



THE JEAN-JACQUES LAFFONT DIGITAL CHAIR

#3
Spring 2017

D I G I T A L E C O N O M Y N E W S L E T T E R

**Bringing together academics, policy-makers
and private partners to discuss the latest research evidence
on new digital technologies and their impact on society**

Decentralisation
of decision-making
in a digital age
by **Wouter DESSEIN**
Columbia Business School
p.4

Management
practices: the
impact on
organisational
performance
in the digital age
by **Raffaella SADUN**
Harvard Business School
p.6

Platform shift:
how new business
models are
changing the shape
of industry
by **Marshall VAN ALSTYNE**
Boston University and MIT
p.8

Multi-sided
platforms and
control: redefining
jobs and companies
in the Uber age
by **Andrei HAGIU**
Harvard Business School
p.10

Reaping the
benefits of the digital
age: the importance
of organisational
change
by **Luis GARICANO**
London School of Economics
p.12

**PUBLIC POLICY
CONTRIBUTIONS**
by **Diane COYLE**
University of Manchester
and **Timothy YU-CHEONG YEUNG**
Université Paris-Dauphine
p.14



Dear
readers

Rising to the challenge

The rapid development of digital technology brings new challenges and a fundamental transformation of the everyday life of citizens and organisations, significantly impacting businesses across the world. The need to understand the challenges and opportunities of the digital economy is an urgent priority for both the public and private sectors.

Economists in Toulouse have been studying these changes for more than 15 years. This research has been enhanced by our collaboration with private partners. The first IDEI-Microsoft research partnership was signed in 2000, and the first of (so far) ten conferences on the economics of the software and internet industries was held in January 2001. Important theoretical advances in our understanding of new phenomena, such as platforms and multi-sided markets, have been stimulated by the exchange of information and perspectives with our research partners.

To strengthen this fruitful relationship, TSE and the Institute for Advanced Study in Toulouse (IAST) launched the Jean-Jacques Laffont Digital Chair in February last year to promote research on the impact of digital technology in such areas as industrial organisation, competition policy, education, finance, culture and health. This important development has helped to consolidate the research investment of Toulouse economists in this domain. As part of this initiative, the second TSE Digital Forum took place in June 2016 in Paris. The event brought together academics, policy-makers and private partners to discuss the big questions that digital technology raises for organisations.

Speakers at Palais Brongniart included

Wouter DESSEIN (*Columbia*), Luis GARICANO (*LSE*),
Andrei HAGIU (*Harvard*), Augustin LANDIER (*TSE*),
Raffaella SADUN (*Harvard*), Marshall VAN ALSTYNE (*Boston University, MIT*)
and Jean Tirole (*TSE*).

Jacques CRÉMER

Director of the Jean-Jacques Laffont Digital Chair



16 JUNE 2016 / PALAIS BRONGNIART PARIS



FORUM THEMES

Staying ahead of the curve

- ### OPTIMAL ORGANISATION
- How can newcomers build an online marketplace?
 - Centralisation vs decentralisation
 - Avoiding the pitfalls of multi-sided markets

- ### TRANSFORMING FIRMS
- How to manage transitions
 - How IT and network effects are changing the way we do business
 - Where will we find the jobs of the future?

- ### COMMUNICATION REVOLUTION
- What are the consequences for economic growth, inequality and productivity?
 - Attention allocation and its effect on organisational performance

Decentralisation of decision-making in a digital age

Any large organisation thinking about how effectively it delivers on its objectives faces an important question: whether it is better to have key decisions made at headquarters or instead to decentralise decision-making to lower-level managers.



For multi-divisional and perhaps multinational organisations, that trade-off may well change following the adoption of digital technologies that facilitate easier flows of information as well as the delegation of routine decisions to software programs.

Speaking at the TSE Digital Forum in Paris in 2016, **Wouter DESSEIN** of Columbia Business School discussed his research findings on why and when to decentralise – and how the digital age affects the benefits of centralisation versus decentralisation. He cited Patrick Cescau, the former chief executive of Unilever, who in 2007 explained his view on when coordination of a multinational organisation requires centralisation thus:

‘Historically, Unilever’s business had been built up around highly autonomous operating companies, with their own portfolio priorities and all the resources they needed – marketing, development, supply chain –

to develop their business in whatever way they saw fit. This was a highly effective way of building a truly multinational business almost 50 years before the term was invented.’

‘But it had become less suited to an increasingly globalised, competitive landscape, where battles were being fought and won with global scale and know-how, and top-down, strategically driven allocation of resources. In today’s world, a hundred different portfolio strategies run the risk of adding up to no strategy at all. It’s not efficient, it doesn’t leverage your best assets and it doesn’t build strong global positions.’

When to decentralise: information versus incentives

The first question to ask is why it might not be desirable for headquarters to make all the key decisions. One basic principle of organisational design is to assign authority to those people who have relevant information – and that might not always be the boss. But while lower-level managers may be better informed than headquarters, they often might have an agenda that is different from the boss.

An example of such misaligned incentives would be division managers who maximise the profits of their own divisions but not the profits of the firm as a whole, perhaps by competing with other divisions for customers and resources. Similarly, purchasing managers might minimise costs rather than profits, perhaps by insisting on too much uniformity or by cutting costs excessively. And sales managers might maximise revenues but not profits, perhaps by cutting prices or customising products too much.

