. 37).

ICSB: GLOBAL PERSPECTIVES ON ENTREPRENEURSHIP 2

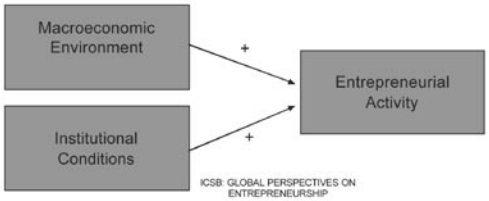
Antecedents of Entrepreneurial Activity

- The 2002 GEM Report adds:
  - The national level of entrepreneurial activity appears to reflect general macroeconomic conditions – moving up and down with changes in the national GDP –
  - as well as enduring cultural, social and institutional factors – maintaining the general rank order of GEM countries from year to year (p. 37).

ICSB: GLOBAL PERSPECTIVES ON ENTREPRENEURSHIP 3

Research Question

- Given the assumed importance of entrepreneurship to economic growth, an important question becomes: why and how do macroeconomic and institutional conditions encourage this entrepreneurial activity?



ICSB: GLOBAL PERSPECTIVES ON ENTREPRENEURSHIP 4

Entrepreneurial Activity

- Defined (2002 GEM:5):
  - Total entrepreneurial activity (TEA) index (i.e., that percent of the labor force that is either actively involved in starting a new venture or the owner / manager of a business that is less than 42 months old.
  - Opportunity-motivated entrepreneurship (OME) – voluntary pursuit of an attractive business opportunity
  - Necessity-motivated entrepreneurship (NME) – engaged in entrepreneurship out of necessity – that is, they can find no other suitable work.
- As the Product of a Decision:
  - Requires a decision between self-employment (creating a new organization) and employment within an existing organization (OME) or unemployment (NME).
  - These decisions require beliefs about the feasibility and desirability of self-employment versus employment.

Institutions and the Feasibility of Entrepreneurial Activity

- Whether entrepreneurial activity is a feasible income-generating alternative to employment within an existing organization depends upon the institutional matrix in which one functions.
- North (1990) suggests that institutions influence the decisions people make.
- As the rules of the game, these institutions provide incentive structures that channel people's utility maximizing behavior by influencing the perceived costs associated with transacting in different ways.
- Therefore, institutional conditions can either encourage or discourage the likelihood of entrepreneurial activity by decreasing or increasing, respectively, the perceived costs of transacting through self-employment.
- The question then becomes: Which institutional conditions provide incentives that reduce the perceived costs of the uncertainty of self-employment as compared to the relative certainty of employment?

Economic Freedom and Entrepreneurial Activity

- Berggren (2002: 197) notes: Institutions that guarantee economic freedom plausibly have the capacity to provide the growth-enhancing kind of incentives, for several reasons:
  - they promote a high return on productive efforts through low taxation, an independent legal system, and the protection of private property;
  - they enable talent to be allocated to where it generates the highest value (as argued in Murphy, Schleifer, and Vishny, 1991);
  - they foster a dynamic, experimentally organized economy in which a large amount of business trial and error can take place (Johansson, 2001, chap. 2) and in which competition between different actors occurs because regulations and government enterprises are few;
  - they facilitate predictable and rational decision making through a low and stable inflation rate;
  - and they promote the flow of trade and capital investment to where preference satisfaction and returns are the highest.
- Thus, because economic freedom encourages an environment that is conducive to entrepreneurial activity, we expect that entrepreneurial activity will increase when economic freedom is high.

Macroeconomics and the Desirability of Entrepreneurial Activity

- GDP per capita is the commonly used measure of average income or standard of living. Because production generates income, total production is considered to be equivalent to total income. Thus, the most common measure of production or output, the GDP (gross domestic product) is also used as a measure of income.
- We propose that entrepreneurial activity becomes more desirable as a country's GDP per capita decreases.
- That is, as a nation's GDP per capita falls,
  - we expect NME to increase for lack of a better income-generating alternative, and
  - we expect OME to increase because of decreases in the opportunity costs associated with the less uncertain income-generating alternative of seeking employment in an existing organization.

