

The TSEconomist

Student Magazine

2012/13 Issue # 3

INTERVIEW WITH THE NOBEL LAUREATE ERIC MASKIN



Interview with Frank Smets (ECB)
Alvin Roth and Lloyd Shapley
Student Internships

Contents



- | | | | |
|----|--|----|---|
| 4 | Hot Topic
Interview with Eric Maskin
Interview with Frank Smets (ECB)
Crisis and Cyprus
<i>by Alexander Michaelides</i> | 28 | Internships
Thomas Larrieu at Orange
Julie Lassébie at RBB
Pierre Rialland at UNIDO |
| 12 | Focus
Positive v. Normative Justifications
for Benefit-Cost Analysis
<i>by James K. Hammitt</i> | 31 | Company Presentation
BS-Initiative Company Presentation |
| 14 | Nobel Corner
Matching in Practice
<i>by Yinghua He</i>
Lloyd Shapley and the Theory
of Cooperative Games
<i>by Michel Le Breton</i>
Lloyd Shapley and Game Theory
<i>by Jérôme Renault</i> | 32 | Campus Events
Business Talks |
| 24 | PhD Minds
Andre Veiga
Charles Angelucci
Eric Mengus | 34 | Alumni news |
| 26 | Enter Network
Carlos III for your ENTER visit Natalia Fabra | 36 | Student Organizations
BDE
Junior Etudes |
| | | 39 | Picture Quiz |

Shape Your Magazine!

The TSEconomist is a magazine by the students and for the students. It is thus open to all, and every contribution is highly appreciated!

Send us your thoughts and feedback, attend one of our weekly meetings, volunteer to cover a Business Talk and interview a speaker, write to us or join the team as a board member, proofreader or designer! All you have to do is write to us at tseconomist@tse-fr.eu.



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The TSEconomist is reborn!

The publication of The TSEconomist's third issue concludes an important step in the life of the magazine and is a success in many regards. On the one hand, it is a result of many new efforts to improve the magazine: a new logo, a new design and new sections are but a few of the improvements! On the other hand, it marks the transformation of the magazine from a new initiative, warmly welcomed by the TSE community, to an established and active student organization. The new website (www.tseconomist.com) and Facebook page, the organization of stands, and the coverage of campus events (Business Networking Day, Business Talks) demonstrate the growing commitment of The TSEconomist to be at the heart of the student life at TSE.

The magazine was initiated with the goal of becoming a platform of communication in our community, bringing together students, researchers and outside economists. This issue, and the hard work that has led to it, brings us one big step closer to achieving this goal! At the heart of this success is, of course, the dynamism and enthusiasm of the team, newly formed, and to whom I would like to give a huge thank you.

This issue differentiates itself from the previous two mainly by a commitment to be more student-oriented. This is why an internship section was included, where TSE students share their experiences, as well as a section dedicated to the experiences of PhD students who went on exchange. More space was devoted to the student associations (BDE and Junior Etudes) and to campus events (Business Talks). This issue also brings with it the launch of The TSEconomist Picture Quiz, asking readers to link the pictures with economic concepts, and offering them a chance to win prizes!

Last but not least, and on behalf of the team, I would like to thank the director of the school Jean Philippe Lesne, the managing director of TSE Christian Gollier, and the director of operations and HR Joël Echévarria for their continuous support and endorsement. A special thanks as well to Jean Tirole and Christian Hellwig for their helpful comments on the questions submitted by the TSE students to Eric Maskin and Frank Smets, respectively. The magazine is also highly indebted to the scientific communication manager Jennifer Stephenson, the corporate communication manager Claire Navarro and the web communication manager Valérie Servieres for accepting so kindly to help at various stages of the preparation of this issue. Many thanks also to our sponsor LCL for printing this issue.

Current Chief Editor: Hussein Bidawi

The TSEconomist, our student magazine, is moving towards the completion of the first year of its life - a year full of challenges, new experiences, and dreams about the future. It is a great pleasure to observe that this student initiative, which was created with a lot of enthusiasm and hard work, is becoming a stable crossroad where members of our community and visitors meet and exchange ideas. I would like personally to thank all the contributors for helping us in our publications so far. Special credits should go to Othmane Ouhammad, Amit Srivatsa and Suxiu Yu whose motivation and determination from the early stages were of decisive importance for the continuation of this project. I wish to warmly welcome the numerous new members and the new chief editor of our team who joined us after the publication of our second issue. I thank them from the deepest part of my heart for their motivation and superb work that I am sure will become obvious to everyone in the following pages.

Let me close my short message by recognizing the substantial support of our School and BDE from the very beginning of this initiative. Their advice, comments and multileveled support are highly appreciated.

"Let The TSEconomist live a long life — its own life!" (Francois Salanie, p.5, introductory issue).

Previous Chief Editor: Georgios Petropoulos

Introduction to the interview with Eric Maskin

By Jean Tirole



I'm very pleased that The TSEconomist chose to interview Eric Maskin, who in turn kindly accepted to participate. Eric Maskin is a role model for scholarship. There is no point reviewing here his breakthrough contributions to the economics of incentives; they are well-known and have been deservedly recognized by the Economics Nobel Prize Committee. Let me just say a few words about a slightly less well-known side of Eric. As all those who have met him will confirm, he is a very modest person; he is also a very good citizen and generous with his time.

