

**NATIONAL INNOVATION SYSTEMS OF
SMALL EUROPEAN TRANSITION ECONOMIES:
GENERAL FRAMEWORK AND THE CASE OF ESTONIA**

Tarmo Kalvet

**University of Tartu, Estonia
PRAXIS Center for Policy Studies, Estonia**

Globelics Academy, Lisbon, Portugal

ISEG, 3 June, 2004

Structure of Presentation

- **Introduction to Estonia**
- **Rationale behind the research**
- **Small societies - small economies**
- **Transition: industrial restructuring /R&D system**
- **Realignment of Innovation Policies**
 - **Limited Capacities as Surge for Selectivity**
 - **Upgrading of Current Industry**
 - **Policy Transfer vis-à-vis Lesson-drawing**
 - **National System of Innovators**

Introduction to Estonia

- **Republic of Estonia**
- **Area: 45,227 sq km**
- **Pop.: 1,361 242**
- **Capital: Tallinn (0.4 million)**
- **Ethnic division:**
 - **Estonians (68%),**
 - **Russians (26%)**
- **GDP, Bil EUR: 6.81 (2002)**
- **GDP p.c. EUR 5,022 (2002)**
- **PPP p.c. EUR 10,020 (2001)**



Innovation policy and NIS (1)

- **National innovation system: “elements and relationships which interact in the production, diffusion and use of new, and economically useful, knowledge and that a national system encompasses elements and relationships, either located within or rooted inside the borders of a nation state.”** (Lundvall 1995)
- **Major research progress since the 1980s:** Freeman 1982; Dosi et al. 1988; Lundvall 1992; Nelson 1993; Research Policy, Vol. 31, 2002.

Innovation policy and NIS (2)

- **Several research challenges lay ahead: “Future research on national systems of innovation should be more concerned with identifying **exactly which institutions** (norms, habits, and rules) positively influence innovation and economic performance, and **how they** influence innovation and economic performance” (Sornn-Friese 2002)**
- **Mostly NIS of developed countries (and NIS-NIC’s) are being analysed.**
- **One set of understudied issues is related to the **small states and transition economies.****

Departure points (1)

1. **Small European transition economies (population size: 2 million) – Estonia, Latvia, Slovenia – share to a large extent both common history (and thus common problems related to NIS) as well as general functioning conditions.**
2. **International trade** is identified as being critically important to small states because it is the primary source of economic growth.
3. **The importance of manufacturing industry!**
(+KIBS?!)

Departure points (2)

- **Successful innovation policy** can be defined as one which is **pushing entrepreneurs towards production of higher value-added goods**, both within manufacturing industries as well as between manufacturing industries.
- **Contributing to the competitiveness** defined as a capacity of an economy **“to produce internationally competitive products and services (export), while *at the same* time maintaining or increasing the actual income of people.”** (OECD)

Small societies (NIS linkages)