So if lower-level managers have superior information but the wrong objectives, why not centralise decision-making and let lower-level managers report their information to headquarters? One problem is managers’ superior information is often ‘soft’ or non-verifiable. The fact that managers can distort or exaggerate the information that they provide can result in a lack of trust between them and the boss.

This suggests that there is an organisational trade-off: delegation leads to biased decision-making based on superior information; while centralisation leads to unbiased but uninformed decision-making (Alonso et al, 2008a, 2008b).

An example would be banks that make loans to small and medium-sized enterprises, a business sector in which local, soft information is important. There is evidence for the United States that small, local banks are better at lending to small firms because they know the owners personally and understand the prospects for their businesses. Larger banks are typically too centralised to be successful at this kind of work.

One basic principle of organisational design is to assign authority to those people who have relevant information, and that might not always be the boss.

Digitalisation and decentralisation

Does the adoption of digital technologies change the nature of the organisational trade-off? It is certainly true that headquarters now have access to the same information as lower-level managers – and decision-making increasingly relies on quantifiable and easily accessible (digital) information. This reduces the informational advantage of lower-level managers and shifts power to headquarters.

But this is only one side of the story. Note that before the digital age, headquarters often had shallow but broad information, knowing a little about everything, while lower-level managers had deep but narrow (specialised) information, knowing a lot about a small part of the organisation but failing to coordinate their activities.

When, as in Unilever's case described by Patrick Cescau, each decision ideally depends on all other decisions and on information from across the organisation, coordination is very important, leading to centralisation. But if decisions are largely stand-alone and mainly depend on local information, decentralisation is preferable.

How does digitalisation affect coordination? It gives lower-level managers access to both deep (specialised) and broad (organisation-wide) information. This dilutes the 'coordination advantage' of headquarters because there is much more common information throughout the organisation and everyone works from the same facts.

Empirical evidence from manufacturing indicates that before the widespread adoption of digital technologies, there was more decentralisation of decision-making from headquarters to plant managers when plants were large and complex (with multiple hierarchical levels) and when headquarters lacked access to information. There was less decentralisation when plants were part of multi-establishment organisations and coordination was important.

The impact of digital technologies has been to increase centralisation in large and complex plants, which were previously more decentralised overall. But in small and less complex plants, which were previously more centralised overall, there has been an increase in decentralisation.

Organising to adapt and compete: implications for organisational practice

One key lesson for large organisations is to consider the implications of the adoption of new digital technologies for where key decisions are taken: at headquarters or by lower-level managers?

Increased digitalisation seems to favour greater centralisation and larger organisations if decisions were previously decentralised to take advantage of soft and local information even where there are misaligned incentives (Alonso et al, 2015). But increased digitalisation favours decentralisation and smaller organisations if decisions were previously centralised to achieve coordination among divisions.

FURTHER READING

- ▶ Ricardo Alonso, Wouter Dessein and Niko Matouschek (2008) 'When Does Coordination Require Centralisation?', *American Economic Review* 98(1): 145-79:
<https://www0.gsb.columbia.edu/faculty/wdessein/papers/coordination.pdf>
- ▶ Ricardo Alonso, Wouter Dessein and Niko Matouschek (2008) 'Centralisation versus Decentralisation: An Application to Price Setting by a Multi-Market Firm', *Journal of the European Economic Association* 6(2-3): 457-67:
<https://www0.gsb.columbia.edu/mygsb/faculty/research/pubfiles/3133/JEEA-P&P.pdf>
- ▶ Ricardo Alonso, Wouter Dessein and Niko Matouschek (2015) 'Organizing to Adapt and Compete', *American Economic Journal: Microeconomics* 7(2): 158-87:
<https://www0.gsb.columbia.edu/faculty/wdessein/papers/AEJMicroOTAC.pdf>

Wouter DESSEIN is professor of Finance and Economics at Columbia University. His research interests center on the economics of organisations, specifically centralisation versus decentralisation, incentive design, the organisational structure of multi-divisional firms and the impact of competition on business organisations.

Management practices: the impact on organisational performance in the digital age

Over the last decade and a half, the World Management Survey has collected data on management practices across multiple organisations, sectors and countries. The survey was developed as a way to understand the large and persistent differences in performance across organisations and countries – and to explore options for improvement.



Speaking at the TSE Digital Forum in Paris in 2016, **Raffaella SADUN** of Harvard Business School, one of the research team, described the survey, the key findings and their implications for organisational practice and public policy in the digital age.

Measuring management practices

The World Management Survey has worked with thousands of managers from nearly 40 countries to measure performance in their organisations – manufacturing firms, retail outlets, schools and hospitals. Managers are asked 18 open-ended questions about three practices that are generally considered to be the essential elements of good management and they are then scored on a five-point scale:

- ➔ **Targets:** does the organisation support long-term goals with tough but achievable short-term performance benchmarks?
- ➔ **Incentives:** does the organisation reward high performers with promotions and bonuses while retraining or moving underperformers?
- ➔ **Monitoring:** does the organisation rigorously collect and analyse performance data to identify opportunities for improvement?

Management and organisational performance

There are several headline findings from analysis of the survey results. First, according to the survey criteria for good management practices, many organisations around the world are very badly managed. Well-run companies set 'stretch' targets on productivity and other measures, base staff compensation and promotions on meeting those targets and constantly monitor the outcomes – but many firms do none of those things.