A superb advisor, he has mentored generations of students at MIT, Harvard and Princeton and has changed the path of their careers. I had the great opportunity to be one of his first students—along with my MIT classmate Drew Fudenberg. Extrapolating on our own experience, I can conjecture that his extraordinary track record with students is due to three factors.

First, he never insists on his students embarking on his own research topics. He is intellectually curious and will get interested even in subjects lying clearly outside his area of expertise (at least when the student starts working on them—quickly Eric becomes an expert...). If a research path will in his opinion lead to a dead-end or to an unambitious outcome, he will say so. But otherwise he will be strongly supportive, regardless of the topic. As he rightly argues in his TSEconomist interview: "I think the most important element in producing a successful Ph.D. dissertation is being really interested in the questions you are trying to answer. If you truly care about the subject, you have the incentive to immerse yourself in it – and that's what leads to a good dissertation. In fact, this is probably the most important element in producing good research more generally." By being supportive of the student's own interests, Eric makes it more likely that the student succeeds in his/her dissertation and start of career.

I should mention two other factors, both related to the personal traits mentioned above. First, he is very generous with his time. I still fondly remember the tutorials Drew Fudenberg and I had with Eric Maskin in his MIT office. He would discuss with us the yet unpublished papers of now classic work by for instance Myerson, Myerson-Satterthwaite, Green-Laffont, Milgrom-Roberts, Kreps-Wilson and (as we asked him) his own work by himself or with Jean-Jacques Laffont, John Riley, Peter Diamond or Partha

Dasgupta. This was just extraordinary; we just saw the field of economics change in real time and were getting insights as to what the shortages of the new approaches (game theory, information economics) and areas for future research were. This is what my TSE colleagues try to emulate today by covering recent developments in an enthusiastic manner.

Eric's second trait that makes the PhD process under his supervision both enjoyable and productive is his graciousness. Working on a PhD thesis generates anxiety; regardless of previously demonstrated talent, performing research is for most PhD students a jump into the unknown and there are always many moments of doubt, when one wonders if one is able to fulfill expectations. Self-confidence is with passion a key to delivering good research; but unlike passion, self-confidence is fragile and does not come by easily. Eric has always been a gentle supervisor. While he clearly indicates to the student unpromising research paths or wrong reasoning, he always does so in a soft, constructive manner.

Let me give you an anecdote, which probably Eric does not recall (and that I almost successfully repressed myself). In my second year of the PhD program, I had the great opportunity to work on a joint paper with him on Keynesian equilibria – this was the beginning of a long collaboration (indeed in the following year, while I was still an MIT student, we started working on the various papers on Markov perfect equilibria – the pure game – theory piece as well as the three IO applications). One day, while he was away at a conference, I added a proposition to the paper. Alas, this proof of the proposition contained a fateful mistake. When returning, Eric quickly figured out the mistake, but very graciously and in a soft-spoken way tried to find redeeming features (honestly, there were none, the mistake was rather stupid), and went on to provide an alternative proof. While embarrassing for me, this episode certainly taught me a lesson.

Research is a complex alchemy, in which sheer analytical power is just one of many ingredients. Another ingredient is the ability to alternate between two opposite advocacy roles: wishful thinking- hoping that a proof or idea will work, sometimes against all odds, and not hesitating to take shortcuts before writing things more carefully – and critical examination – submitting the outcome to the toughest refereeing process possible. Yet another absolutely key factor is passion, as described in the interview. And finally there is a large payoff to being in the right place with the right people. Eric Maskin is certainly one of these scholars who always make the investigation intellectually challenging and at the same time much fun, as it should!

Interview with Eric S. Maskin: Questions by TSE students

• Life and the Nobel Prize

Why did you decide to become an economist given that you were trained as a mathematician? How much investment in math would you recommend to Ph.D. students interested in economic theory in general but without any math background?

It's true that my initial training was in mathematics. However, almost by accident, I happened to take a course from Kenneth Arrow on "Information Economics," which was so inspiring that I decided to change direction. It seemed to me that economics combined the best of both worlds: the rigor of mathematics with the immediate relevance of a social science. As for how much math I would recommend, I'd say that basic analysis, including measure theory, is certainly very useful. Also, linear algebra and stochastic processes always helps. But beyond that, I don't think a huge mathematical investment is necessary to do economic theory unless you are planning to work in an extremely technical area.

What were your immediate reactions and thoughts when you were informed that you won the Nobel Prize? How did being a Nobel laureate affect your life?

My first reaction was great surprise and a sense of unreality – but also pleasure, especially from the fact that Leo Hurwicz and Roger Myerson were being recognized too. For the most part, the prize hasn't changed my life a great deal, but it has given me the opportunity to visit some places I wouldn't have otherwise seen and meet some people I wouldn't have otherwise come across. It has also given me the chance to speak to a much broader audience.

What was the feeling of living in the Princeton house in which Albert Einstein spent the last 19 years of his life? What do you think is the most remarkable element of his work and his legacy?

It was certainly a thrill to live in Einstein's old house; he has always been one of my heroes. For me, his most remarkable accomplishment is to show how far we can go in understanding the world through pure thought alone.

You come from a musical family: your mother taught at Juilliard and your brother is a professional oboist. As a matter of fact, you turn out to be a first-rate musician yourself. You play the piano as well as the clarinet, and perform regularly in concerts, mainly classical music, but also jazz. Did your involvement with music affect your research life? Did you ever regret that you did not follow the family tradition in the choice of your profession?

