TNIT newsletter

Toulouse Network for Information Technology

Number 4 - March 2010

Content:

Welcome

We waited for spring time to arrive in Toulouse, and for the volcanic ash cloud to go away before sending you this March newsletter, which we hope that you will enjoy. You will find an interview of Nick Bloom, who has joined the TNIT in January, a description by Suzanne Scotchmer of the course on Digital Markets that she teaches in Berkeley (so that you can take a break from our series of reading lists) and a discussion by Doh-Shin Jeon on the problems of increased concentration in the market for electronic publishing.

We also have taken this opportunity to insert the call for paper of the Sixth (already!) biennial conference on "Intellectual Property, Software and the Internet" which will be held in Toulouse in January 2011 (the "regulars" will notice the name change, due to the growing importance of IP issues). We cannot promise sunshine, but we can promise a stimulating conference and a pleasant time.

Jacques Crémer

The Toulouse Network for Information Technology (TNIT) is a research network funded by Microsoft and managed by the Institut d'Economie Industrielle. It aims at stimulating world-class research in the Economics of Information Technology, Intellectual Property, Software Security, Liability, and Related Topics.

All the opinions expressed in this newsletter are the personal opinions of the persons who express them, and do not necessarily reflect the opinions of Microsoft, the IDEI or any other institution.

http://idei.fr/tnit/index.html

INSTITUT D'ÉCONOMIE INDUSTRIELLE

Toulouse School of Economics

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Interview with **Nick Bloom**

TNIT: Nick, you just joined the TNIT on January 1st. Welcome. Can you tell us about your main interests in economics, and especially in the economics of IT?

NB: I have always been interested in why there are such tremendous differences in productivity between firms. This started before I became an academic, when I worked for the dark-side as a consultant in McKinsey. Visiting all their clients I was amazed by how some firms were really dreadful and other incredibly impressive. More generally a rash of studies has recently come out pointing to huge differences in performance between plants in the same industry - for example Foster, Haltiwanger and Syversson (2008) show that for boring industries like block-ice, cement and white pan bread, that the top 10% of plants are twice as productive as the bottom 10%. These are really massive differences in productivity which are a challenge to explain.

One factor that seems central to this story is IT. This is such a new technology that some organizations have adapted to it rapidly, like Wal-Mart, while others have struggled, like the UK National Health Service (don't get sick in Britain). So understanding the causes and effect of IT on firm's performance seems key to understanding productivity dispersion, and ultimately what drives national growth.

TNIT: In your paper with Raffaella Sadun & John Van Reenen ("Americans do I.T. Better: US Multinationals and the Productivity Miracle") you show that US firms use I.T. technologies more effectively than European (UK) firms. What is driving this result? What should Europeans do?

NB: Well the story goes back to 1945 when Europe emerged from World War II with productivity levels of less than 50% of the US. Europe's industries had been smashed up by the war, and spent the next half-century slowly catching up with America. But by the mid-1990s European productivity was almost level with that in America, and many people assumed the Europeans would simply proceed to overtake the Americans. But something radical happened around 1995, which was that US productivity suddenly accelerated - the late 1990s and early 2000s productivity miracle under Clinton and Greenspan. This never happened in Europe. So for the next decade the US enjoyed about 10% higher productivity growth than Europe, a huge impact on the differences in standards of living across the Atlantic.

Looking at the data researchers found that this immense acceleration in US productivity growth came primarily from IT using industries, and this never occurred in Europe. So the question was why did this happen? Many pundits claimed it was due to a better US business environment. For example, in America retail firms can build massive ugly strip-mall stores which can effectively use new IT, while in Europe planning restrictions typically prevents this. But we wondered instead if differences in American management practices - something we had studied in other work - could also be playing a role. So we looked at firms in Europe, and in particular compared US multinationals to non-US multinationals to evaluate their use of IT. We found that American firms even in Europe seemed to have enjoyed an IT productivity miracle which non-US multinationals did not. So whatever was driving the US productivity miracle in using IT better, US firms were taking this abroad.

What seemed to make US firms better as using IT was they are much more flexible on organizational structures. US firms are ruthless at hiring and firing people and rearranging organizations to make effective use of new technologies. In contrast, European firms are slower to do this so struggled to fully utilize new IT technologies. The reasons behind this appear to go back to historical differences in education levels, labor-market regulations and product market competition.
But of course this means the US gap may not be permanent.

It could be a story of the tortoise and the hare, with the US taking the early lead but Europe catching-up again. At least until the next technological revolution comes along and the more flexible US accelerates away again.