Sample and Measures

- Sample size: n = 37 countries
- IEF (2003):
  - The Index of Economic Freedom was developed by the Heritage Foundation and *Wall Street Journal*.
  - Published annually since 1995, the Index includes 161 countries and uses 50 independent variables grouped into 10 categories to score countries (see hypotheses on next slide).
  - The overall score is the average of the sum of the ten factors. Based upon the overall score, countries can be classified as free (<1.95), mostly free (2-2.95), mostly unfree (3-3.95), or repressed (>4).
  - Data for the 2003 IEF came from the period which covered the second half of 2001 and the first half of 2002.
  - For this reason, we decided to compare it to the 2002 data of the Global Entrepreneurship Monitor (GEM) which was derived from a more comparable period.
- GEM (2002):
  - GDP per capita, TEA, NME, & OME were obtained from the 2002 GEM report.
  - The GEM began analyzing entrepreneurial processes in 1999 using data from 10 countries.
  - It is the only known source of entrepreneurial activity which measures and also gathers information similar to that of the IEF, such as property rights, government policies, access to infrastructure, etc. from country experts.
  - The 2002 GEM offers data on 37 countries from around the globe, all of which are contained in the IEF.

	Hypotheses	Total entrepreneurial activity will increase	Necessity-motivated entrepreneurial activity will increase	Opportunity-motivated entrepreneurial activity will increase
	ADJ. R^2 MODEL Pr > F	.3981 .008 Significant	.4927 .002 Significant	.2675 .050 Significant
	INTERCEPT	ß=19.403 p=.004	ß=6.661 p=.015	ß=12.229 p=.014
1	TRADE POLICY – As government interference in the free flow of foreign commerce decreases,	ß=-1.644 p=.244 R^2=.054	ß=-.661 p=.264 R^2=.050	ß=-1.297 p=.228 R^2=.058
2	FISCAL BURDEN OF GOVERNMENT– As tax rates and the level of government expenditures decrease,	ß=613 p=.509 R^2=.018	ß=.706 p=.079 R^2=.119 Marginally Significant	ß=.025 p=.972 R^2=.000
3	GOVERNMENT INTERVENTION – As direct use of scarce resources for its own purposes or its control of resources through consumption and production decreases,	ß=.016 p=.985 R^2=.000	ß=-.114 p=.761 R^2=.004	ß=.175 p=.796 R^2=.003
4	MONETARY POLICY – As market pricing is facilitated or inflation is controlled,	ß=1.151 p=.191 R^2=.067	ß=.713 p=.059 R^2=.136 Marginally Significant	ß=.588 p=.376 R^2=.032
5	FOREIGN INVESTMENT – As foreign investment becomes less restricted,	ß=-.383 p=.726 R^2=.005	ß=.180 p=.695 R^2=.006	ß=-.533 p=.522 R^2=.017

	Hypotheses	Total entrepreneurial activity will increase	Necessity-motivated entrepreneurial activity will increase	Opportunity-motivated entrepreneurial activity will increase
6	**WAGES AND PRICES** – As government regulation or intervention of wages and prices decreases,	ß=4.466 p=.027 R^2=.180 Significant	ß=1.379 p=.098 R^2=.106 Marginally Significant	ß=2.477 p=.099 R^2=.105 Marginally Significant
7	**PROPERTY RIGHTS** – As government failure to protect private property through law enforcement decreases,	ß=2.304 p=.115 R^2=.096	ß=-.383 p=.525 R^2=.016	ß=2.505 p=.028 R^2=.178 Significant
8	**REGULATION** – As the difficulty of starting or operating a business decreases,	ß=-.202 p=.876 R^2=.000	ß=-.275 p=.614 R^2=.010	ß=.232 p=.814 R^2=.002
9	**BLACK MARKET** – As corruption in the country decreases	ß=-.446 p=.771 R^2=.003	ß=.348 p=.590 R^2=.012	ß=-.417 p=.721 R^2=.005
10	**BANKING** – As excessive bank regulation decreases,	ß=.013 p=.990 R^2=.000	ß=.166 p=.713 R^2=.006	ß=-.041 p=.959 R^2=.000
11	**GDP** – As the expected income from employment increases,	ß=-7.893 p=.008 R^2=.244 Significant	ß=-3.390 p=.008 R^2=.054 Significant	ß=-4.451 p=.046 R^2=.150 Significant

Discussion

- Economic Freedom and GDP per capita are strong predictors of entrepreneurial activity.
- All 3 types of EA (TEA, NME, OME) increase when GDP per capita decreases and there is less government regulation or intervention into wages and prices.
- NME increases when tax rates and government expenditures decrease and the monetary policy acts to control inflation and facilitate market pricing.
- OME increases when government enforces property rights and does not engage in appropriation

Limitations

- Cross Sectional:
  - Does GDP per capita drive entrepreneurial activity or does entrepreneurial activity drive GDP per capita? Yes
  - We looked at GDP per capita across countries - not change in GDP per capita within country
  - Time lags & business cycles?
- Sample size:
  - Power and Degrees of Freedom – Interactions?

