

Workpackage number: WP 1.3		Start date or starting event: month 2					
Workpackage title: <i>Market Structures in Knowledge Based Product Markets</i>							
Participant id:	IWH	GEA	SPRU	BC			
Person-months per participant:	11	12	4	1			

Objectives:

The overarching objective is to establish, how market structures are determined by market-specific knowledge processes, and in particular, what market structures are typically found in knowledge-intensive product markets, in order to provide the necessary information to discuss the political implications of interventions with a view on social gains and losses from oligopolistic / monopolistic market structures. This will take stock of the ways in which new or emerging process technologies feed into new product market structures as new knowledge networks are developed.

- 1 The first objective is to establish where and how market structures differ in particularly knowledge-intensive product markets such as such as ICT, biotechnology, pharmaceuticals, nanotechnology etc. From a more dynamic perspective, it assesses how much product market changes relate to changes that stem from the application of new technologies to older product areas and to services.
- 2 The second objective is to determine how much of the observed structural differences are rooted in the specific properties of knowledge involved, and how much of such differences give rise to non-levelled playing fields or even to possible abuses of market power.
- 3 Assessing the results, the third objective is to discuss where and how national and European competition policy should take account of structural differences, i.e. where and how to align legal rules and regulations to the particularities of knowledge-intensive product markets.

Description of work:

Amongst the many theoretical approaches that can be found in the literature relevant to this workpackage, the empirical analysis here is couched into the framework of new institutional economics: this allows us both to assess how market structures are determined by market-specific knowledge processes, as well as to establish the linkages to the analysis of knowledge creation, dissemination and use, conducted in other workpackages of the project; linkages that are necessary to integrate policy-relevant results with the findings related to network alignment and policy learning.

- 1 For the first objective, a representative sample of European sectors are mapped along their two dimensions of knowledge processes and market structures. At this higher level of aggregation, knowledge processes are proxied by knowledge intensities (e.g. R&D and innovation intensities as technological indicators, but also marketing intensities as indicators for knowledge management), and market structures are proxied by measures of concentration and firm-size. Using official data from national statistical offices and EUROSTAT, this mapping allows us to distil the particularities of knowledge-intensive sectors (e.g. ICT, biotechnology, pharmaceuticals, nanotechnology) in terms of market structure. For the dynamic view on this issue, knowledge-intensive sectors are selected to assess how much of the changes to their product market structures relate to changes that stem from the application of new technologies (that can be considered knowledge-intensive processes) to older product areas and to services. This, however, does not yet allow us to distinguish whether market structures differ due to market power or are rooted in the specific properties of knowledge generated and used in such sectors.
- 2 Hence, in a second step, particular industries are singled out for firm-level case study analysis by use of deeper interviews. As point of reference, we depart from the general characterisation of knowledge and learning in industries, such as e.g. supplier-dominated sectors (mainly traditional manufacturing, which are mainly governed by the learning curve effect), mass-production sectors (such as the car industry, where systematic and incremental engineering play an additional role), information-intensive sectors (like finance, retail, travel agencies, where development is triggered by the software industry, knowledge based industries (such as electronics, chemistry, life sciences that are especially enriched by research and

development that immediately enter production), specialized suppliers (like the machine tool industry, that live from the monitoring of needs of clients). Particular emphasis is however placed on sectors that were characterised in the mapping exercise as particularly distinctive in terms of market structure and that are typically considered as being particularly knowledge intensive. The case studies are devised to assess the nature of knowledge involved (i.e. private vs club vs public), the kind of knowledge involved (narrative, codified or tacit, etc.), and the resulting incentive-structure for the generation, transfer and use of knowledge, and how this is affected by the reigning IPR-regime (e.g. software and open source). This allows us develop a general explanation of why and how market structures differ, based on market-specific knowledge process characteristics, and it sheds light on competitive behaviour of domestic and foreign players in knowledge intensive product markets, and any potential social gains and losses from oligopolistic / monopolistic market structures.

- 3 Using this general explanation as a benchmark, we can now support policy-learning both at European and national levels in terms of legal rules in competition policy and regulation of markets with some degree of public character (e.g. utilities) to align intervention in the market to the particularities of knowledge processes involved (i.e. nature and kind, IPR-regime and incentives). It also allows us to provide support to competition authorities by shedding a new kind of light into investigations of individual cases, namely the link between market structure and market-specific knowledge processes. Whilst knowledge processes are already being considered in such investigations, the authorities still lack well-structured information about the link between market structure and knowledge processes. The policy issues in this workpackage are somewhat distinct from the policy issues in most other workpackages of this project, in as much as here, the policy objectives are focussed upon consumer welfare and efficiency of allocation of resources in the production process, additionally to the direct properties of knowledge creation, dissemination, and use within the framework of network alignment.

Deliverables:

D10 *Report on Knowledge and Market structures*. Responsible: Ulrich Blum (IWH) (month 20)

- IWH: State-of-the-Art in Researching Knowledge and Market structures
- IWH, GEA: Mapping European sectors and the particularities of knowledge-intensive sectors in terms of their market structures (month 9)
- IWH, GEA, BC: The nature and kind of knowledge, resulting incentive structure for the knowledge process in particularly knowledge intensive industries, and how this is affected by the reigning IPR-regime (from case studies) (also as input for WP 1.1, WP 1.2, WP 3.2 and WP 3.4) (month 20)
- SPRU: The evolving relationship between knowledge-intensive industries and user industries in Europe (also as input for WP 3.4) (month 20)

D11 *Policy-paper on the alignment of competition policy to industry-specific knowledge processes* (also as input for WP 3.5) Responsible: IWH and GEA (month 24)

D12 *Policy-briefings where competition authorities conduct investigations in industries assessed in the project* (also as input for WP 3.5) Responsible: IWH, GEA (months 24)

Milestones and expected result:

- 6 Market structures in knowledge-intensive product markets and competition policy