TNIT: You are very interested in the efficiency impact of management. What is your favorite management style? Why?

NB: Michael Scott of Dunder Mifflin is one of my favorite managers. An inspiring individual who I always try to learn from. David Brent is also excellent, as is Basil Fawlty, CEO of Fawlty Towers.

Seriously, my research has tried to look at basic management practices that seem to be associated with better performance - like collecting information, setting tough targets, and providing incentives. The management research discipline has tended to focus on case studies, and in a post Enron world that's worrying. So I've been involved in collecting data on management practices from large samples of firms drawn from the manufacturing, retail, hospital and schools populations across countries. This is a case of establishing some basic facts on management practices across firms and countries. The initial work started by documenting huge dispersions in management practices, much like productivity.

Recently I've been running field experiments out in India on large (about 300 person) textile firms to evaluate the causal impact of modern management practices. This has been fascinating - the first striking finding is that many firms in developing countries are incredibly poorly managed. They operate at a level of disorganization that is hard to imagine for somebody living in the US. For example, we found tons of inventory lying without any order or labeling around the store rooms, tools and machinery scattered across factory floors, basic equipment broken so workers were doing routine activities by hand. Of course introducing standard management practices for operating efficiency led to massive improvements in performance. So now we are collecting data to try and investigate why these types of practices were not introduced sooner.

TNIT: Now some short questions. You teach in the US, but you are a British citizen. Do you notice that you make use of IT less efficiently than your colleagues at Stanford?

NB: No - not at all. Most of my colleagues at Stanford are from mainland Europe, where the use of IT is even worse than in the UK as we show in our research! In particular, watching the French try to use IT - ooh la la!

TNIT: You have defined a financial "fear factor" and linked it to the number of newspaper articles with the word 'uncertainty' in the title. We notice that 'uncertainty' appears in the title of quite a number of your papers. Are you really scared?

NB: My research going back to my PhD was on the impact of shocks in uncertainty on economic growth. An obvious example was the credit-crunch, which led to steps-up in measured uncertainty in August 2007 and then again in September 2008. One measure of uncertainty I focus on is the VIX, which is the implied volatility measure on the S&P 100 index. After Lehman's collapsed this went to levels that had never been seen before. So in October 2008 I wrote a very pessimistic blog pieces predicting a possible great depression, and then after the VIX fell back in January 2009 a pretty positive piece predicting a rebound instead. Thankfully, right now the VIX is back to low levels, so I'm not that worried. I've also stopped writing any more blog pieces as good news seems to be boring.

TNIT: You know India well. What is your favorite place to visit there?

NB: I've only been to Mumbai many times, but not travelled much else round India. Mumbai is incredibly hectic - most people (including me) don't like it the first time. Even as a born and bred Londoner, Mumbai is way too busy, noisy and dirty. Really, I've never seen any other city that's remotely like it, including Jakarta, Hong Kong, Lima or Bangkok. Just the density of people and noise is amazing - it apparently has three times the population density of New York, so it makes NY look like quiet suburbia.

TNIT: And now some quick opposites. Touch Type or Secretary?

NB: Touch Type

TNIT: Facebook, LinkedIn or address book?

NB: Facebook

TNIT: JSTOR or paper copies in library?

NB: JSTOR

TNIT: Coffee or mineral water?

NB: Both!

TNIT: Twitter or not?

NB: Not - I'm too old to understand what twitter is even for I think?

TNIT: Thank you very much for this interview!

Teaching on digital markets

by **Suzanne Scotchmer**

Suzanne Scotchmer is one of the world's leading authorities on the economics of innovation and intellectual property. For the last few years, she has been teaching a course at Berkeley on "Digital Markets", which attracts graduate students in Economics, Public Policy and Law. In this issue of the TNIT Newsletter, we take a break of our series of reading lists, and have asked Suzanne to present her course. We would be very happy to hear from other readers who have interesting experiences of teaching courses in the economics of the Internet and Software Industries.

The internet has changed the world, but has it changed economics? To the extent that economic forces are fundamental, the answer must be no. Yet the internet has created new business models, made old ones obsolete, and called into question the viability of intellectual property, certainly copyrights. On one hand, there has never been a marketplace that was more hospitable to entry than the internet. On the other hand, the internet marketplace is dominated by a few large firms that will be hard to unseat. Such conundrums are the subject of my course on Digital Markets.