Music has helped provide some balance to my life. I love doing research, but must acknowledge that writing an economics paper does not allow me to express my emotions very much. Playing music, by contrast, gives me a rich emotional outlet, which is very satisfying. I don't regret not becoming a professional musician. As it is, I have the best of both worlds – I can do economics and play music on the side (perhaps not as often as I'd like, but still quite a bit). It would be very hard for a professional musician to do economics on the side.

• About Crises and Economic Theory



Eric Maskin is Adams University Professor at Harvard. He received the 2007 Nobel Memorial Prize in Economics (with L. Hurwicz and R. Myerson) for laying the foundations of mechanism design theory. He also has made contributions to game theory, contract theory, social choice theory, political economy, and other areas of economics.

He received his B.A. and Ph.D from Harvard and was a postdoctoral fellow at Jesus College, Cambridge University. He was a faculty member at MIT from 1977-1984, Harvard from 1985-2000, and the Institute for Advanced Study from 2000-2011. He rejoined the Harvard faculty in 2012.

The recent financial crisis revealed that markets do not work so perfectly as some policy makers had thought. What were the main reasons for which policy makers and politicians were so confident about the performance of financial markets and rejected the call for more stringent regulation? Can such behavior be justified by realistic economic theoretical models? What do you think are the main lessons that we should keep in mind for the future?

I don't really understand why politicians and policy makers had such faith in the self-regulation of financial markets – perhaps ideology had something to do with it. Certainly, such faith was not based on a good understanding of economic theory, which shows very clearly how financial markets

can fail because of serious externalities. I hope that we remember going forward that financial stability depends on correcting these externalities, and that a good way of doing so is regulation – especially, regulation of leverage.

How do you comment on the recent policy decisions of the EU, like the outright monetary transactions of the ECB, the austerity packages implemented in many European countries and the intensive discussions around the issue of Eurobonds? Do you believe that the currently applied rescue plans in these countries are incentive compatible or they leave room for misbehavior?

I think the ECB's accommodating monetary policy has been helpful, but I'm afraid that austerity programs have largely proved to be counterproductive; they were implemented at time when economies were still fragile, and have tended to make things worse. I applaud the idea of Eurobonds and other moves to integrate Europe's fiscal side. Of course, rescue plans create a moral hazard problem, which is why the fiscal consolidation of Europe (including the power of a central authority to constrain member countries' domestic spending) is so important.

Do you think that the Euro as currency can survive the exit of one of the small and peripheral countries from the Eurozone (say Greece for example)? Could it survive the exit of Germany? Can the consequences of such events be really predicted?

I'm no expert on European politics, but I'd guess that the Euro might survive the exit of Greece, but not the exit of France or Germany. The honest answer, though, is that these are just wild guesses. I suspect that even experts on the subject can't do much better than guess.

• Patent Protection and Innovation

Your opinion that patents can inhibit innovation in particular in industries like the software industry seems at first sight to contradict the conventional wisdom that patent protection leads to more innovations. Do you think that we should weaken the patent protection in particular industries in order to improve social welfare?

There are indeed industries in which relaxing patent protection might be good for innovation and society. This is true especially of industries – like software – in which invention is highly sequential; where instead of there being one big discovery, there are lots of little discoveries, each building on what has been done before. In such industries, patents can block critical follow-on innovation. You may want to build on a discovery I've made. But if I hold a patent on that discovery, I am apt – as a monopolist – to set a high license fee, which may well deter you from innovating.

• Our final question:

You have contented yourself with your research, but have been a fantastic advisor as well. What do you think are the main ingredients of a successful Ph.D. dissertation?

I think the most important element in producing a successful Ph.D. dissertation is being really interested in the questions you are trying to answer. If you truly care about the subject, you have the incentive to immerse yourself in it – and that's what leads to a good dissertation. In fact, this is probably the most important element in producing good research more generally.

Interview with

Frank Smets

Questions by TSE students

• Questions about research at a policy institution

How different is it for a researcher to be employed by an institution like the European Central Bank (ECB) instead of being a full time faculty member at an economic department of a university? Does the lack of teaching obligations give you more time to focus on your research activities?

I have never been a full-time faculty member myself so it is difficult to compare. One of the great things about working in the research department of a policy institution like the ECB is the direct contact with policy makers and the almost daily confrontation with new topical policy questions. When I started working for the Bank for International Settlements after graduating from Yale University in 1992, I found this the most rewarding aspect of becoming a researcher in a policy institution. At Yale, one of my frustrations was to come up with interesting, policy-relevant research questions. At the BIS the problem was the reverse: I did not know which policy question to address first.

As a researcher at the ECB one does not have teaching obligations (although many of my colleagues do teach on the side). However, one does have other non-research obligations such as writing and presenting policy notes, preparing a speech, participating in the projection process, being involved in the organization of seminars and conferences, etc. One of the challenges is that compared to teaching and particularly in crisis times these activities are a bit less predictable and may therefore interfere with one's research commitments. As with teaching, the opportunity is to explore the synergies between one's research activities and one's policy contributions.

What if your research findings contradict some of the implemented policies supported by ECB? Do you feel restricted by the political nature of this institution?

An important objective of the research department is to provide input in the policy process. In management jargon, we want to be a "trusted source of research-based policy advice". The ECB's policies therefore partly build on research findings. In this context, it is also the research department's role to "think out of the box" and to potentially challenge prevailing policies. It is therefore natural that different views are sometimes expressed. The failure of mainstream economists to foresee the crisis shows that more than ever it is important to avoid groupthink. Research plays an important role. At the same time, it is of course important that the publication of research findings do not interfere with the ECB's communication and policy of a "single voice".