Conclusion

- Despite a highly conservative statistical test (using a small sample that provided few degrees of freedom), we find substantial support that entrepreneurial activity increases with economic freedom and reductions in GDP per capita.
- Which factors of economic freedom matter the most, however, depends upon the motivation behind the entrepreneurial activity.

Speech, 1:45 pm

Global Efforts to Reduce Regulatory Burdens

Betina Hagerup
Deputy Director General
Danish Commerce and Companies Agency

Betina Hagerup of the Danish Commerce and Companies Agency discussed trends in Europe to measure and reduce regulatory burdens, especially those that affect entrepreneurship. She highlighted the fact that regulation has a negative impact on business, and added that it negatively affects society as well, by reducing overall economic growth and decreasing global competitiveness. She acknowledged that many regulations also produce immense social benefits, so any regulatory reform must be accomplished by pursuing "smarter" regulations rather than simply reducing regulation wholesale. The model adopted in Denmark and elsewhere in Europe is known as "regulatory budgeting."

Regulatory budgeting relies on detailed estimates of regulatory impacts at the microeconomic level, while maintaining a macroeconomic focus on global competitiveness. The detailed estimates of cost impacts are used to form a budget that calls for specific, focused annual reductions in burdens. This culminates in a target that meets the goal of increasing growth and competitiveness. A number of studies have documented the success of this gradual yet highly focused change in the regulatory environment in Europe. In Denmark recent successes have reduced the administrative costs of regulatory compliance by $17 million while increasing GDP by $45 million and productivity by 0.1 percent. In the Netherlands the results have been even more dramatic, with a 25 percent reduction in red tape leading to a 1.5 percent increase in GDP and a 1.7 percent increase in productivity.

Betina Hagerup, deputy director general, Danish Commerce and Companies Agency.

Global efforts to reduce regulatory burdens

Betina Hagerup
Deputy Director General
Danish Commerce and Companies Agency
BHA@EOGS.DK

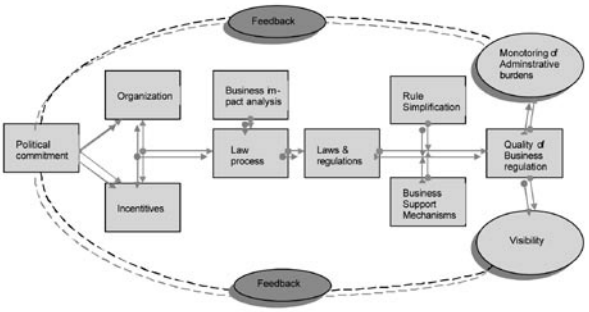
*'The **cumulative effect of many regulations** and formalities from multiple institutions and layers of government is to **slow down** business responsiveness (…) and generally **discourage** entrepreneurship. These effects are **more costly in global markets**…'*

OECD, 2001; Businesses' Views on Red Tape

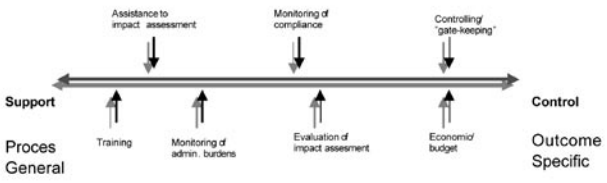
Danish international study

- Focus on
  - reducing administrative burdens
  - and improve quality in business regulation
- Comparing efforts in 20 countries
- Results:
  - Analytical model on better business regulation
  - best practise examples
  - new international trends
  - and national input

Overall model on better business regulation



Approaches to reduce administrative burdens



A global trend on administrative burden?

Microlevel

- Detailed impact
- Specific legislation

Macrolevel

- Focus on competitiveness

But why?

*'Proportionally, **the smallest companies** endure(.) more than five times the administrative burden per employee than larger firms…'*

OECD, 2001; Businesses' Views on Red Tape

Effect of red tape reduction

- Denmark

Red tape reduction by 17 mio.$

= increase in GDP by 45 mio. $

= increase in production by 0.1%

- Vaekstredegoerelsen, 2003, The Danish Government

- The Netherlands

Red tape reduction by 25%

= increase in GDP by 1.5%

= increase in productivity by 1.7%

- More leeway for business thanks to fewer burdens, 2004

How to improve competiveness through less red tape?