Second, the survey indicators of better management are strongly correlated with performance measures such as productivity, return on capital employed and firm survival. For example, a one-point increment on the five-point management scale – the equivalent of going from the bottom third of performers to the top third – is associated with 23% greater productivity.

Third, management makes a difference in shaping national performance. For example, variation in management accounts for nearly a quarter of the roughly 30% productivity gap between the United States and Europe.

Finally, not only does good management yield practical improvements in manufacturing firms and retail outlets, but it can also improve performance beyond the private sector. Schools and hospitals are typically more poorly managed than manufacturing firms, but they too show a positive correlation between performance and implementation of the three basic management principles.

Management in the digital age

What about the relationship between management and the digital revolution? There is growing evidence of the complementarity between information and communication technology (ICT) and organisational practices. It is the management and organisation of the establishment into which ICT is placed that determines whether productivity and other indicators of performance are improved.

One key lesson for organisations is to consider the management implications surrounding the adoption of new technologies.

The necessary reorganisation of organisational processes around ICT can take time to implement. It is never just a case of plugging in a computer or installing sophisticated software systems such as enterprise resource planning (ERP) in firms or electronic medical records (EMR) in hospitals. There often need to be substantial changes in skills, organisational structure and allocation of work, all of which needs to be facilitated by effective management, especially people management.

Implications for organisational practice

One key lesson for organisations is to consider the management implications surrounding the adoption of new technologies. Complementary investments in skills and organisational processes may well be needed to unlock the returns to ICT.

There are also broader questions about why firms fail to improve their management practices and reap the performance benefits. One reason is that they cannot self-assess their own practices very effectively.

The last question in the survey asks managers: 'Excluding yourself, how well managed would you say your firm is on a scale of 1 to 10, where 1 is worst practice, 5 is average and 10 is best practice?'

The results show both that organisations are too optimistic about the quality of their management, and that there is no relationship between their self-assessed scores and any indicators of organisational performance.

To see how far behind their organisations are, managers must rigorously evaluate their practices and compare themselves with others. Managers can easily benchmark themselves by country and industry on the World Management Survey scoring grid.

Having seen where they need to improve, managers should begin working towards slow but steady progress. Organisations can start by identifying which processes they need to change and then devising metrics for monitoring progress over the short and long terms. Ideally, goals should be visible to everyone and they should be translated into individual and organisational targets that are tracked frequently.

Implications for public policy

Are there any policies that governments could implement to encourage improved management practices and organisational performance?

One area is government policy on competition. Poor management is often reinforced by national policies such as production quotas and tariff barriers, which reduce competition. Governments can play a positive role by reducing subsidies for certain sectors, eliminating tax breaks for favoured companies and lowering barriers to trade. Lower regulation is also associated with more effective management practices.

Another area is the framework for organisational ownership. In the manufacturing sector at least, family-run and government firms typically have very poor management, while multinationals achieve good management practices wherever they locate.

Finally, improved education for non-managers and managers appears to be linked to better management.

FURTHER READING

- ▶ Nicholas Bloom, Renata Lemos, Raffaella Sadun, Daniela Scur and John Van Reenen (2014) 'The New Empirical Economics of Management', *Journal of the European Economic Association* 12(4): 835-76: <https://people.stanford.edu/nbloom/sites/default/files/jeea.pdf>
- ▶ Nicholas Bloom, Raffaella Sadun and John Van Reenen (2016) 'Management as a Technology?' Centre for Economic Performance Discussion Paper No. 1433: <http://cep.lse.ac.uk/pubs/download/dp1433.pdf>
- ▶ Nicholas Bloom and John Van Reenen (2007) 'Measuring and Explaining Management Practices Across Firms and Countries'. *Quarterly Journal of Economics* 122(4): 1351-1408: <https://people.stanford.edu/nbloom/sites/default/files/measuringmanagement.pdf>
- ▶ World Management Survey: <http://worldmanagementsurvey.org/>

Raffaella SADUN is the Thomas S. Murphy Associate Professor of Business Administration in the Strategy Unit at Harvard Business School. Her research focuses on the economics of productivity, management and organisational change. Her research documents the economic and cultural determinants of managerial choices, as well as their implications for organisational performance in both the private and public sector.

Platform shift: how new business models are changing the shape of industry

Facebook, PayPal, Alibaba, Uber – these seemingly disparate companies have up-ended entire industries by harnessing a single phenomenon: the platform business model. Platform firms have become an increasingly significant feature of the global economy, including three of the five biggest firms as measured by market capitalisation: Apple, Google and Microsoft are the giants of the internet era.



Speaking at the TSE Digital Forum in Paris in 2016, **Marshall VAN ALSTYNE** of Boston University and MIT described how platforms use technology to match producers and consumers in a multi-sided marketplace – creating new forms of value and shifting fundamental assumptions about the way that companies think about marketing, operations, human resources, finance and strategy (Parker et al, 2016).

The power of network effects

The giants of the internet economy resemble those of the industrial economy but for contrasting reasons. The engine of the industrial economy is supply-side economies of scale. Massive fixed costs and low marginal costs mean that firms achieving higher sales volume than their competitors have a lower average cost

of doing business. That allows them to reduce prices, which increases volume further, which permits more price cuts – a virtuous feedback loop that produces monopolies.

