Competition Law and Innovation: Dissecting the Interplay

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1. Digital revolution as a systemic Schumpeterian innovation (1)

- Systemic Dimension 1: the economy
  + “creative destruction” of old markets and old industries
  + Examples: Big data, autonomous driving, and “Internet of Things”
  + innovation not limited to existing markets / industries but is restructuring entire economy, creating new markets and new industries

- Systemic Dimension 2: the regulatory framework
  + digital revolution also changes basic characteristics how economy and society works
  + current discussion about the adaptation of the entire legal and regulatory framework to a digital society (esp. IP law, consumer law, data protection law, media law etc.)
  + EU: Digital Single Market Strategy etc.
1. Digital revolution as a systemic Schumpeterian innovation (2)

Question: How can competition law deal with innovation in this digital revolution?

Structure of presentation:

1. Digital revolution as a systemic Schumpeterian innovation
2. Competition and innovation: A difficult relationship
3. How does competition law deal with innovation?
4. Need for innovation-specific concepts and methods
5. Data-driven innovation, competition law, and other regulatory regimes
2. Competition and innovation: A difficult relationship (1)

Basic problems: static and dynamic concepts of competition (1)

Economics: “competition” and “innovation” are two separate problems

- Competition: => static concept of competition
  + perfect competition leads to economic (static) efficiency which is defined in regard to a given set of products / technologies
  + theoretical industrial economics (based upon game theory)
    > analysis of price/quantity (Nash) equilibria (e.g. oligopoly models)
  + market failure: if prices > (marginal) costs => deadweight losses!

- Innovation = change of set of products / technologies
  + not integrated in general equilibrium theory / efficient allocation
  + “dynamic efficiency” is theoretically not clearly defined
  + market failure: incentive problems / public good: => IP / subsidies

=> Innovation is not integrated in static concept of competition!
2. Competition and innovation: A difficult relationship (2)

Basic problems: static and dynamic concepts of competition (2)

- Static concept of competition has led to static assessment concepts in competition law

- Economic concept of market power:
  + scope for price increases / reduction of output (monopoly model)

- Static assessment concepts in competition law
  + Market definition / product market: SSNIP test (can a firm increase profitably price for 5 - 10%?) in regard to current products for identifying relevant competitors => static market definition
  + Competitive assessment: looking primarily on price increases

- But: innovation is often about creation of new markets

=> Innovation dimension of competition does not fit well into this static assessment framework
2. Competition and innovation: A difficult relationship (3)

Basic problems: static and dynamic concepts of competition (3)

- “Common sense” idea of competition as a rivalrous / dynamic process

- Concepts of **dynamic competition**, which try to integrate innovation
  + Schumpeterian competition: as an innovation-imitation process, creating new markets through disruptive innovations
  + Workable competition: in (empirical) SCP-paradigm innovation was part of market performance ( => “effective competition”)
  + Hayek's "competition as a discovery procedure", in which new knowledge is generated in a trial and error process

=> outdated and/or not well developed theoretically and empirically!

- Dynamic / innovation aspects of competition are not well-researched
  (e.g., Farrell 2006: advantages of diversity = „dark matter of competition“)

=> No clear theory of „dynamic competition“ or „innovation competition“!
2. Competition and innovation: A difficult relationship (4)

Competition and innovation: Current state of knowledge (1)

Schumpeter vs. Arrow:
- Schumpeter (1942): larger firms / higher firm concentration positive for innovation through better appropriability etc. (Schumpeter hypotheses)
- Arrow (1962): firm with market power can have less innovation incentives due to "replacement effect"

Empirical studies about Schumpeter hypotheses:
- Firm size ↔ innovation: no innovation-optimal firm size
- firm concentration ↔ innovation: no innovation-optimal firm concentration (some discussion about „inverted U-curve“ but empirically unclear)
- Important: Results are different for different industries and technologies
  [But: direct empirical studies about mergers show mostly negative effects on innovation]
2. Competition and innovation: A difficult relationship (5)

Competition and innovation: Current state of knowledge (2)

Theoretical Industrial Economics:
- large number of models that analyze impact on innovation incentives
- distinctions betw. models which
  + directly consider innovation competition (as patent race models)
  + take also into account pre-innovation product markets
- other important distinctions:
  + perfect or imperfect patent protection / appropriability conditions
  + product or process innovations
- Results:
  + depending on assumptions very different results, leading to useful insights for case analysis, but the insights remain very limited
2. Competition and innovation: A difficult relationship (6)

Competition and innovation: Current state of knowledge (3)

Insights from innovation economics perspective:
- Innovation processes are very complex phenomena, which only partly can be analyzed with game-theoretic oligopoly models
- Characteristics: high uncertainty and unpredictability, creativity, heterogeneity of firms (diversity), parallel experimentation and learning etc.
- Evolutionary approaches to innovation / industrial dynamics

Insights from business / management studies:
- Resource-oriented / knowledge-based theories of the firm
- Strategic management theories

=> they may provide many specific insights that have not been used sufficiently in competition law!
3. How does competition law deal with innovation?