- Detailed measuring
- Reduction targets
- The golden rule: What gets measured gets done…

The Standard Cost Model points in this direction

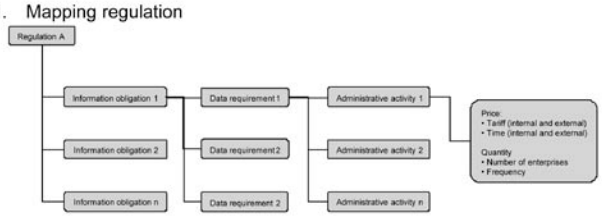
The Standard Cost Model is an *action oriented* method

The advantages:

- Detailed and objective mapping of each piece of legislation
- Precise knowledge of the costs of the administrative burdens
- Ability to give direct recommendations on simplification
- The high level of detail -> well-suited for cross-country comparisons

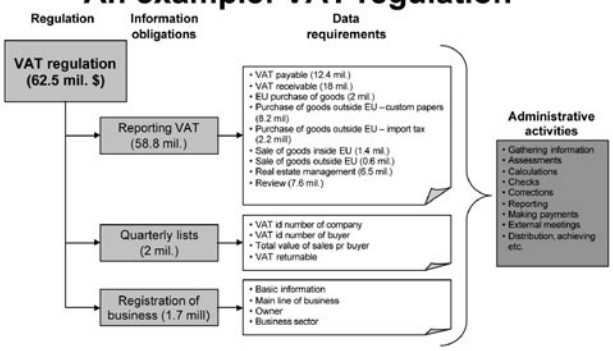
The Method

1. Mapping regulation



2. Interviewing businesses and identifying the normally efficient business
3. Reporting the results

An example: VAT regulation



An example: Cost at societal level based on the preliminary Danish results

	Development 2001 - 2004				Origin of regulation International/national		
	2001 (mill. $)	2004 (mill. $)	+- (mill. $)	+- (pct.)	A	B	C
Ministry of Taxation	1.470	1.318	-152	-10%	8%	5%	87%
Ministry of Economic and Business Affairs	1.447	1.457	10	1%	37%	14%	49%
Total	2.918	2.775	-142	**-5%**	23%	10%	67%

An example: Cross country comparison on VAT regulation

	Denmark	Netherlands	Norway	Sweden
VAT: Total cost for per year	62.5 mil. $	978 mil. $	136 mil. $	355 mil. $
Cost per business/year	221 $	990 $	528 $	422 $
Number of businesses that paid VAT in 2004	282 723	987 000	258 370	836 141

Panel 2, 2:15 p.m.

International Lessons on Technology Transfer, Innovation, and Entrepreneurship

Office of Advocacy Chief Economist Chad Moutray, the panel moderator, noted that research shows that the majority of the net new jobs over the past decade, both in the United States and abroad, have stemmed from small businesses. Many regions are looking for the "next big thing" to provide themselves with new economic livelihoods. This panel explored the linkage between innovation and entrepreneurship, and in particular, the efforts of many countries and localities to pursue technology transfer and the commercialization of new ideas.

David Audretsch, of the Max Planck Institute and Indiana University, devoted his remarks to Germany's efforts to generate more new firms from its innovation. He noted that Germans have gone through five stages as they have grappled with the reality of entrepreneurship and the global marketplace: denial, recognition, envy, consensus, and attainment. As their economy struggled to overcome global competition and the loss of manufacturing employment, Germans gravitated from denial to eventual envy of other economies' ability to generate new enterprises and succeed amid global competition. Eventually, though, German policymakers began to realize the importance of supporting new ventures by embracing policies that supported high levels of research and development, emphasis on emerging industrial sectors, and new sources of finance. Thus, Germany, like so many other nations, recognized the importance of start-ups to their eventual competitiveness and economic outlook. Have they attained their goals? It is too early to tell.

Bo Carlsson, of Case Western Reserve, discussed his review of the literature on university innovation and the disparate approaches used to promote technology transfer in the United States and Europe. In the United States, the Bayh-Dole Act of 1980 and the ability of universities to control their university-produced intellectual property have had a tremendous impact. To illustrate this point, he noted that the number of patents issued by universities, hospitals, and research institutions grew from 177 in 1979 to 3,673 in 2003; the number of start-ups formed from those patents likewise increased significantly during that time. In the European framework, universities tend not

Chad Moutray (right), chief economist of the Office of Advocacy, led the technology and innovation panel. On the left are Bo Carlsson and David Audretsch.