In supply-side economies, firms achieve market power by controlling resources, increasing efficiency and fending off the competitive forces described by Michael Porter: the threat of new entrants and substitute products or services; the bargaining power of customers and suppliers; and the intensity of competitive rivalry. The goal of strategy in this world is to protect the business from competition and channel it towards other firms.

Conversely, the driving force behind the internet economy is demand-side economies of scale, also known as ‘network effects’. These are enhanced by technologies that create efficiencies in social networking, demand aggregation, app development and other phenomena that help networks to expand.

In the internet economy, firms that achieve higher ‘volume’ than competitors (that is, they attract more platform participants) offer a higher average value per transaction. This is because the larger the network, the better the matches between supply and demand and the richer the data that can be used to find matches. Greater scale generates more value, which attracts more participants, which creates more value – in another virtuous feedback loop that produces monopolies.

Supply economics gave us Carnegie Steel, Edison Electric (which became GE), Rockefeller’s Standard Oil and many other industrial era giants. Network effects have given us Alibaba, which accounts for over 75% of Chinese e-commerce transactions; Google, which accounts for 82% of mobile operating systems and 94% of mobile search; and Facebook, the world’s dominant social platform.

Implications for organisational change

How do organisations need to change in the internet age? The key is to recognise that in any market with network effects, the focus of attention needs to shift from inside the firm to outside the firm. This applies to all business functions.

Marketing

Marketing is no longer just about creating internally managed outbound messages. It now extends to the propagation of messages by consumers themselves. This shift is captured in an outline of the last four decades of consumer marketing by Coca-Cola’s chief information officer: in the 1980s, the key tool was the single message; in the 1990s, segmentation; in the 2000s, individual targeting; and now in the 2010s, social influence and ‘virality’.

In the internet economy, firms that achieve higher 'volume' than competitors offer a higher average value per transaction.

Operations and logistics

Operations and logistics traditionally emphasise the management of 'just-in-time' inventory. That function is increasingly being supplanted by the management of 'not-even-mine' inventory – whether rooms, apps or other assets owned by network participants.

The failure of existing firms to recognise the shift in value creation from internal to external servicing has provided the opportunity to new platform businesses. For example, if Marriott, Yellow Cab and NBC had added platforms to their value chains, then Airbnb, Uber and YouTube might never have emerged.

Tom Goodwin of Strategy Havas Media illustrates the change: 'Uber, the world's largest taxi company, owns no vehicles; Facebook, the world's most popular media owner, creates no content; Alibaba, the most valuable retailer, has no inventory; and Airbnb, the world's largest hotelier, owns no real estate.'

Human resources

With human resources, the emphasis shifts from employees to contractors, from internal experts to external crowds and from subordinate dictation to community persuasion. For example, enterprise software giant SAP opened the internal system on which its developers discuss problems to its external ecosystem – to developers at both its own partners and its partners' clients. Information sharing across this network has improved product development and productivity and reduced support costs.

Human resources functions at companies increasingly leverage the wisdom of networks to augment internal talent. Instagram sold for a billion dollars not because of the contributions from its 13 employees but from 30 million users. And even middle management can be outsourced with firms accessing 'cloud labour'.

At the same time, expensive gatekeepers are being replaced by crowds in some sector. For example, at TripAdvisor, advice from travellers replaces that of travel agents; and Rocket Lawyer provides crowdsourced advice on a wide range of legal matters, supplanting traditional law firms.

Finance

Finance, which historically has recorded its activities on private internal accounts, now records some transactions externally on public or 'distributed' ledgers. Organisations such as IBM, Intel and JPMorgan are adopting blockchain technology that allows ledgers to be securely shared and vetted by anyone with permission. Participants can inspect everything from aggregated accounts to individual transactions.

This shift allows firms to 'crowdsource' compliance with accounting principles, for example, or to seek input on their financial management from a broad network outside the company. Opening the books in this way taps the wisdom of crowds and signals trustworthiness.

Strategy

Thinking about competitive strategy is more complicated and dynamic in a platform world – more like three-dimensional chess. The competitive forces described by Michael Porter still apply, but on platforms, these forces behave differently and new factors come into play. To manage them, companies must pay close attention to the interactions on the platform, participants' access and new performance metrics.

In the near future, the platform shift will have an impact on additional areas of economic and social interaction: energy, education, healthcare, the internet of things, even cities can all be thought of as platforms.

FURTHER READING

- Geoffrey Parker, Marshall Van Alstyne and Sangeet Paul Choudary (2016)
'Platform Revolution: How Networked Market are Transforming the Economy and How to Make Them Work for You'
WW Norton & Co: <http://platformrevolution.com/>

Marshall VAN ALSTYNE is a professor at Boston University and a Digital Fellow at MIT. His work concerns information economics, focusing mainly on competitive strategy, network effects and access to information. Marshall's work also balances open source principles against those that generate profits and stimulate innovation.

Multi-sided platforms and control: redefining jobs and companies in the Uber age

Multi-sided platforms are online marketplaces that enable interactions between two or more distinct groups of individuals or organisations that value each other's participation. Examples of these new intermediaries between buyers and sellers of a growing range of products and services include Airbnb, Amazon, eBay, Google, Facebook, PlayStation and Uber.