Frank Smets is Director General of the Directorate General Research of the European Central Bank. He is a Research Fellow of the Centre for Economic Policy Research in London and a managing editor of the International Journal of Central Banking.

He has written and published extensively on monetary, macroeconomic, financial and international issues mostly related to central banking.

Before joining the European Central Bank in 1998, he was a research economist at the Bank for International Settlements in Basel, Switzerland. He holds a PhD in Economics from Yale University.



That is why we have an ECB working paper series where most of our research is published under the responsibility of the individual authors. The editorial process focuses on ensuring sufficient quality and appropriate drafting, but is not there to stop the publication of policy sensitive research papers.

• **Questions about DSGE modeling and policy in the context of the crisis**

The Smets-Wouters model is part of the standard repertoire of the ECB, being the medium scale DSGE model that the ECB uses. The applications of DSGE (dynamic stochastic general equilibrium) style models have been widespread ranging from pure story-telling and computational illustration, to policy evaluations and forecasting. Where do you see the future of DSGE modeling? Which particular trends and extensions would you emphasize? What applications might be more/less feasible in the future than they are now?

Medium-scale DSGE models such as the

ECB's New Area-Wide Model (NAWM), the New Multi-Country Model (NMCM) or the Christiano-Motto-Rostagno (CMR) model have over the past decade become standard tools at central banks and other policy institutions. In spite of all the criticism that these models have received following the financial crisis, I think that these tools are here to stay. Every model is only an imperfect and very partial description of reality and is usually designed for specific purposes and to analyze specific questions. It is therefore natural that models evolve as new questions come up. Most policy institutions use a suite of models not only to be able to address different questions, but also to robustify the policy implications.

I would emphasize two particular extensions. First, since the financial crisis a lot of research has focused on introducing financial intermediation in macroeconomic models. We have learned that the banking sector is not

always a veil and we need to better understand how the financial system and the real economy interact. Under what circumstances does financial instability arise? How does it impair the monetary transmission mechanism? What does it mean for regulatory and non-standard monetary policies? Another direction for on-going research is a better modeling of how expectations are formed and how diverse views by economic actors develop and interact. Both of these developments are challenging because they introduce much more heterogeneity (they move away from the so-called representative agent paradigm) and non-linearity in the DSGE models. This makes solving the models more complicated and time-consuming, but as computer speed and solution algorithms advance new frontiers continue to be explored.

Yet these models and their use in policy making are also heavily criticized. What are the methodological shortcomings of

this type of approach in your opinion? And what would you respond to the critics who think that such models when taken too literally may give a false sense of scientific sophistication?

As I mentioned before, any model is an abstraction of reality and, unfortunately, it takes a model to beat a model. The role of formal models in policy making is generally exaggerated: policy makers do not only use a suite of models, but also a lot of judgment, simple rules of thumb, intuition, etc. when making policy decisions. The standard New Keynesian linearized DSGE models with their emphasis on price and wage stickiness have and will continue to play a useful role, but they were not designed to address some of the new questions that came up in the financial crisis. Some of those questions such as the impact of financial fragility on the transmission process may be addressed in extensions of those models. For other questions, radically different models with different forms of expectation formation and heterogeneity may have to be developed. This makes macroeconomics so exciting in the current context.

• Questions about Macroeconomics and Central Banking in the wake of the financial crisis

There appears to be a sharp divide in the analysis of what caused the current European debt crisis, and how it should be resolved. For example, how do you view the German-French debate between austerity and growth? And what do you think of the contributions macroeconomists and central bankers have made to this debate?

Characterizing the current debate as one between austerity and growth is misleading and too simple in my view. The sources of the euro area sovereign debt crisis are multiple and not just the result of excessive sovereign debt accumulation or excessive consolidation. In Ireland and Spain the proximate source of the problems is the bust of the excessive credit and housing boom and the fall out in terms of a fragile banking sector, weak economic activity and falling government revenues. In Portugal and Italy the most important fundamental factor is the very low productivity

growth over the past decade and a half. Only in Greece the underlying problem was excessive government debt accumulation. A common symptom in each of these countries has been a persistently large current account deficit and a large and increasing external debt of close to 100 percent of GDP. When the financial crisis led to a freezing of the interbank market and a sudden stop in capital flows from the core to those countries, this set in motion a number of “diabolic” negative spirals between the banking and the sovereign risks and between those risks and the real economy. Throwing more debt after debt cannot stop these negative spirals. Instead a combination of policies needed to be put in place. This includes i) fiscal consolidation in particular in those countries where the sustainability of government debt is put into questions; ii) structural reforms aiming at improving competitiveness to turn around the current account deficit, stop the accumulation of external debt and regain the trust of international investors; iii) a restructuring and recapitalization of the financial sector to allow it to provide credit to new projects; and iv) a credible backstop mechanism like the ESM and the ECB’s OMT to avoid that self-fulfilling fears of a break-up of EMU undermine government finances. At the same time, institutional reforms need to be undertaken in order to mend the design flaws in EMU and break the link between sovereign and banking risks. The most important reform in this respect is the establishment of a financial market union, comprising of unified banking supervision, a common bank resolution mechanism and a joint deposit insurance system.