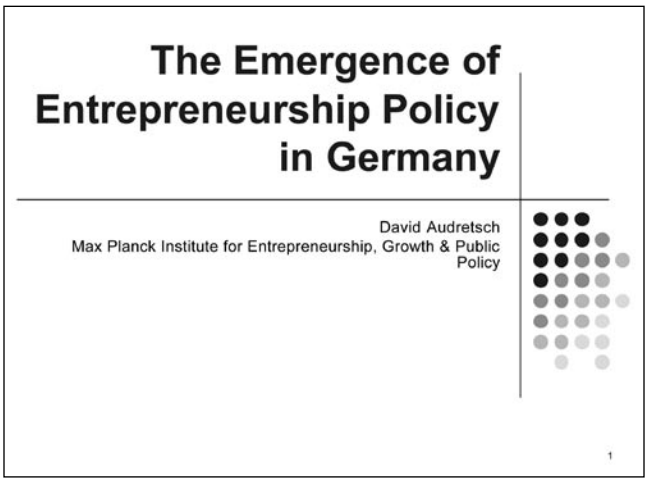
to own intellectual property, and there is less of an incentive to commercialize university-created patents. Instead, faculty members are encouraged to network with industry representatives to promote spin-offs of innovations. This is the so-called "third task" of professors, in addition to their research and teaching requirements. As such, technology transfer is less targeted in Europe than in the United States; facilitating spin-offs depends on strong institutional ties between university professors and the business and investor communities. Finally, a university's internal culture matters; those institutions that do not embrace entrepreneurship will not see as many start-ups stemming from their innovations.

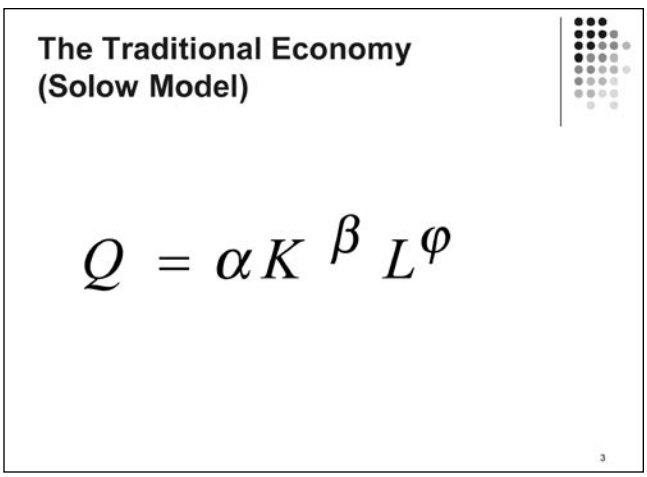
Donald Siegel, of Rensselaer Polytechnic Institute, continued the emphasis on technology transfer and noted that universities are being viewed by many policymakers as engines of growth for their commercialization efforts. In order to be more effective, however, universities need to develop a strategic approach to assure the adequacy of resources and establish key priorities and organizational structures to provide the necessary incentives to stimulate technology transfer. One key priority is improved staffing of technology transfer offices, which often suffer from high staff turnover and limited expertise. Siegel also sees the need for universities to embrace an entrepreneurial culture. Buy-in from faculty and other stakeholders is critical to its success, and a technology entrepreneurship curriculum needs to be applied widely on campus. Furthermore, new firms housed in a science or technology park that have strong connections to the university community are more likely to survive, and conversely, access to the science parks allows the university to place more of its graduates in their fields of expertise, hire preeminent scholars, and generate more publications.