Speaking at the TSE Digital Forum in Paris in 2016, **Andrei HAGIU** of Harvard Business School outlined his research on the business strategies of entrepreneurs and established firms setting up multi-sided platforms. In particular, he explored whether a platform is really preferable to the traditional reseller model – and if so, whether the professionals that companies like Uber rely on to deliver services should be treated as employees or independent contractors.

Multi-sided platforms versus resellers

Most companies that serve as intermediaries between buyers and sellers face a fundamental strategy decision: should they be resellers (like supermarkets), acquiring and then reselling products or services? Should they operate as multi-sided platforms connecting buyers and sellers without controlling the offerings being sold? Or should they blend the two business models?

In many ways, online marketplaces are the perfect business model. Since they facilitate transactions between suppliers and customers rather than taking full responsibility for products or services, they have low cost structures and high gross margins. These marketplaces usually take a cut from each transaction, which goes almost straight to the bottom line.

They also benefit from 'network effects': the larger the network of buyers and sellers, the better the matches between supply and demand and the richer the data that can be used to find matches. Greater scale generates more value, which attracts more participants, which creates more value in a virtuous feedback loop

Yet online marketplaces remain difficult to build. To attain a critical mass of buyers, there needs to be a critical mass of suppliers; but to attract suppliers, there needs to be a lot of buyers. Even after a marketplace has attracted a critical mass of both buyers and sellers, much remains to be done (Hagiu and Rothman, 2016).

Implications for strategic choice of business model

The attractions of multi-sided platforms have enticed many companies to try to apply the model in cases where the reseller model would have had a better chance of succeeding (Hagiu and Wright, 2013).

The key is to recognise that a firm's position along the continuum between pure reseller and pure multi-sided platform is determined by its degree of control over transactions. To what extent does the intermediary control pricing, product presentation and other factors that influence purchasing decisions? And to what extent does it take responsibility for fulfilling orders and delivering products?

Analysis suggests that intermediaries should choose the platform model for the following types of products (Hagiu and Wright, 2015a, 2015b):

- Products where the suppliers have a significant information advantage about the best way to market products relative to the intermediary.
- Products for which their prices and marketing activities have limited spillovers on other products. Some products, for example, have much higher value to buyers when bought together than when purchased separately from independent sellers. In those cases, resellers generally do better than platforms.
- Products in the 'long tail'. High-demand products are sold more efficiently by a large reseller, which can capitalise on economies of scale in purchasing, infrastructure, delivery and customer support.

In many ways, online market places are the perfect business model. They have low cost structures and high gross margins.

These advantages do not apply to low-demand products, which is why Amazon acts as a reseller for high-demand products but as a multi-sided platform for long-tail products available from independent sellers.

Service marketplaces: employees versus independent contractors

Platform businesses have become particularly prevalent in service industries, enabling professionals to connect directly with customers. At companies like Coursera (education), HourlyNerd (business consultancy), Uber (taxis) and Upwork (outsourced staffing), professionals control some or all of the relevant decisions, such as prices, equipment, training and promotion.

Firms providing service marketplaces of this kind face a choice between two models of organisation: employing and controlling professionals; or enabling professionals to interact with customers on terms that they choose themselves (Hagiu and Wright, 2016). In making

this choice, it is important to recognise two types of decisions – transferable and non-transferable – that affect the returns to the firm and the professionals. Non-transferable decisions are always completely controlled by the professionals – with Uber, for example, how friendly to be to customers – or by the firm – for example, the quality of the ride-hailing app. In contrast, transferable decisions can be made by either party: the type of car an Uber driver uses; or the details that an Airbnb host lists about an apartment for rent.

If the transferable decisions are controlled by the firm, then it is functioning as a traditional business. But if the transferable decisions are controlled by the professionals, then the firm is functioning as a platform.

Implications for business regulation

What about the growing number of firms in the grey area in between, as technologies have made it easier to fine-tune the degree of control exerted over interactions between service providers and customers? The optimal model for a company might be somewhere in the middle, controlling some aspects of contractor performance but not others.

This analysis is relevant to legal and regulatory debates about whether professionals that work through service platforms like Uber should be classified as employees rather than as independent contractors. Existing legal definitions emphasise control rights as the most important factor in determining this issue. But drawing the distinction between employees and independent contractors solely based on control rights is notoriously difficult.

A practical approach that could be used by courts would be based on the share of variable revenues (net of production costs) kept by workers: when this share is above 50%, it is an indication that the firm has given key control rights to the workers, consistent with them being independent contractors. The higher the share, the more confidence the court can have in drawing this conclusion.

More broadly, a new approach is needed that goes beyond the dichotomy between employees and contractors. While still guaranteeing employer flexibility and worker protections, there should be a spectrum of options to reflect the unique in-between status of many professionals in the age of multi-sided platforms.