The fiscal consolidation debate is not about austerity versus growth, but it is about how can governments ensure the sustainability of their debt and improve the efficiency of the government with the view of promoting growth. Fiscal consolidation needs to be done in a smart way and this may differ from country to country. Fiscal consolidation has long-run positive output effects. The question is how these medium-term positive effects can be brought to the present. The answer is by ensuring credibility of the program. In countries in which

confidence is low this will require front-loading with possibly negative short-term output effects. Research on fiscal multipliers is important to calibrate those fiscal consolidation policies.

What lessons do you draw from the financial crisis? What are the important questions that you feel we (economists) need to work on to avoid similar events in the future?

For me one of the most important lessons is that we need to increase the buffers both in policy making and in financial markets.

In what direction do you think Macroeconomics will evolve? Will we see a shift of paradigms, much like we saw in the 70s? If so, what will the new macroeconomics look like?

Difficult question! There will be more focus on expectation formation and behavioral phenomena such as herding, groupthink and cognitive biases. This will require thinking about new dynamic equilibrium concepts. Macroeconomics will have to pay more attention to the financial system and its interaction with the real economy. This means that rather than one interest rate; macro models will have a multiple of interest rates. It also means that more emphasis will be put on stock and flow interactions and monetary and credit quantities. One of the stylized facts of financial crises across the globe is that credit booms almost always precede them. The interaction between monetary and fiscal policies will also come more and more to the forefront as central banks exit from crisis management.

Last but not least: What advice would you give graduate students who wish to start their own research careers in the area of business cycles and monetary policy?

It is an exciting time to be studying business cycles and monetary policy. The great recession and the euro area sovereign debt crisis will provide inspiration for many decades to come. I would advice students to look at European data and issues and not only to follow the American research agenda.

Questions from a Small Open Economy Crisis in the Eurozone

By Alexander Michaelides



Alexander Michaelides is Professor of Finance at the Department of Public and Business Administration of University of Cyprus. He holds a B.A. in Economics from Harvard University and a PhD in Economics from Princeton University in 1997. He worked as Foreign Exchange Economist at Lehman Brothers International in London before joining University of Cyprus as a reader and assistant professor in 1998. In 2001 he moved at the Department of Economics of London School of Economics initially as a lecturer and then as a reader. He rejoined University of Cyprus at 2010.

He is specialized in Macro-finance with noticeable contributions in heterogeneous agent models, portfolio choice and asset pricing.

I will attempt to analyse the crisis faced by a small open economy (Cyprus) in the Eurozone, and argue that there are interesting questions for both policymakers and academics that arise from this case study. At this point in time, Cyprus is in the process of negotiating the terms of a memorandum of understanding with the Troika (the European Commission, the European Central Bank and the International Monetary Fund). Cyprus is expected to receive a credit line of approximately 17.5 billion euros (small in absolute amounts but large relative to Cyprus' GDP (100%)). Around 10 billion euros (57%) will be earmarked for the recapitalisation of the banking system and 7.5 billion (43%) will be earmarked for the rollover of expiring debt and budget deficits until 2016. In exchange Cyprus is implementing austerity measures to be able to repay the additional government debt that could exceed 140% (relative to GDP) by the end of 2016.

This end result generates a number of questions. How did Cyprus reach this point? Could the current crisis have been avoided? What measures could have been taken to avoid this eventual outcome? Is entry to the Eurozone on 01/01/2008 responsible for this eventual outcome? Is exit from the Eurozone a possible solution? These are some of the questions that are being discussed openly in Cyprus. I will not attempt to answer these here but will discuss chronologically how economic events unfolded and ask the questions policy makers and academics should be interested in from this case study.

Cyprus entered the Eurozone on January 1st 2008 and the European Union on May 1st 2004. As in other southern European countries, the combination of lower interest rates through Eurozone entry and better guarantees of property rights through EU entry generated a rapid increase in external demand (first from the United Kingdom, then from Russia) for holiday residences. Locals also started borrowing more due to lower interest rates and a relaxation of down payment constraints locally. By 2010 the combination of household and corporate debt to GDP was, within the Eurozone, second only to Ireland: household debt to GDP was 159.2% and corporate debt to GDP was 144.5% (Lane, 2012 and author's calculations).

An interesting (academic and policy) question arises from this development. What level of private debt to GDP is "dangerous" for financial stability in a country? When land restrictions are tight, either due to stringent planning permission laws or simply the lack of space, tangible assets to GDP tend to have high values. Kiyotaki, Michaelides and Nikolov (2011) make the point that, in a calibrated general equilibrium model, a fall in interest rates leads to higher house price changes in countries with tighter land constraints. We expect Japan and the UK to have a higher ratio of tangible asset value to GDP, and we expect housing prices to be higher in coastal cities relative to cities where land is plentiful (for example, Glaeser, Gyourko and Saks (2005)). Along with high values come also high debts. Given this natural variation in debt levels across countries, at which point does private debt to GDP become dangerous for financial stability?

There was also a change in government in Cyprus in February 2008. A more leftist government took over, with a much stronger preference for redistributive policies. Just

as external demand for tourism and holiday residences was dropping due to the world economic crisis, the government expanded social transfers dramatically. The government debt to GDP was 48% in the end of 2008 and finished the third quarter of 2012 at 84% (including a 10% increase due to a bank bailout in 2012). A 3% budget to GDP surplus in 2008 became approximately a 6% deficit every year from 2009 to 2012, driven mostly by higher social transfers.

