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Significant Impediment To Industry Innovation: A novel theory of harm in EU merger policy?

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[Nicolas Petit](#)

Thanks to Truth on the Market for the opportunity to guest blog, and to ICLE for inviting me to join as a Senior Scholar! I'm honoured to be involved with both of these august organizations.

In Brussels, the talk of the town is that the European Commission ("Commission") is casting a new eye on the old antitrust conjecture that prophesizes a negative relationship between industry concentration and innovation. This issue arises in the context of the review of several mega-mergers in the pharmaceutical and AgTech (*i.e.*, seed genomics, biochemicals, "precision farming," etc.) industries.

The antitrust press [reports](#) that the Commission has shown signs of interest for the introduction of a new theory of harm: the Significant Impediment to Industry Innovation ("SIII") theory, which would entitle the remediation of mergers on the *sole* ground that a transaction significantly impedes innovation incentives at the *industry level*. [In a recent ICLE White Paper](#), I discuss the desirability and feasibility of the introduction of this doctrine for the assessment of mergers in R&D-driven industries.

The introduction of SIII analysis in EU merger policy would no doubt be a sea change, as compared to past decisional practice. In previous cases, the Commission has paid heed to the effects of a merger on incentives to innovate, *but the assessment has been limited to the effect on the innovation incentives of the merging parties in relation to specific current or future products*. The application of the SIII theory, however, would entail an assessment of a possible reduction of innovation in (i) a given industry as a whole; and (ii) not in relation to specific product applications.

The SIII theory would also be distinct from the ["innovation markets" framework occasionally applied in past US merger policy](#) and now marginalized. This framework considers the effect of a merger on separate upstream "*innovation markets*," *i.e.*, on the R&D process itself, not directly linked to a downstream current or future product market. Like SIII, innovation markets analysis is interesting in that the identification of separate upstream innovation markets implicitly recognises that the players active in those markets are not necessarily the same as those that compete with the merging parties in downstream product markets.

SIII is way more intrusive, however, because R&D incentives are considered in the abstract, without further obligation on the agency to identify structured R&D channels, pipeline products, and research trajectories.

With this, any case for an expansion of the Commission's power to intervene against mergers in certain R&D-driven industries should rely on sound theoretical and empirical infrastructure. Yet, despite efforts by the [most celebrated Nobel-prize economists of the past decades](#), the economics that underpin the relation between industry concentration and innovation incentives remains an unfathomable mystery. As [Geoffrey Manne and Joshua Wright have summarized in detail](#), the existing literature is indeterminate, at best. As they note, quoting [Rich Gilbert](#),

[a] careful examination of the empirical record concludes that the existing body of theoretical and empirical literature on the relationship between competition and innovation “fails to provide general support for the Schumpeterian hypothesis that monopoly promotes either investment in research and development or the output of innovation” and that “the theoretical and empirical evidence also does not support a strong conclusion that competition is uniformly a stimulus to innovation.”

[Available theoretical research](#) also fails to establish a directional relationship between mergers and innovation incentives. True, soundbites from antitrust conferences [suggest](#) that the Commission's Chief Economist Team has developed a deterministic *model* that could be brought to bear on novel merger policy initiatives. Yet, given the height of the intellectual Everest under discussion, we remain dubious (yet curious).

And, as noted, the available empirical data appear inconclusive. Consider a relatively concentrated industry like the seed and agrochemical sector. Between 2009 and 2016, all big six agrochemical firms increased their total R&D expenditure and their R&D intensity either increased or remained stable. Note that this has taken place in spite of (i) a significant increase in concentration among the largest firms in the industry; (ii) dramatic drop in global agricultural commodity prices (which has adversely affected several agrochemical businesses); and (iii) the presence of strong appropriability devices, namely patent rights.

This brief industry example (that I discuss more thoroughly in the paper) calls our attention to a more general policy point: prior to poking and prodding with novel theories of harm, one would expect an impartial antitrust examiner to undertake empirical groundwork, and screen initial intuitions of adverse effects of mergers on innovation through the lenses of observable industry characteristics.

At a more operational level, SIII also illustrates the difficulties of using indirect proxies of innovation incentives such as R&D figures and patent statistics as a preliminary screening tool for the assessment of the effects of the merger. In my paper, I show how R&D intensity can increase or decrease for a variety of reasons that do not necessarily correlate with an increase or decrease in the intensity of innovation. Similarly, I discuss why patent counts and patent citations are very crude indicators of innovation incentives. Over-reliance on

patent counts and citations can paint a misleading picture of the parties' strength as innovators in terms of market impact: not all patents are translated into products that are commercialised or are equal in terms of commercial value.

As a result (and unlike the SIII or innovation markets approaches), the use of these proxies as a measure of innovative strength should be limited to instances where the patent clearly has an actual or potential commercial application in those markets that are being assessed. Such an approach would ensure that patents with little or no impact on innovation competition in a market are excluded from consideration. Moreover, and on pain of stating the obvious, patents are temporal rights. Incentives to innovate may be stronger as a protected technological application approaches patent expiry. Patent counts and citations, however, do not discount the maturity of patents and, in particular, do not say much about whether the patent is far from or close to its expiry date.

In order to overcome the limitations of crude quantitative proxies, it is in my view imperative to complement an empirical analysis with industry-specific qualitative research. Central to the assessment of the qualitative dimension of innovation competition is an understanding of the key drivers of innovation in the investigated industry. In the agrochemical industry, industry structure and market competition may only be one amongst many other factors that promote innovation. Economic models built upon Arrow's replacement effect theory - namely that a pre-invention monopoly acts as a strong disincentive to further innovation - fail to capture that successful agrochemical products create new technology frontiers.

Thus, for example, progress in crop protection products - and, in particular, in pest- and insect-resistant crops - had fuelled research investments in pollinator protection technology. Moreover, the impact of wider industry and regulatory developments on incentives to innovate and market structure should not be ignored (for example, falling crop commodity prices or regulatory restrictions on the use of certain products). Last, antitrust agencies are well placed to understand that beyond R&D and patent statistics, there is also a degree of qualitative competition in the innovation strategies that are pursued by agrochemical players.

My paper closes with a word of caution. No compelling case has been advanced to support a departure from established merger control practice with the introduction of SIII in pharmaceutical and agrochemical mergers. The current EU merger control framework, which enables the Commission to conduct a prospective analysis of the parties' R&D incentives in current or future product markets, seems to provide an appropriate safeguard against anticompetitive transactions.

In his [1974 Nobel Prize Lecture](#), Hayek criticized the "*scientific error*" of much economic research, which assumes that intangible, correlational laws govern observable and measurable phenomena. Hayek warned that economics is like biology: both fields focus on "*structures of essential complexity*" which are recalcitrant to stylized modeling. Interestingly, competition was one of the examples expressly mentioned by Hayek in his

lecture:

[T]he social sciences, like much of biology but unlike most fields of the physical sciences, have to deal with structures of essential complexity, i.e. with structures whose characteristic properties can be exhibited only by models made up of relatively large numbers of variables. Competition, for instance, is a process which will produce certain results only if it proceeds among a fairly large number of acting persons.

What remains from this lecture is a vibrant call for humility in policy making, at a time where some constituencies within antitrust agencies show signs of interest in revisiting the relationship between concentration and innovation. And if Hayek's convoluted writing style is not the most accessible of all, the title captures it all: "*The Pretense of Knowledge.*"

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