FURTHER READING

- ▶ Andrei Hagiu and Julian Wright (2013) 'Do You Really Want to Be an eBay?', Harvard Business Review 91(3): 102-108: <https://hbr.org/2013/03/do-you-really-want-to-be-an-ebay>
- ▶ Andrei Hagiu and Julian Wright (2015a) 'Multi-Sided Platforms', International Journal of Industrial Organisation 43: 162-74: http://www.hbs.edu/faculty/Publication%20Files/15-037_cb5afe51-6150-4be9-ace2-39c6a8ace6d4.pdf
- ▶ Andrei Hagiu and Julian Wright (2015b) 'Marketplace or Reseller?', Management Science 61(1): 184-203: http://www.hbs.edu/faculty/Publication%20Files/Marketplace_Reseller_HBS%20WP%2001312014_138e1ae7-e457-4143-b984-249c4a9ca0aa.pdf
- ▶ Andrei Hagiu and Julian Wright (2016) 'Controlling vs. Enabling', Harvard Business School Working Paper No. 16-002: http://www.hbs.edu/faculty/Publication%20Files/16-002_6cab30ee-e13b-42ab-8365-7ab7f03c483f.pdf
- ▶ Andrei Hagiu and Simon Rothman (2016) 'Network Effects Aren't Enough', Harvard Business Review 94(4): 65-71: <https://hbr.org/2016/04/network-effects-arent-enough>

Andrei HAGIU is an Associate Professor in the Strategy group at Harvard Business School. Andrei's research focuses on multi-sided platforms, which enable interactions between two or more distinct groups of customers, who value each other's participation. He studies the business strategies used by multi-sided platforms across a wide range of industries.

Reaping the benefits of the digital age: the importance of organisational change

Why have organisations in Europe been slow to benefit from information and communication technologies (ICT) compared with their US counterparts?



Speaking at the TSE Digital Forum in Paris in 2016, **Luis GARICANO** of the London School of Economics described research findings that shed light on the comparative failure of European organisations to reap the benefits of the digital age - and their implications for public policy and organisational practice.

Firm size and adoption of digital technologies

There is considerable evidence that an organisation's size matters for how effectively it adopts new technologies to enhance its productivity. For example, the returns to ICT adoption for large firms are higher than for medium-sized firms and the returns typically improve over a longer period.

This is significant since the distribution of firm sizes in Europe is often distorted by size-related regulations. In France, for example, there are several labour market regulations that apply only to firms with 50 employees or more. The net effect of these policies is to subsidise small firms at the expense of larger firms and make it difficult for smaller firms to grow. But since small firms are on

average less productive than large firms, the French economy loses out (Garicano et al, 2016).

Implications for public policy

The failure to allocate more output to bigger and better-managed firms is a major factor holding back the aggregate productivity of European economies compared with the United States. For example, half of the productivity gap between the United States and southern European countries such as Italy and Portugal could be bridged if these countries allocated jobs to the better-managed firms as well as happens in the United States. Removing regulations that favour smaller firms would be a start.

Better management to benefit from digital technologies

It is not just public policy that constrains the effective adoption of digital technologies: organisations' failure to adapt appropriately is also important. The impact of ICT on productivity is crucially mediated by management - and poor management practices may help to explain Europe's productivity slowdown.

A striking example of the need for organisational change to benefit from ICT is not from the private sector but from the efforts of US police departments to reduce crime. Evidence suggests that increased computerisation results in more effective crime-fighting - but only if police work is reorganised to take advantage of the presence of computers (Garicano and Heaton, 2010).

In the context of policing, the organisation of work around computers might change by the use of geographical patterns to allocate resources and to measure the crime-fighting progress of individual officers. The best-known example is the New York City police department's CompStat system, associated with Bill Bratton's tenure as police chief in the 1990s.

CompStat is an integrated information and management system for policing, which includes data-driven problem identification, internal accountability, geographical organisation of deployment and measurable goals. The research finds that police departments that adopted computers together with CompStat-style organisational practices experienced reduced property crime and violent crime. They also significantly increased crime clearance rates.

Distinct effects of information technologies and communication technologies

Research typically assesses the impact of computers as a single technology. But there are important insights to be gained from disaggregating the components of ICT to understand their distinct effects on organisational structure.

A key technological innovation that reduces communication costs is the growth of corporate intranets.

one stemming from the costs of accessing information stored in machines; and the other from the cost of communicating information between individuals (Garicano, 2000). According to the theory, reductions in the cost of accessing information are a decentralising force, pushing power down the hierarchy and allowing frontline staff to solve more problems and rely less on the training of specialists.

In contrast, improvements in communications technologies are a centralising force, pushing power up the corporate ladder. If people can communicate more cheaply, they will rely more on the help of bosses and solve fewer problems themselves.

Information technologies empower, communications technologies centralise

Analysis of firm-level survey data can separate the two effects of ICT. The data include information on the autonomy of plant managers compared with their chief executives over key decisions on investment, hiring, sales and innovation, as well as their 'span of control' (how many people report directly to them). They also indicate the autonomy of production staff compared with plant

managers over their tasks and pace of work.

Research has explored the impact of different types of technology on decision-making within a firm, testing whether more information technologies increase autonomy while more communications technologies reduce autonomy (Bloom et al, 2014). Two of the indicators of information technologies are software for enterprise resource planning (ERP); and computer assisted design/computer assisted manufacturing (CAD/CAM). ERP systems are software applications that allow firms to store, retrieve and share information on any aspect of production, sales or other processes in real time.

According to the theory, ERP systems reduce the cost of acquiring information. As a result, they are expected to lead to increased decentralisation in favour of local plant managers. Staff with access to CAD/CAM are also expected to be able to solve a wider range of production problems, and therefore have less need to check with their supervisors. CAD/CAM should increase their autonomy and, by reducing the amount of help they need from plant managers, increase managers' span of control. A key technological innovation that reduces communication costs is the growth of corporate intranets. These are expected to increase centralisation, with plant managers making more decisions for their staff and headquarters making more decisions for managers. The research tests whether the availability of intranets reduces decision-making autonomy in both staff production decisions and the non-production decisions of managers.