At the same time, Cyprus had over time attracted substantial foreign deposits due to its low tax regime and relatively good value-for-money professional services. The banking sector had grown as a result and this trend became more pronounced after EU entry as foreign firms could enjoy a low tax rate within an EU jurisdiction. A natural place for banks to expand for diversification reasons was the Greek economy due to the common language and the substantial number of Cypriots living and working there. Banking sector assets managed to grow to the level of eight times GDP, since encouragement towards "financial integration" in a common currency area meant expanding heavily in Greece. As of September 2012, the three largest Cypriot banks had given out 132% gross loans to GDP and had a 77% deposit to GDP ratio. Thus, the expansion in Greece was financed partly through Cypriot deposits illustrating how global banks make decisions that can affect the host or originator country (Cetorelli and Goldberg, 2012 and Houston, Chen and Yue (2012)). As the probability of Greece exiting the euro rose after 2009, the bank exposure that had been built over the previous 15 years started to negatively affect the state of the Cypriot banking sector.

Downgrades of the Cypriot sovereign debt started in 2010 citing repeatedly bad public finances, low competitiveness and the large size of the banking sector (with the implied contingent liabilities for the sovereign). Short term, foreign debt became more important in 2009-2010 as the lure of lower foreign interest rates was a temptation too big to resist in the face of falling tax revenues and higher government expenditures. Once Cyprus was shut out of the international debt markets after May 2011, rollover risk of existing short term debt became an additional, major source of headache for the Cypriot minister of finance.

On July 11th 2011 the economy took an unexpected turn for the worse. A cargo of ammunition, that had been confiscated in 2009 under the international arms embargo against Syria, exploded killing 13 people. The cargo was being stored in between a nautical base and the main electricity-producing plant of the country. Immediately, power cuts started affecting negatively the economy and the mood of the country, and full power generation was not restored until 18 months later.

In the midst of public anger, the government had to also deal with the worsening situation in Greece that was negatively impacting the local economy through trade links and the banking system. In October 2011 another fatal blow took place, and it emanated from the unintended consequences of the Greek PSI. Through the 79% haircut in net present value of Greek government bonds, 4 billion euros (the equivalent of 25% of Cypriot GDP) in bank capital was wiped out. An interesting policy question with regards to regulation arises

here as some banks could be criticized more than others in how they accumulated this position. On one hand, according to Basel requirements government bonds get a zero risk weight. On the other, could banks have been taking on “zero risk” investments with substantial yield differentials relative to German Bunds as the “greatest” carry trade ever? (Acharya and Steffen, 2012).

The continuous downgrades of sovereign debt from the three main rating agencies further exacerbated the problems of the banking sector, and by implication, the real economy. Higher funding costs were passed on to businesses and consumers, whereas there was more pressure on banks to increase their capital buffers, a manifestation of what Goodhart (2009) calls “procyclical regulation”. During a boom, any improvement in the credit grades of assets held by a bank, given the constant capital ratio requirements, implies that banks can increase lending. The reverse happens in a recession, so that an economy enters a vicious circle between a credit crunch and further sovereign debt downgrades due to the recession.

This argument would surface again in October 2012 (definitely a recession period in Cyprus) when the Troika would require that banks increase their core tier I capital ratio from 8% to 10% within one year. I imagine that the motivation behind this requirement was that it would make banks more careful, attract private investors and reduce the uncertainty arising from evaluating uncertain loan portfolios. But then the question naturally arises: is that requirement the correct policy response during a crisis? Should these capital buffers not vary over the cycle, so that they rise in booms and fall in recessions? And if that should be the case, what should those capital requirements be? The issues are discussed in Kashyap and Stein (2004), Hanson, Kashyap and Stein (2011) and Repullo and Saurina (2011) but quantitative models providing answers to these questions are still not available.

As the Cypriot economic crisis is on-going, and the agreement with the Troika has not been signed, all the questions above become important topics of research and discussion, both for European policy makers and academics. What levels of private and government debt are dangerous for financial stability? How should public debt be forgiven to limit collateral damage? Should all government bonds get a zero risk weight when computing capital needs? How does one regulate/monitor cross-border banking activities? How can banking regulation become less procyclical? How does one alleviate the sovereign debt – bank balance sheet vicious circle? What are the appropriate monetary policy instruments in such an environment? What are the government’s policy options in such an environment? All these questions need further research to be addressed in an intellectually satisfying and policy-relevant way.

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Positive v. Normative Justifications for Benefit-Cost Analysis

By James K. Hammitt



Note

Professor Hammitt wrote this article in June 2012, however, due to mistakes on the side of The TSEconomist it was not published in the last issue. We wish to apologize to Professor Hammitt for this inconvenience.

Benefit-cost analysis (BCA) is a form of applied welfare analysis that is often used to help choose government policies, especially for environmental, health, and safety regulation and investment in transportation. It is often required in the United States, and is becoming more common in France and the European Union.

What is the goal of BCA? What question does it answer? These questions are critical for understanding how BCA results should be interpreted and how BCA should be conducted.

There are at least two possible bases for justifying BCA, positive and normative. The positive basis derives from the text-book description of BCA as a method that identifies policy changes that satisfy the Kaldor-Hicks compensation test. The test asks whether those who benefit from a policy change could compensate those who are harmed so that everyone would judge himself better off with the policy change and compensation payments than without. This justification leaves unanswered the normative question of whether passing the Kaldor-Hicks compensation test is either a necessary or sufficient condition for the policy change to improve social wellbeing.

