

Final exam: Advanced Analysis of Innovation Systems

Date: June 24th 2008

Time: 13:15-16:00

No entrance after 13:45

You are not allowed to leave before 13:45

Instructions:

- Check whether your exam consists of 10 questions
- Mark each page with your name and student number.
- Make sure your handwriting is clear and legible: If I cannot read it I cannot give you any points for it!

Grading

- The exam consists of 10 open questions
- Overall you can obtain 40 points, preliminary grade = $(\text{points}+4)/4$
- Results will be made available through webCT on June 27th
- The exam will be discussed on June 30th, between 14:00-15:00 in Unnik 210

Question 1	4 points
Question 2	4 points
Question 3	4 points
Question 4	4 points
Question 5	4 points
Question 6	4 points
Question 7	4 points
Question 8	4 points
Question 9	4 points
Question 10 (Extra)	4 points
Total	40
Grade = $(\text{points}+4)/4$	

Important guideline: Estimated space needed per question 0.5 page!

Request: This course will be evaluated on line. You will receive an email request to fill out the evaluation form. I would appreciate it very much if you would all complete the evaluation.

Thank you!

Question 1: Knowledge

- a. In what stage of the Industry Life Cycle as described by Klepper is it most likely to encounter an industry knowledge base characterized by high technological opportunities, low appropriability and low cumulateness (such as described by Malerba)? Give a short argumentation
- b. Malerba describes how the knowledge base of innovative activities may change in two different ways. Give these two different ways
- c. Describe the development and the importance of the knowledge infrastructure component of the Innovation System during each of the 5 waves using the empirical material from the book by Freeman and Louça.

Question 2: Clusters

- a. Give a definition of the cluster concept as used by Porter.
- b. Give an example of a successful cluster from the book by Freeman and Louça. Provide a short argumentation for your answer.
- c. What type(s) of innovation system(s) (national/regional/technology-specific/sectoral) correspond(s) to a cluster? Give a short argumentation for your answer.

Question 3: Germany

- a. Analyze the competitive advantage of Germany in the 3rd and 4th Kondratiev wave in terms of the determinants specified by Porter.

Question 4: Technological paradigms and trajectories

- a. Give the definition of technological paradigm and technological trajectory as described by Dosi.
- b. Describe radical and incremental innovations in terms of technological trajectories and technological paradigms.
- c. Dosi identifies two actor groups that are of primary importance in the exploratory phase of the industry life cycle. Name these two actor groups. Give a short argumentation for your answer.

Question 5: Horizontal user innovation networks

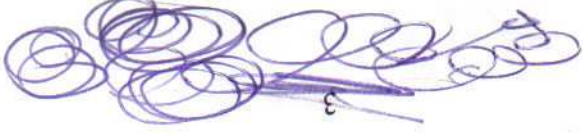
- a. What are the conditions for the occurrence of horizontal user innovation networks according to von Hippel?
- b. Describe the structure of the innovation system in the case of horizontal innovation networks.
- c. Pavitt identifies the knowledge inputs to significant innovations in the UK. Relate his findings to the conditions for the formation of horizontal user innovation networks.

Question 6: Sectoral innovation systems

- a. Give the main building blocks of a sectoral system of innovation according to Malerba.
- b. Copy and complete Table 1 below following Pavitt. Give a short argumentation for your answer.

Category of firm	Type of Technological trajectory
Production intensive	

- c. Describe the two different Industry Life Cycles patterns that the industries identified in b. might experience according to Klepper.



Question 7: Evolutionary theories

- a. Give a description of an evolutionary theory of technological change using the following concepts: dominant design, innovation, competing technologies, technology push.

Question 8: Industry life cycle

- a. Give a description of the stages of the industry life cycle according to Klepper.
- b. Describe the characteristics of each stage in the industry life cycle.

Question 9: The multi-level model

- a. Give a description of the multi-level framework as a model for technological change
- b. To which level in the multi-level framework does a technology specific innovation system correspond according to Markard and Truffer? Give a short argumentation.

Question 10: Developing countries

- a. What is the difference between innovation ecologies and innovation systems according to Metcalfe and Ramlogan?
- b. According to Porter which determinants are at the birth of a competitive industry in developing countries?
- c. What recommendations do Metcalfe and Ramlogan give to strengthen/build successful innovation systems in developing countries?
- d. What recommendations does Dosi give to strengthen/build successful innovation systems in developing countries?