The evidence is strongly supportive of the theory. Information technologies like ERP and CAD/CAM increase autonomy whereas communications technologies like intranets reduce autonomy.

Implications for organisational practice

One key lesson for organisational headquarters is to consider the implications of the adoption of new technologies for how their plant managers and workforce are likely to respond.

Information technologies, which provide access to stored data, tend to empower frontline staff. But communications technologies such as email tend to increase the centralisation of organisations, putting more power in the hands of senior managers at headquarters and reducing their employees' personal autonomy.

FURTHER READING

- ▶ Nicholas Bloom, Luis Garicano, Raffaella Sadun and John Van Reenen (2014) 'The Distinct Effects of Information Technology and Communication Technology on Firm Organisation', *Management Science* 60(12): 2859-85: <http://cep.lse.ac.uk/pubs/download/dp0927.pdf>
- ▶ Luis Garicano (2000) 'Hierarchies and the Organisation of Knowledge in Production' *Journal of Political Economy* 108(5): 874-904: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=241055
- ▶ Luis Garicano and Paul Heaton (2010) 'Information Technology, Organisation and Productivity in the Public Sector: Evidence from Police Departments', *Journal of Labor Economics* 28(1): 167-201: <http://cep.lse.ac.uk/pubs/download/cp247.pdf>
- ▶ Luis Garicano, Claire Lelarge and John Van Reenen (2016) 'Firm Size Distortions and the Productivity Distribution: Evidence from France', *American Economic Review* 106(11): 3439-79: <http://cep.lse.ac.uk/pubs/download/dp1128.pdf>

Luis GARICANO is a professor of economics and strategy at the London School of Economics. His research focuses on the determinants of economic performance at the firm and economy-wide levels, on the consequences of globalization and information technology for economic growth and on the architecture of institutions and economic systems to minimize incentive and bounded rationality problems.

PUBLIC POLICY CONTRIBUTIONS

Making the most of platforms: a policy and research agenda

Diane COYLE, *University of Manchester*

Digital platforms are proliferating in many countries and many sectors of the economy. Platforms create immense value, for their customers and also for their suppliers. Yet all too often they are seen only through the lens of the ‘disruption’ of incumbents, resulting in a narrow debate about whether platforms should be more heavily regulated. Yet the right questions are: what policy framework will ensure the immense benefits are encouraged and widely shared; what will help create new platforms, and sustain healthy competition and innovation; and how can unwelcome aspects of platform behaviour be avoided?

For businesses, for policymakers and regulators, and for economic researchers, this revolution raises many questions. Despite an explosion of interest in platforms, and a rapidly-growing body of research, there are many open questions. What’s more, much of the existing research centres on the United States, with its distinctive economic and social context. There is a need for more European research, including looking at why are there not more big European platforms

contributing to innovation and growth. This report outlines the present state of knowledge about platforms and sets out some of the important issues for research and policy. Policies should be assessed from the perspective of the contribution platforms can make to productivity and growth, and above all to the welfare of the many millions of people using them.

This paper gives a broad overview of theory and evidence to date on digital platforms and aims to set out the issues that remain to be addressed by researchers, policymakers, and the platform businesses themselves. The distinctive economic characteristics of platforms, their global scope and their rapid evolution make for a rapidly-changing landscape in which traditional policy tools and business strategies do not apply, and there are many questions to be answered.

After describing platforms and their basic economic characteristics, the paper turns to questions of business strategy and platform design, exploring why platforms make the choices they do and asking what challenges these pose for regulators. The issue of trust is key to the regulatory questions: platforms have no business if their users do not trust them so the question is the extent to which the means they use to sustain trust avert the need for detailed new regulation. This is a heated debate in the context of ‘sharing economy’ platforms, where it is important for policies to be based on solid research given the lobbying on both sides of the debate. The first step for regulators is to require the platforms to provide the data needed for an independent assessment; almost all the data available so far has been that provided by the platforms themselves.

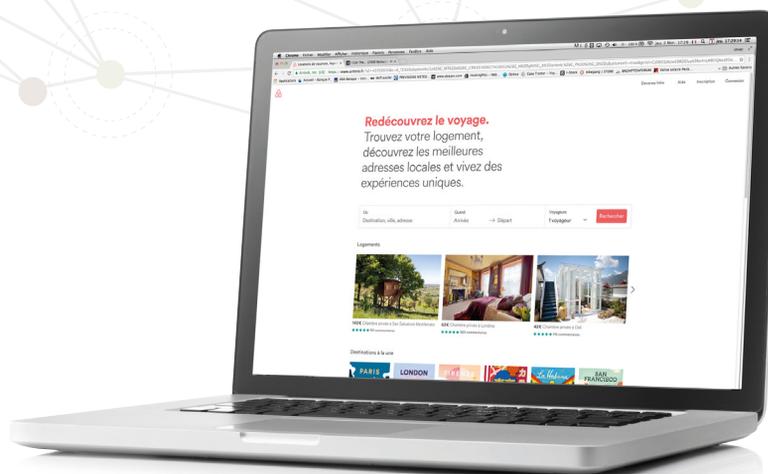
The straightforward regulatory questions are not the only important policy challenges. Other issues needing research and discussion include: the incentives platforms have to innovate – an acute issue in the case of the advertising-funded media platforms; the ownership of information and social and legal rules around data sharing; the determinants of consumer switching between platforms. Above all, economists need to develop practical tools for competition authorities, given the fact that previous intuitions and rules do not apply in the platform context. While it is true to say every case is different when it comes to platforms, competition authorities at least need standard procedures for analysing each specific context.