Since markets provide the ability to trade, they are perhaps the most fundamental public good. Digital markets differ from bricks-and-mortar markets in how the markets are organized, in who provides them (such as private parties), and in the strategies available to vendors. Access to markets has never truly been free, but the internet marketplace is governed by profit-making firms. Search advertising is a good example. Where a single search engine is dominant, does the search provider have the ability to create winners through its search algorithm? Can it profit from doing so, given that it shares in the profit? Is it possible or necessary to regulate search? How can that be done if code is private? Where a dominant search provider provides other paid services on the internet, should the search provider be allowed to privilege its own businesses? If regulation is in order, how could it be policed?

It is not just ownership of selling platforms that are concentrated, but also ownership of the infrastructure. Since service providers have business alliances with vendors, this leads to the increasingly important question of net neutrality. In the same way that we can ask whether search engines can or should be required to provide impartial search, should owners of infrastructure be required to provide the same service to everyone? Does such a requirement nullify the efficiency benefits that may come from selling at different prices for different quality?

The internet is producing a revolution in how digital products are delivered. This includes pricing models, bundling and who chooses it (buyers or vendors), and cloud versus device-based delivery. Even as authors, publishers and producers complain of rampant piracy, new business models appear weekly for selling and sharing digital products. Will all books eventually be delivered in "the cloud" as Google proposes, or downloaded to personal appliances, as in the case of Sony Reader and Kindle? Will file formats evolve to be portable? Or remain proprietary as in the case of iTunes and Kindle? Will books eventually be provided in the cloud in return for flat fees, along the model of Google's proposed library subscriptions?

Among the topics addressed during the course are digital rights management, and how it changes relationships among publishers, the competitive consequences of the Google Book Settlement, new business models based on alliances between publishers and device manufacturers, such as iTunes, iPad and Kindle, and the difficulties of developing, managing and monitoring electronic voting.

The course has a rudimentary webpage available at

http://socrates.berkeley.edu/~scotch/digitalmarkets/

This will eventually grow into a resource center, possibly with taped lectures. The course serves law students, economics graduate students, and public policy students. It has drawn visiting students from Copenhagen Business School, the European University Institute, and Keio University. Stay tuned.

Why is market concentration high in electronic academic publishing?

by Doh-Shin Jeon

Electronic publishing has brought many fundamental changes in the market for academic journals. It has significantly reduced the physical cost associated with having access to articles. Instead of visiting a library to read and, sometimes, to make a copy of an article, one can read, download and print an article with an Internet connection. Digitalization of text and data has also changed the way researchers search for relevant information. They can use techniques of text and data mining and linking to find relevant information in the exponentially growing mass of available scientific information. Finally, publishers have changed their pricing model from "neither bundling nor price discrimination" to "bundling and usage based price discrimination". The very low cost of distribution of journals in electronic forms, and the possibility of charging different prices to different consumers, opens up the possibility of giving access to all readers in the world, by adapting prices to their willingness and/or ability to pay. For instance, discounted prices can significantly enhance access to scientific information for researchers and students in developing countries.

Despite the fact that electronic publishing has undeniably brought enormous social benefits, these benefits have come with some downsides. Indeed, I will argue that electronic publishing has created the risk of increasing double concentration in academic journals. By double concentration, I mean the economic concentration within a market being dominated by few firms, and the intellectual concentration with readership and citations being dominated by fewer journals and researchers.

The change of pricing model from "neither discrimination nor bundling", which prevailed for printed journals, to "discrimination and bundling" for electronic journals is the main factor behind the increased industry concentration. The bundling practices of the large publishing houses are often called "big deal". For instance, Elsevier sells to libraries (or consortia of libraries) subscription to all the journals it publishes and charges a price that depends on historical purchase records of the institution. Canceling one's subscription to a subset of journals does not induce any significant reduction in price. Along with Domenico Menicucci, we analyzed the consequences of this bundling for competition among publishers, when they can charge different prices to different libraries. We showed that bundling allows large publishers to capture larger fractions of the acquisition budget of libraries, and may prevent small publishers from selling their journals. This has a clear-cut negative implication on the efficiency of the market by reducing libraries' access to academic journals. In particular, without bundling, libraries will always be able to give priority to high quality journals in their purchasing policy. However, with bundling, a bundle of many mediocre journals can be lumped together and find a place on the acquisition list, while some high-quality journals are not purchased. Our results confirm the worries of small publishers believing that if they are below no. 5 on the shopping list of libraries, that there may be no funds left to purchase their journals.