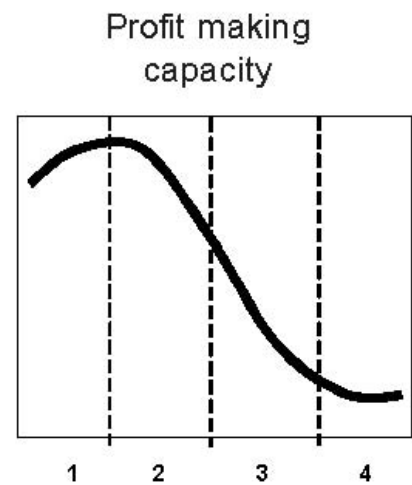
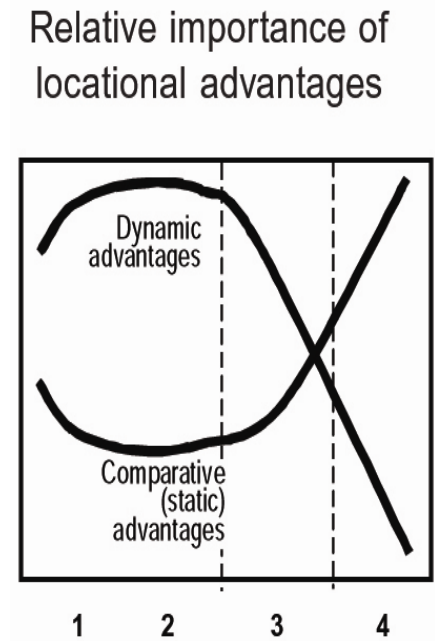
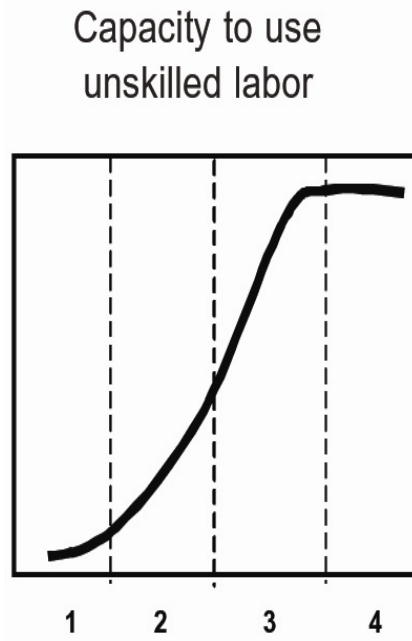
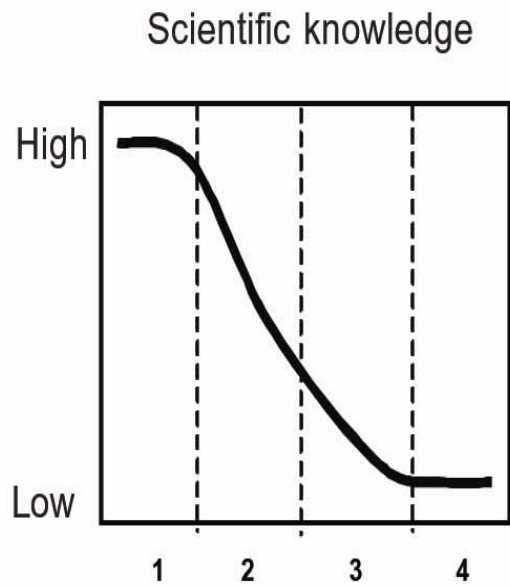
- Previous studies suggest that small countries are not simply smaller versions of large countries.
- In a small-scale society, where the total social field is small, relationships tend towards **particularism** (Benedict 1966, 27)
- The role of the individual takes on greater significance in small societies where '**everyone knows everyone else**' (Sutton 1987)
- **Comprehensive informal network** (Bacchus and Brock 1987, Sutton 1987, Bray and Packer 1993)

Small economies

- **General conclusion: disadvantages of small size, ie of economic sub-optimality, outweigh any potential advantages (Armstrong and Read, 2003)**

Small firms in small countries:

1. **The small domestic market places tight restrictions on the ability to function as a buffer against heavy fluctuations in international demand;**
2. **It limits the development of sophisticated “lead users” that could stimulate innovation;**
3. **It also limits the scope for technological spillovers;**
4. **The limited national knowledge and capital base restricts the choice of industries in which such small nations might successfully specialize.**