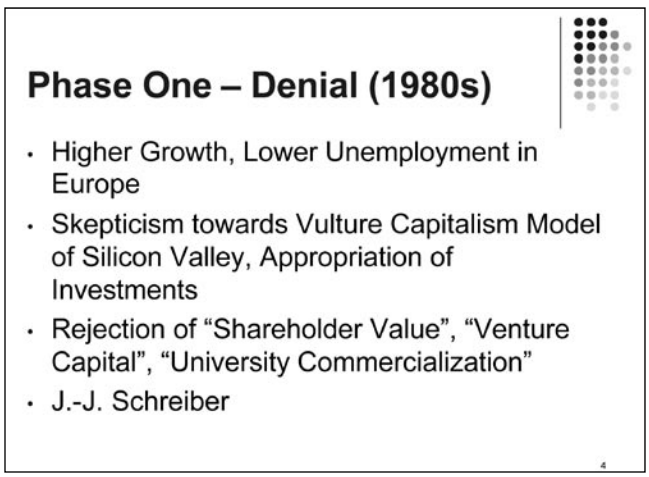
Pictured, from top to bottom: David Audretsch, professor, Indiana University; Bo Carlsson, professor, Case Western Reserve University; Donald S. Siegel, professor, Rensselaer Polytechnic Institute.

University Spillovers and Entrepreneurship in Germany

David Audretsch
Professor
Max Planck Institute
Indiana University







Phase Two – Recognition (early 1990s)

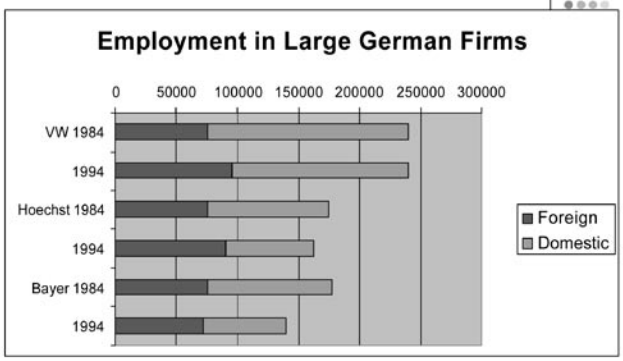
- Link between Entrepreneurship & High Tech
- Law of Comparative Advantage
- Assumed Low Cost of Diffusion
- European Emphasis on Diffusion Policies
- European *Mittelstand* vs Entrepreneurship

5

Phase Three – Envy (mid 1990s)

- Globalization in Europe like U.S.
- Loss of Competitiveness in Traditional Industries
- Low Growth, High Unemployment
- Recognition of Link between Entrepreneurship & Growth

6



7

German Industries

Change in Employment in Germany and Foreign Subsidiaries (1991-1995)

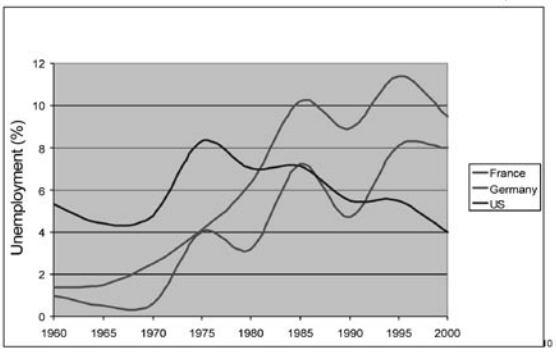
	Mfg.	Chemical	Electrical Eng	Autos	Mechanical Eng	Textiles
Foreign	+189,000	+14,000	-17,000	+30,000	+16,000	-6,000
Domestic	-1,307,000	-80,000	-198,000	-161,000	-217,000	-68,000

8

Stuttgart Region

9

Rise in European Unemployment



10

Phase Four -- Consensus

- The Lisbon European Council & The Lisbon Mandate
- The Gothenbourg Council
- Global Knowledge Leader by 2020
- The Global Entrepreneurship Leader by 2020
- „Our lacunae in the field of entrepreneurship needs to be taken seriously because there is mounting evidence that the key to economic growth and productivity improvements lies in the entrepreneurial capacity of an economy" (Romano Prodi, 2002)

11

The *Mittelstand* Policy vs. Entrepreneurship Policy

- ***Mittelstand* Policy**
- Tradition Sectors
- Family Tradition
- Low R&D
- Low Human Capital
- Low Wages
- Stability (Low Startup & Failure Rates)
- Traditional Sources of Finance
- Low Growth

- **Entrepreneurship Policy**
- New Emerging Sectors
- High R&D
- High Human Capital
- High Wages
- Turbulence (High Startup & Failure Rates)
- New Sources of Finance
- High Growth