There are still more profound questions. Why does Europe not have any home-grown digital platforms on the scale of Google, Uber, Airbnb or Facebook? Can platforms do a better job in providing some services such as transport or traffic management than traditional public sector providers – and if so, why should they not do so? What is in fact the evidence about the extent to which platforms are changing ways of working and therefore an uncomfortable fit with the traditional structures of social provision, taxation and employment protection? So there is an extensive and – given the speed of change – an urgent research and policy agenda.

In the public debate there has been a tendency, perhaps understandable, to focus on the platforms’ threats to established ways of doing business. But it is more important to ensure the knowledge and policies are in place to take advantage of the opportunities. Platforms provide compelling benefits to their millions of users. Europe needs more of them, and the sooner we have a policy landscape establishing the principles of competition and regulation, the better.

 Return to summary

There is a need for more European research, including looking at why are there not more big European platforms contributing to innovation and growth.



Understanding AirBnB in Fourteen European cities

Diane COYLE, *University of Manchester*
and Timothy YU-CHEONG YEUNG, *Université Paris-Dauphine*

Airbnb is a widely celebrated online home-sharing platform where visitors find cheaper alternatives and hosts make use of unused space. However, the idea has encountered severe oppositions from hoteliers. Regulatory bodies are alerted and intervene into the expanding sharing economy. Is it necessary to regulate Airbnb activities? If yes, what should be done?

Answering these questions appropriately requires empirical evidence. However, Airbnb has not been widely studied perhaps due to lack of data. This project presents evidence among the first to estimate the impact of Airbnb activities on the hotel industry and the long-term domestic rental market in fourteen European cities. As expected, the impact on hotel occupancy rate is negative. Interestingly, we find positive impact on hotel room daily rate and total revenue. Meanwhile, its impact on the long-term rental market is ambiguous.

To understand Airbnb, a careful study of the dynamics of accommodation markets is helpful. Airbnb breaks the segmentation of short-term and long-term rental markets since it allows property owners to switch from one to another easily. Thus, the expansion of Airbnb may bid up the rental price in the long-term domestic market. We do not find systematic patterns in Germany, though a positive effect is detected in the United Kingdom.

On the other hand, Airbnb helps sorting customers into types. Leisure visitors may target cheap alternative on Airbnb, but business travellers may prefer hotels since they are more willing to pay given the support of their companies. Hotels may be able to charge a higher room rate as now they face a less price elastic demand.

The result does not support hoteliers' arguments that regulators should curb the expansion of Airbnb. Airbnb may work in favour of some hotels, especially the high-end ones. Besides, a more competitive market is beneficial to the society. The platform may facilitate flexible adjustments of the supply of short-term stay accommodation, helping the economy to make use of unexploited resources.

The evidence is mixed and there are still questions to answer. The contrasting results concerning the hotel industry to those found in the United States suggest that the situations across the Atlantic are very different. To proceed, we aim to consider also the general tourism atmosphere since both Airbnb and hotel activities are influenced by the same factors in the sector. Moreover, our next objective is to obtain data of the long-term rental market of more cities to see if there are some general patterns worth for regulatory investigations.



THE JEAN-JACQUES LAFFONT
DIGITAL CHAIR



TOULOUSE SCHOOL OF ECONOMICS PRÉSENTE

TSE FORUM digital & energy

8 JUIN 2017

9:30 - 18:30

PALAIS BRONGNIART
PARIS

Une journée d'échanges entre économistes et décideurs autour des enjeux du numérique et du futur de l'énergie, en présence de Jean Tirole

DIGITAL FORUM : 9:30 - 12:00

► La révolution des plateformes et l'impact sur la concurrence

Principaux intervenants :

- Alexandre de Cornière (TSE)
- Jacques Crémer (TSE)
- Pierrick Lemasne (ACCOR)
- Frédéric Mazzella (Blablacar)
- Fleur Pellerin (Korelya Capital)*

*à confirmer

ENERGY FORUM : 14:00 - 17:30

► Marchés de l'énergie : transition, développement et organisation

Principaux intervenants :

- Isabelle Kocher (Engie)
- Jean Bernard Lévy (EDF)
- Philippe Sauquet (Total)
- Richard L. Schmalensee (MIT)
- Catherine Wolfram (Energy Institute at Haas)

! L'APRES-MIDI SE DÉROULERA EN ANGLAIS

SUR INVITATION EXCLUSIVEMENT

www.tse-fr.eu/tse-forum - @TSEinfo



KEEP IN TOUCH



Eunate MAYOR

Project Manager of the "Jean-Jacques Laffont Digital Chair"

TSE - IAST - IDEI

21 Allée de Brienne F-31015 Toulouse Cedex 6

Tel: +33 (0)5 67 73 27 65 - eunate.mayor@tse-fr.eu