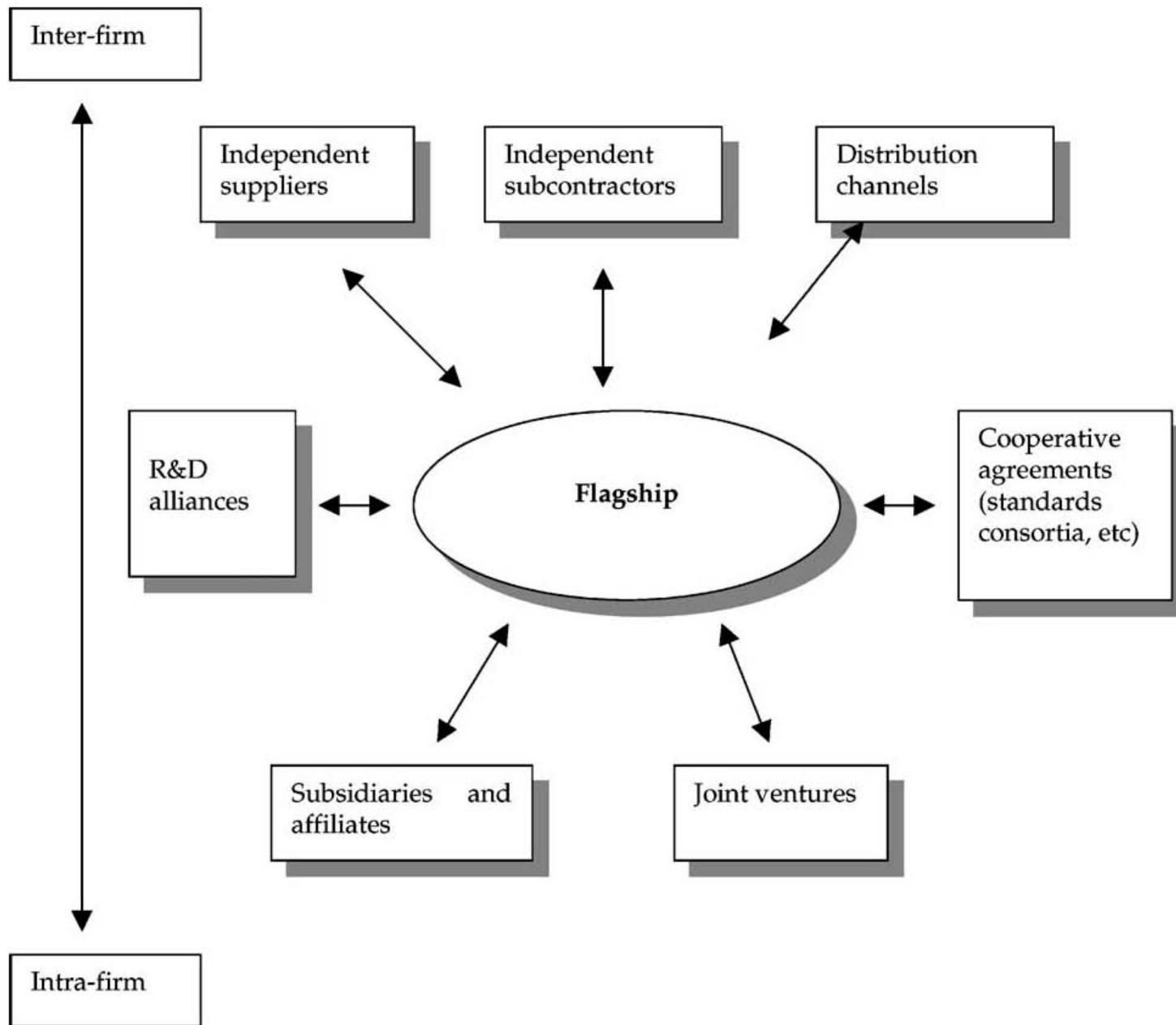
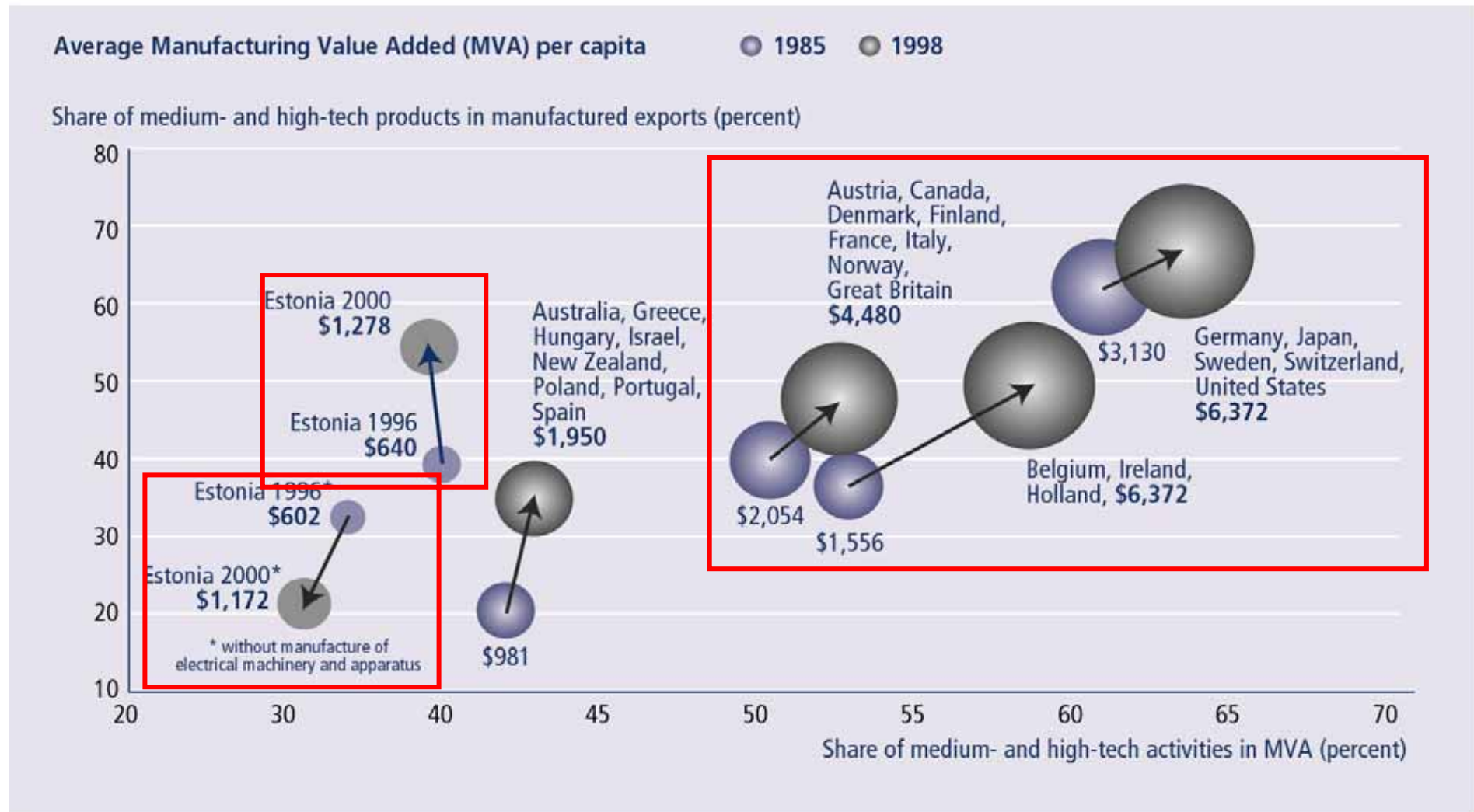