The normative basis asserts that BCA is a method to identify policy changes that constitute social improvements, where improvement must be defined in some way that is external to BCA. Several normative justifications can be offered. One is derived from a form of utilitarianism in which the objective is to maximize the sum of well-being in the society and it is assumed that well-being can be measured using standard economic concepts such as compensating and equivalent variation. This justification leads naturally to the suggestion that the monetary values of benefits and costs should be weighted depending on whether they fall on rich or poor, given the intuition that marginal utility declines with wealth.

Other normative justifications are motivated by pragmatism. One such claim is that BCA is a practical method that approximates the result of an ideal but impractical measure of social welfare. Another is that BCA helps promote consistent decision making by avoiding random errors and protecting against cognitive mistakes that can arise when a decision maker tries to evaluate a policy change by holistic judgment. A third claim is that, if policies that maximize net

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benefits are routinely chosen, everyone will be better off in the long run because those who benefit and those who are harmed will tend to vary across decisions. Obviously, the strength of these pragmatic claims depends on the alternatives with which BCA is compared.

• Conflict between positive and normative justifications?

Conventional BCA relies on standard economic assumptions about human behavior. The most important of these is that people act to maximize their own well-being (subject to the constraints they face). Yet behavioral-economic research provides evidence that people often behave in ways that do not maximize well-being as it is represented by utility functions like those in conventional economic models. Choices seem to be jointly determined by a combination of “real interests” and other factors such as analytic errors, myopic impulses, inattention, passivity, and misinformation.

Do these behavioral deviations from the predictions of standard economic models reflect decision-making errors or are standard models oversimplified, ignoring important and legitimate concerns? Surely, both answers are correct: some deviations are due to error, and models are, by design, oversimplified. A more useful question is which of the deviations between behavior and economic models reflect errors that individuals would wish to correct, were they aware of them, and which reflect inadequacies of standard models in describing normatively appropriate behavior?

Differences between behavior and standard models drive a wedge between positive and normative justifications for BCA. If people always behave in accordance with standard economic theory, then any policy that satisfies the Kaldor-Hicks compensation test will expand the “social pie” and the central question about BCA would be how to balance efficiency (as measured by aggregate net benefits) against distribution of well-being within society and other concerns. If not, then policies combined with compensation payments that are predicted to yield Pareto improvements may not deliver; affected individuals may not perceive themselves to be better off.

How should policy makers and analysts respond when confronted with public preferences that depart from the normative preferences embodied in economic models? Paul Portney posed this question in his 1992 parable, “Trouble in Happyville”: Imagine you are the Director of Environmental Protection for the town of Happyville. There is a naturally occurring contaminant in the town’s drinking water that all of the residents believe is carcinogenic and may account for the town’s above-average cancer rate. Each resident is willing to pay \$1,000 to cover the cost of treatment that will eliminate the contaminant. You have consulted with the world’s leading risk analysts and each has reported that, while one can never be sure, each would stake her professional reputation on the conclusion that this contaminant is benign. You have repeatedly and skillfully communicated these judgments to the citizenry, but each of them still prefers to spend the money to treat the water. What should you do? If you call for the water to be treated, you are knowingly denying each resident the other benefits he could achieve with \$1,000 but each resident will believe himself to be better off. If you reject the treatment option, you are knowingly imposing a policy that each resident

believes is contrary to his well-being.

• Implications for Benefit-Cost Analysis

If BCA is conceived as a positive exercise, with the goal of determining whether policy consequences satisfy the condition that those who benefit could theoretically compensate those who are harmed, then the objective is to measure benefits and harms exactly as they are perceived by the affected population. When these perceptions conflict with normative models, the normative models are irrelevant. Under this interpretation, analysts should measure individual preferences as accurately as possible. Predicting policy consequences and measuring individual perceptions are scientific questions that are, in principle, susceptible to empirical testing. In addition, this approach respects individual autonomy (consumer sovereignty).

If BCA is conceived as a positive exercise, its significance for policy is uncertain. While a practice of choosing policies that satisfy the Kaldor-Hicks compensation test allows for the possibility that everyone in the population will gain, there is no guarantee that such an objective will be achieved and the possibility that other social objectives, such as fair distribution of outcomes or equality of opportunity may be compromised.