The increased interoperability of the publishers' website also contributes to increased concentration in the industry. Seamless navigation across different websites facilitates the use of techniques of text and data mining and linking. Currently, 2,427 publishers provide links through CrossRef, a backbone offering a reference linking service that allows users to click on a citation and be taken directly to the target content. Publishers can avoid the costs of signing many bilateral linking agreements since a single agreement with CrossRef serves as a linking agreement with all participating publishers. In a recent paper, we have shown that when interoperability across different information depositories such as publishers' websites generates an added value that exhibits economies of scale (i.e. when interoperability between two large depositories generates more value than interoperability between two small ones), all publishers have an incentive to join the multilateral platform. However full interoperability enhances the relative standing of large publishers while decreasing that of small ones. Our finding is consistent with the concern expressed by the World Summit on the Information Society (WSIS) that CrossRef might treat small publishers on an unequal basis.

Furthermore, the industry concentration in electronic academic journals has been accompanied with a concentration in citations. In a recent Science article*, James Evans showed that electronic publishing has led to an increased concentrations of citations on fewer articles and fewer journals, with older articles losing "market share". He attributes this narrowing of science to the difference between browsing print material and searching online and following hyperlinks. Online search and hyperlinks encourage researchers to bypass many of the articles marginally related to their work and to easily find the mainstream opinion, which they are likely to follow. As a consequence, electronic journals hasten scientific consensus. On the contrary, poorly indexed print-journals, by drawing researchers through unrelated articles, may have facilitated broader comparisons and led researchers into exploring older contributions.

These two phenomena may reinforce each other: the increased concentration resulting from bundling and interoperability reinforcing the concentration of citations into the journals owned by large commercial publishers. Furthermore, if the large commercial publishers' journals enjoy disproportionately wide dissemination and their websites provide better search and hyperlink services, the citation of their journals could increase, leading in turn to an increase in their market power.

Doh-Shin Jeon is Associated Professor in Economics at the Toulouse School of Economics. This article is based on his papers:

Doh-Shin Jeon and Domenico Menicucci (2006), *"Bundling Electronic Journals and Competition among Publishers", Journal of the European Economic Association, 4: 1038-83*

Doh-Shin Jeon and Domenico Menicucci (2009), *"Interconnection among Academic Journal Websites: Multilateral versus Bilateral Interconnection", Working paper, Toulouse School of Economics and University of Firenze*

**** For more information:***

James A. Evans (2008), *"Electronic Publication and the Narrowing of Science and Scholarship". Science, 321: 395-99*

Sixth bi-annual conference on

The Economics of Intellectual Property, Software and the Internet

Toulouse, January 13-14, 2011

THE OBJECTIVE OF THE CONFERENCE, co-sponsored by the Institut D'Economie Industrielle and the Toulouse School of Economics, is to discuss recent academic contributions to the economics of Intellectual Property, and of the Software and Internet Industries, whether theoretical, econometric, experimental or policy oriented. There will be an increased emphasis on intellectual property compared to previous conferences in the series because of the growing importance of IP issues for research and for policy.

TOPICS TO BE COVERED include (this list is suggestive and not exhaustive; all contributions to our understanding of these industries and their impact on the economy in general are welcome):

- The industrial organization of the software and internet industries (competition and regulation, contractual relationships, strategies of firms, demand).
- Issues in intellectual property policy.
- Consequences for growth and employment of the software and internet industries.
- E-Commerce, including jurisdictional issues/taxation and competitive strategies.
- Social networking and Web. 2.0.
- New technologies of information and communication and the organization of firms.
- Standards and intellectual property patents.
- Software platforms as two-sided markets.
- The economics of cloud computing.
- The economics of R&D.
- Internet advertising.

THE SCIENTIFIC COMMITTEE is composed of Philippe Aghion, Susan Athey, Nick Bloom, Luis Garicano, Neil Gandal, Bengt Holmstrom, Jon Levin, Preston Mc Afee, John Van Reenen, Ran Spiegel and Hal Varian.

THE ORGANIZING COMMITTEE is composed of Jacques Crémer and Paul Seabright.

PROSPECTIVE PARTICIPANTS are invited to pre-register and/or to submit papers by sending an e-mail to softint@cict.fr. Papers should be received by 30 September 2010 (abstracts will be considered, but papers are preferred). A decision will be made by 24 October 2010.

REGISTRATION FEES: € 200 (includes lunches, conference dinner and coffee breaks). Waived for speakers and discussants, special rates for certain other attendees.

FURTHER INFORMATION is available on the conference web page, and more specific information will be sent to those who have pre-registered. Travel on the base of economy class, accommodation and local expenses will be provided for speakers. For further information contact the conference secretariat:

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