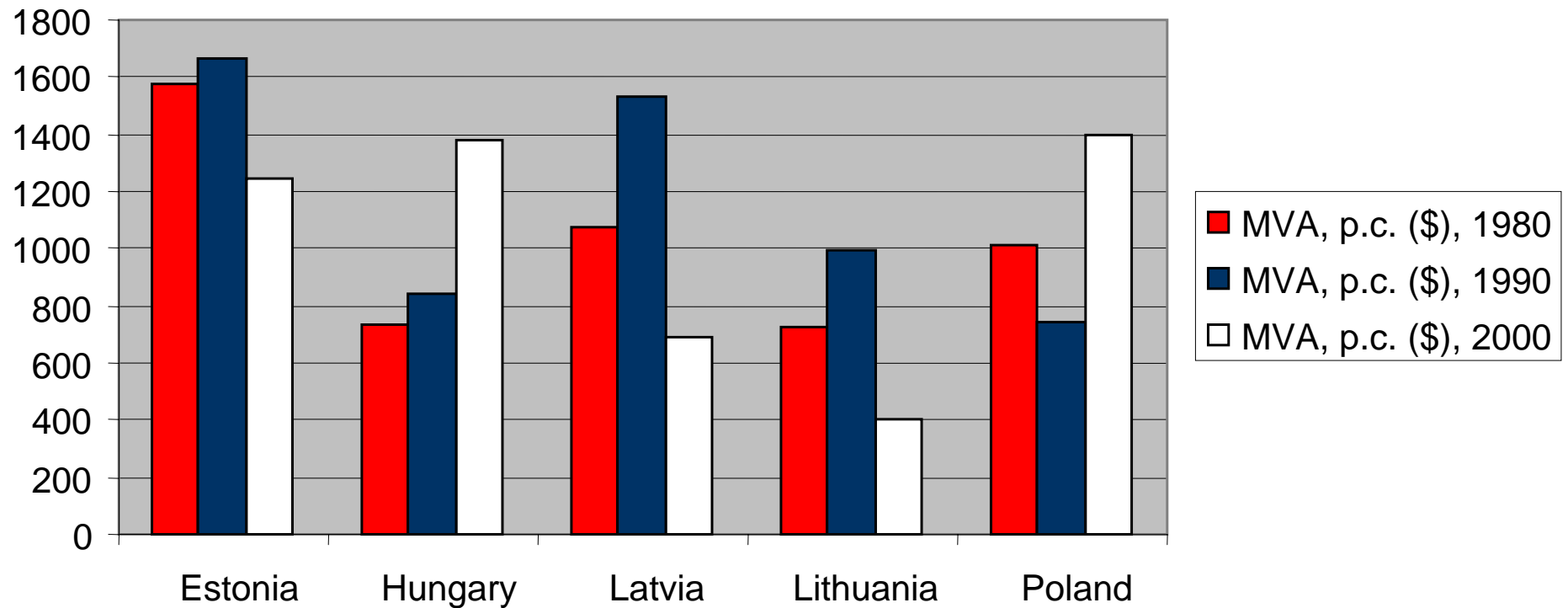
Fig. 1. The nodes of a global production network.

