

<p><b>Institution:</b> University of Southampton</p>
<p><b>Unit of Assessment:</b> 18 Economics and Econometrics</p>
<p><b>Title of case study:</b> 18-03 Towards a Healthy Future: Shaping Innovation and Competition Policy in the Pharmaceutical Industry</p>
<p><b>1. Summary of the impact</b></p> <p>Research by the University of Southampton on competition and innovation in the pharmaceutical industry has had an impact on the pricing and reimbursement system used by the Department of Health of Cataluña when assessing the introduction of new drugs and treatments. The same research has proactively informed the recent investigation on competition in the EU pharmaceutical industry by the EU Competition. The original findings of the research, on the impact of mergers and acquisitions on different aspects of the innovation activity of this R&amp;D-intensive industry, have also influenced antitrust policies across the two sides of the Atlantic.</p> <p><b>2. Underpinning research</b></p> <p>The UK pharmaceutical industry is a commercial success story. According to the Department for Business Innovation and Skills, the UK pharmaceutical industry, which employs more than 70,000 people, is responsible for the discovery and development of more leading medicines than any other country, apart from the US. But drugs cost the country money too. The UK government is under increasing pressure to sustain innovation and give patients affordable access to the best treatments.</p> <p>Dr Carmine Ornaghi, Senior Lecturer in Economics at the University of Southampton since 2004, has addressed this economic tension in several research projects. Starting in 2006, Ornaghi first examined the effects of mergers and acquisitions on research efforts and outputs of pharmaceutical organisations. This was an area which until then had received little attention – traditionally, antitrust authorities have avoided questioning the long-term effects of mergers. Ornaghi’s original initiative involved matching financial data from large pharmaceutical firms with patent data from the National Bureau of Economic Research and the resulting 2009 paper, <b>[3.1]</b> is among the first and most exhaustive analyses of its kind. Results suggest that mergers are rarely as successful as anticipated and the effect on research is generally negative. Companies may seek to acquire firms with similar technology or product portfolios in order to soften competition, which in turn can lead to higher prices and fewer incentives to innovate.</p> <p>Ornaghi’s second paper also published in 2009 <b>[3.2]</b> investigated the relationship between how closely two firms’ technologies and products are aligned and how well they will perform together, post merger. Using patent holdings data and the product portfolios of major pharmaceutical companies, he showed that merger deals are more likely to be struck between firms with related technology and drug portfolios, and that mergers may have a positive effect on product development but a negative effect on technology.</p> <p>The third paper, co-authored with Professors Maria-Angeles De Frutos and Georges Siotis of the Universidad Carlos III in Madrid and published in 2013 <b>[3.3]</b>, examined how quality differences in prescription drugs shape advertising strategies. It used a theoretical model to illustrate firstly that firms with lower-quality drugs benefit more from advertising, and secondly that advertising serves to increase price – predictions which are confirmed using a unique dataset of price, quantity and advertising expenditures. The finding is that advertising can act as a barrier to innovation, and that greater controls on advertising expenditure may free up funds for research and reduce the NHS’ drug bill.</p> <p>The last paper <b>[3.4]</b> studied the effects of generic entry on the price and advertising strategies of branded drugs. Laws have increased the speed with which generic medicines may enter the market, yet aggressive advertising strategies mean consumers will often still favour the branded equivalent. These findings call for more effective laws to increase the use of generic drugs – an important issue for the NHS, which currently spends around 10% of its budget on drugs.</p>

### 3. References to the research

#### Relevant publications

- 3.1 Ornaghi C. (2009a): 'Mergers and Innovation in Big Pharma', *International Journal of Industrial Organisation*, 27, pp.70-79 (*Refereed Journal*)
- 3.2 Ornaghi C. (2009b): 'Positive Assortive Merging', *Journal of Economics and Management Strategy*, 18, pp.323-346 (*Refereed Journal*)
- 3.3 De Frutos M., C. Ornaghi and G. Siotis (2013) 'Competition in the Pharmaceutical Industry: How Do Quality Differences Shape Advertising Strategies', *Journal of Health Economics*, 32, pp 268-285 (*Referee Journal*)
- 3.4 De Frutos M., C. Ornaghi and G. Siotis (2012) 'Competition in the Pharmaceutical Industry in the presence of Generics, *unpublished manuscript*

#### Grants

- BBVA research grant – Convocatoria Social 04. Oct. 2005 – Sep. 2007. Project: Mergers and Innovation in the Pharmaceutical Industry. Principal Investigator: M.A. de Frutos. Other investigators: C. Ornaghi. Amount: €44,000.
- British Academy grant – Sept 2010 - Sept 2011. Project: Competition in the Pharmaceutical Industry. Principal Investigator: C. Ornaghi. Amount: £7,000.