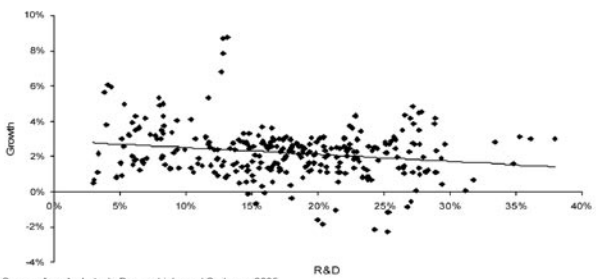
12

The New Economy (Romer Model)

$$Q = \alpha K^{\beta} L^{\varphi} R^{\eta}$$

13

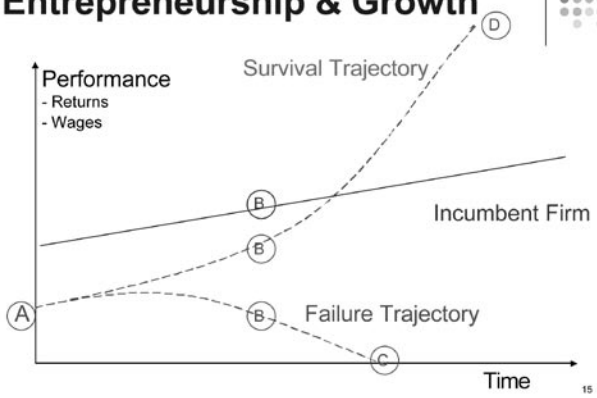
Correlation between Growth and R&D



Source: Acs, Audretsch, Braunerhjelm and Carlsson, 2005

14

Entrepreneurship & Growth



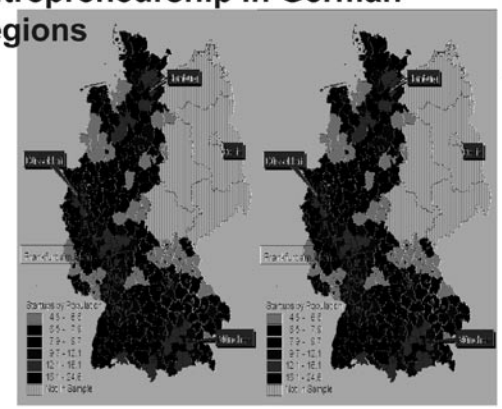
15

The Role of Entrepreneurship Capital in Germany

$$Q_i = \alpha K_i^{\beta} L_i^{\varphi} R_i^{\eta} E_i^{\varepsilon}$$

16

Entrepreneurship in German Regions



17

Estimation of Production Function Model for German Regions

Table 3: Results of Estimation of the Production Function Model for German Regions

	(1)	(2)	(3)	(4)	(5)
Constant	-2.755***	-2.305***	-1.822***	-1.810***	-1.474***
	(-10.749)	(-7.807)	(-4.866)	(-4.363)	(-3.804)
Capital	0.270***	0.279***	0.276***	0.294***	0.287***
	(5.312)	(5.366)	(5.333)	(5.587)	(5.603)
Labor	0.805***	0.736***	0.748***	0.715***	0.734***
	(13.241)	(11.410)	(11.606)	(10.897)	(11.554)
Knowledge		0.030**	0.022	0.027**	0.014
		(2.199)	(1.540)	(1.987)	(0.954)
Entrepreneurship			0.112**		
			(2.078)		
High-Tech Entrepreneurship				0.043*	
				(1.694)	
ICT Entrepreneurship					0.104***
					(3.244)
R2	0.911	0.918	0.920	0.929	0.921

18

Estimation of Regional Labor Productivity

Table 4: Results of Estimation of the Model of Labor Productivity in German Regions

	(1)	(2)	(3)	(4)	(5)
Constant	1.888***	-2.175***	-1.645***	-1.730***	-1.299***
	(-19.235)	(-16.683)	(-5.566)	(-6.060)	(-6.060)
Capital Intensity	0.332***	0.283***	0.283***	0.296***	0.293***
	(6.814)	(5.535)	(5.551)	(5.747)	(5.807)
Knowledge		0.035***	0.030***	0.030***	0.021**
		(3.673)	(3.028)	(3.005)	(2.032)
Entrepreneurship			0.107**		
			(1.993)		
High-Tech Entrepreneurship				0.044*	
				(1.747)	
ICT Entrepreneurship					0.102***
					(3.203)
R2	0.125	0.169	0.179	0.177	0.195

19

The German Entrepreneurial Policy Response

Creating an Entrepreneurial Germany: The Five Stages

- Denial
- Recognition
- Envy
- Consensus
- Attainment

2

Phase Five – Attainment?

21

22