Cluster analysis of the technological development of the manufacturing industry in industrial countries and transition economies, 1985-1998; in Estonia 1996-2000



Source: *United Nations Industrial Development Organization, Industrial Development Report 2002/2003, Competing through Innovation and Learning, 2002, <http://www.unido.org/>.*
 Calculations on Estonia are based on data from the Statistical Office and calculated by PRAXIS.

MVA p.c. (\$), 1980-2000



Source: UNIDO, UNIDR, 2004

Realignment of Innovation Policies

Limited Capacities as Surge for Selectivity

- According to the **theory of techno-economic paradigms**, similarly to scientific paradigms, there are also technological paradigms that determine the technological problems, the scientific principles and material technologies to be used.
- (Tugan-Baranovski – Kondratjev – Schumpeter – Freeman – Perez thesis)
- **Biotech**: be prepared for the upcoming paradigm, build up R&D capacities;
- **ICT**: phase of synergy, application of ICT in manufacturing/services!
- **How are ICT and Biotechnology Related? Policy Implications for Estonia**, Carlota Perez, Erik S. Reinert,
<http://www.praxis.ee/innovation/workshop/>

Upgrading of Current Industry

- **Industrial structures are oriented towards low- and medium-tech industries;**
- **more policy initiatives needed target towards industrial, technological and skill-based upgrading of existing industries.**

	Labour productivity, EUR
Economic activities total	9,523
Manufacturing	9,459
..manufacture of wood and wood products	12,399
..manufacture of food products and beverages	11,632
..manufacture of textiles	5,560
..manufacture of office machinery, PC...	29,272
..manufacture of electrical machinery...	10,226
..manufacture of medical, op. instruments...	7,669
..manufacture of radio, comm.. eq...	5,369

Policy Transfer vis-a-vis Lesson-drawing

- **“Borrowing a program that is effective elsewhere is no guarantee of success.” (Rose 1993: ix)**
- **Policy failures: uninformed, incomplete, and inappropriate transfer (Dolowitz and Marsh, 2000, 17)**
- **Be nation-specific and target *elements and relationships which interact in the production, diffusion and use of new, and economically useful, knowledge.***

National System of *Innovators*

- Innovations are produced by entrepreneurs, whose motives are more complex than profit maximisation and may include... “the dream and the will to found a private kingdom, usually, though not necessarily, also a dynasty,” the “will to conquer: the impulse to fight, to prove oneself superior to others, to succeed for the sake, not of the fruits of success, but of success itself,” and/or the “joy of creating, of getting things done, or simply of exercising one's energy and ingenuity” (Schumpeter 1934, 93)

Some recent works by author...

- Tarmo Kalvet, *Estonian ICT Manufacturing and Software Industry: Current State and Future Outlook*, Institute for Prospective Technological Studies, DG-JRC, forthcoming in 2004.
- Marek Tiits, Rainer Kattel, Tarmo Kalvet, *Competitiveness and Future Outlooks of the Estonian Economy*, Tallinn: Research and Development Council, 2003.
- Tarmo Kalvet, Tarmo Pihl, Marek Tiits, *Analysis of the Estonian ICT Sector Innovation System*, Tartu: Archimedes Foundation, 2002.



Thank you!

Tarmo Kalvet

tarmo@praxis.ee, tel. +372 6 409 004

University of Tartu, Estonia, www.ut.ee/SOAH/
PRAXIS Center for Policy Studies, Estonia, innovation.praxis.ee