### 4. Details of the impact

Ornaghi's research on competition between prescription drugs, and how the entry of generic drugs affects pricing and advertising strategies has been used by the Department of Health of Cataluna as well as the EU competition commission:

In 2010 the Department of Health of the Government of Cataluna (CatSalut) set up a task force to review and provide the foundations of new policies for reforming the financing and access to new prescription drugs and managing innovation in the pharmaceutical industry. As a member of this taskforce Ornaghi's invited contribution involved advising how the industry could reconcile innovation with controlling expenditure. This intervention and the ensuing discussions resulted in a 2011 policy paper published by CatSalut [5.1]. In a letter dated 1 February 2013, Dr Antoni Gilibert, managing director at CatSalut, writes that '*[Dr Ornaghi's] participation in our 2010 Task Force has proven to be very helpful to adjust the strategies, performed in both pricing and reimbursement commissions.*'

The same line of research has also proactively informed policy within the European Union. Professor Georges Siotis (former advisor to the EU commission's Chief Competition Economist), who co-authored this research, used the findings to contribute to the 'Pharmaceutical Sector Inquiry Report' published by the European Commission in 2009.

Ornaghi's earlier research into the effects of mergers and acquisitions on the innovative activities of pharmaceutical companies has also informed and influenced several notable policy makers and antitrust authorities. His work on the economics of the pharmaceutical industry has added an important new perspective to policy debates on both sides of the Atlantic, and has been referenced by some of the most influential experts of antitrust issues. In the USA the research has been cited by several economists working for the Antitrust Division of the US Department of Justice. Ornaghi's findings are referenced in two 2009 studies: one on the necessity of issuing new merger guidelines written by G. Werdner, a senior economic counsel [5.3] and the other by Professor Michael Katz, a former Deputy Assistant Attorney General for Economic Analysis [5.4].

As the author of some of the first and most exhaustive research papers in this subject area, Ornaghi has shown possible avenues towards a fairer industry, a more sustainable health service

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and better patient access to the latest drugs and technologies. Ornaghi discussed and presented the research to economists in the EU Competition Commission, most notably to Professor George Siotis, former advisor to the Commission's Chief Competition Economist, Professor Damien Neven. In a letter dated 27 November 2012, Siotis states that:

*'Dr Ornaghi's research on the pharmaceutical industry has been having a relevant impact on the work of economists working for antitrust authorities and other public institutions.'*

He confirms that he used key insights and results from Ornaghi's paper to prepare for a talk he delivered to the EU think tank Bruegel, and that the work, 'some of the most relevant in the field', also informed a policy workshop on innovation held at the Toulouse School of Economics.

Most significantly, Siotis was also directly involved in most of the antitrust cases to surface during the EU Competition Directorate's sector enquiry in the pharmaceutical industry, completed in 2009. He attributes 'most of [his] insights on competitive dynamics in the pharmaceutical industry' to Ornaghi's work. Ornaghi's research findings have also informed a policy paper published in 2011 by the Organisation for Economic Co-operation and Development (OECD Trade Policy Papers). In an acknowledgement of what Ornaghi terms the 'depreciation of human capital' following a merger, author Nobuo Kiriya notes that: 'While M&As can bring about cost reduction by eliminating duplication, and promote synergies by unifying the expertise of two companies, the large reduction in the number of researchers following a merger, together with cultural friction, may hamper innovative performance' [5.2].

**5. Sources to corroborate the impact****Official Reports and Policy Oriented Papers:**

- 5.1 Department of Health of Catalunya (2011) - Policy Paper on 'New Pharmaceutical Policy in the European Union'. ([CatSalut Website Link](#))
- 5.2 OECD Trade Policy Working Paper No. 113 (2011) – Kiriya N. 'Trade and Innovation: Pharmaceutical'.  
([http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=TAD/TC/WP\(2010\)28/FINAL&docLanguage=En](http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=TAD/TC/WP(2010)28/FINAL&docLanguage=En))
- 5.3 G. Werden G. (2009) 'Should the Agencies Issue new Merger Guidelines? Learning from Experience'. George Mason Law Review. Pp 839-849.  
([http://www.georgemasonlawreview.org/doc/16-4\\_Werden.pdf](http://www.georgemasonlawreview.org/doc/16-4_Werden.pdf))
- 5.4 Katz M. and H. Shelanski (2009) 'Mergers and Innovation'. Antitrust Law Journal  
([http://www.gis-larsen.org/Pdf/lecture4\\_Katz\\_Shelanski\\_Mergers\\_Innovation\\_Final.pdf](http://www.gis-larsen.org/Pdf/lecture4_Katz_Shelanski_Mergers_Innovation_Final.pdf))

**Name of Users/Beneficiaries:**

- 5.5 Corroborating statement dated 19 Nov 2012 by the Senior Economic Adviser, Competition Commission and Task Force for Greece is available upon request.
- 5.6 Corroborating emails dated 26 May 2013 and 01 Feb 2013 by the Managing Director of Pharmaceutical Price and Access, Catalan Health Service (CatSalut) is available upon request.