Problems:
- Economic knowledge about innovation dimension of competition (and applicable empirical methods) is very limited
  + therefore hard to develop general criteria and case groups
- Innovation does not fit well into static assessment concepts
- How to deal with unpredictability of innovation?

Consequences:
- Application bias: in many cases innovation effects are ignored (also: dynamic efficiencies), focussing only on price effects on consumer welfare, or only considered as “additional” effect
  + danger: price effects seen as more important than innovation effects
- Experimentation: Partly agencies try to investigate innovation effects, often in an experimental way, but often without a clear theoretical framework, leading to the critique of being speculative
4. Need for innovation-specific concepts and methods (1)

- Discussion that static framework of competition analysis is not suitable for analyzing dynamics of innovation competition

  => necessity to think anew about suitable concepts of “dynamic competition” or “innovation competition”!

- Pluri-theoretical approach: Using insights and methods from different theoretical approaches
  + not only: game-theoretic industrial economics
  + innovation economics and evolutionary economics
  + management and business studies (strategic management theory, resource/knowledge-based theories of the firm)
  + (perhaps also behavioural approaches)
4. Need for innovation-specific concepts and methods (2)

Need for innovation-specific assessment concepts

- Example merger control

- Type 1 cases: level of innovation projects
  + mergers where parallel innovation projects can be directly identified
  + agencies are protecting innovation competition betw. parallel R&D projects w. divestiture of R&D projects (with all necessary resources)

- Type 2 cases: level of resources for innovation
  + mergers where agencies protect the existence of several competitors with capabilities / resources to innovate
  + early US case: Lockheed/Northrop in defence industry
  + recent EU case: GE/Alstom (2015): market for gas turbines
    > divestiture of all necessary resources to smaller competitor
4. Need for innovation-specific concepts and methods (3)

Towards a more "resource-oriented" approach (1)

- Problem: innovation itself is hard to predict, but often preconditions for innovation can be identified

- Necessary for innovation: (enabling innovation activities)
  + specific knowledge / capabilities / knowhow / IPRs / specialized assets, R&D staff etc.

- Developing an analytical assessment framework that focusses much more on the necessary resources for innovation
  + against monopolization / concentration of resources
  + against strategies that block or control further innovation
  + ensuring access to critical resources / bottlenecks
  + ensuring sufficient number of independent sources of innovation

=> Strategy for „open markets“ / „openness“ for innovation
4. Need for innovation-specific concepts and methods (4)

Towards a more "resource-oriented" approach (2)

- „Market definition“:
  + identification of relevant innovation competitors not through product markets but through analysis of innovation activities and innovation capabilities / resources
  + („innovation market“ concept already suggested this!)

- Analysis of necessary resources is already done in different contexts:
  + analysis of “potential competition” and entry barriers
  + access to necessary resources, e.g.,
    > in vertical contexts (exclusionary conduct) and
    > in “essential facility” situations

=> New problem: role of the resource “data” in digital economy
5. Data-driven innovation, competition law, and other regulatory regimes (1)

Big Data and data-driven innovation
- data as a resource for innovation (OECD 2015: data as infrastructure)
- critical: access to data
- other critical resources in digital economy?
  + capabilities for data analytics, human resources (e.g., data analysts), algorithms ...

Data, innovation, and competition law
- Merger cases:
  + data as a resource in mergers leading to dynamic efficiencies but also can impede innovation competition
- Abuse of dominance (Art. 102 TFEU)
  + refusing access to data as abusive behaviour

...
5. Data-driven innovation, competition law, and other regulatory regimes (2)

Systemic character of Big Data and digital economy
- Need for analysis of interplay betw. competition law and other regulatory regimes in regard to data / digital economy (IP law, data protection law, consumer law, media law etc.)
- more cooperation and integration of regulatory regimes, and perhaps new interfaces betw. regulatory regimes

Interplay with other regulatory regimes (examples)
- Data protection law ↔ competition law:
  + data portability / regulation of privacy policies influences market power through data, and competition influences privacy
- IP law ↔ competition law:
  + danger of new IPRs on data for competition and market power
  + IPRs on technical interfaces influence competition (more interoperability through weakening these IPRs)