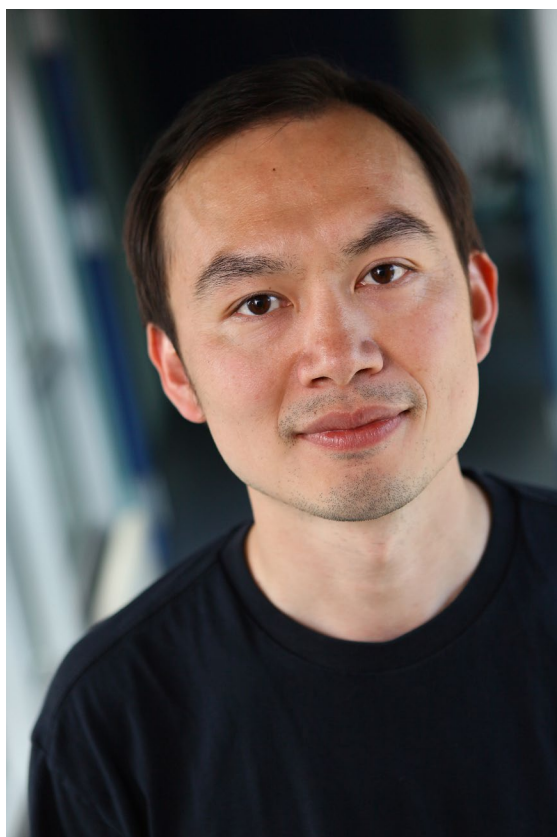
If BCA is conceived as a normative exercise, then the normative basis must be specified. As the choice of normative basis is a political rather than a scientific question, it seems appropriate for the choice to be made by the relevant political decision makers, though the prospects that they will provide a sufficiently precise statement for analysts to follow seem limited. When using a normative basis, the analyst must determine which parameter values in the BCA are consistent with the corresponding normative model. This may require adjusting empirical estimates to correct for behavioral biases; it is not clear how such adjustments are made. The normative approach assumes the analyst is a better judge of individuals’ well-being than the individuals themselves, and opens her to charges of elitism or paternalism. Many of the questions involved in conducting BCA under a normative justification are not scientific but philosophical and not susceptible to empirical testing, which places in the analyst in more of an advocacy than a scientific role. Nevertheless, benefit-cost analysis that rests on an accepted normative basis is by definition more useful for policy guidance than one that simply predicts if the policy passes the Kaldor-Hicks compensation test.

The choice of justification is part of a larger question about the role of representative government: should the government provide the citizenry what the citizenry believes it wants at the moment, much as a direct democracy (or a politician who slavishly follows public-opinion polls) might do, or should it provide leadership, directing the citizenry in a direction it does not yet know (and might never agree) is in its real interest? The tension is nicely encapsulated by the views of two eminent statesmen. Thomas Jefferson (1820): “I know of no safe repository of the ultimate powers of society but the people themselves; and if we think them not enlightened enough to exercise their control with a wholesome discretion, the remedy is not to take it from them, but to inform their discretion by education.” Edmund Burke (1774): “Your representative owes you, not only his industry, but his judgment; and he betrays, instead of serving you, if he sacrifices it to your opinion.”

Matching in Practice

A brief and incomplete introduction of Al Roth's work

By Yinghua He



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Many people wonder why assigning students to public schools and organ donation have entered the realm of Economics?

Although it is cliché, the simple answer lies in the definition of economics:

"Economics is a science which studies human behavior as a relationship between ends and scarce means which have alternative uses." — Lionel Robbins

No doubt that places in public schools and organ donations are scarce, but what is "non-economics" here is that there is no price or monetary transfer involved – public schools are free, and laws usually forbid paying organ donors. This is exactly what makes Al Roth's studies in market design unique.

The goal of market design is to achieve efficient outcomes: Students should be assigned to the schools that they prefer; patients who need an organ transplant should receive a donated organ in time. In a traditional market, this goal can be achieved with the help of a price system. If a student likes a school more, she is willing to pay a higher price, as is a patient in a greater need of an organ transplant. In real life, however, for various reasons there are many occasions when pricing or monetary transfers are either forbidden or very limited. The case with the lack of, or limited use of, monetary transfer is described by the economic term, **non-transferable utility**. Other examples include allocating doctors to hospitals, housing/dormitory allocation on campus, office allocation, and course allocation.

Matching and Stability

In the above examples, there are two sides of agents – courses and students, schools and students, or organ donors and patients – whom we want to match together. Note that neither side can be divided into pieces: A seat in a course or a school cannot be shared by two students; neither can a kidney be shared by multiple patients. Hence agents on each side have **indivisibility**, and yet they are **heterogeneous**. Otherwise, if all agents are the same, there is little room to have better allocations.

One may have noticed that we have been mixing two different scenarios. In office/housing/course allocation, offices, houses and courses do not make active decisions nor do they rank agents on the other side. This is so called **one-sided matching** which includes the everyday product market. The product itself does not care about who its owner is.

There is yet another very different setting, **two-sided matching**, where both sides make active decisions and rank the opposite side. Hospitals care which doctors they hire, while doctors have preferences for hospitals; schools rank students; and both men and women actively select whom they marry.

In addition to non-transferable utility, this area of research assumes that agents are rational such that they know their best interests and behave

accordingly. After participating in a matching procedure, or a matching mechanism, agents end up with some allocations where agents from two sides matched with someone from the opposite side.

The key concept in matching is stability. As we assume rational agents, a “good” allocation or matching outcome should be such that no agent has incentives to leave her current match. More formally, the allocation is stable if there is no single agent who can obtain any gains from leaving her current match either to stay unmatched or to form a new match with some agent from the opposite side who will be strictly better off in the new match.

One-Sided Matching

One-sided matching is common in real life. The markets for consumer products, such as TV, computers, and cars, are examples. These products are usually allocated to people based on a price system, or the competitive market mechanism. Whoever can pay the price of the product gets the product. According to the first fundamental theorem of welfare economics, the allocation of a competitive market is Pareto efficient. Namely, by switching to a new allocation, no one can be made better off without someone being made worse off. Therefore, the allocation is also stable. This may explain why the market mechanism prevails in real life.

One may wonder why we cannot always use the market mechanism in one-sided matching. In many cases, it is exactly because we are not allowed to use a price system or monetary payments. For example, selling human organs or selling children is forbidden in almost all countries. This is what Roth (2007) describes as repugnancy, and many of his contributions are designing the market given repugnancy as a constraint.

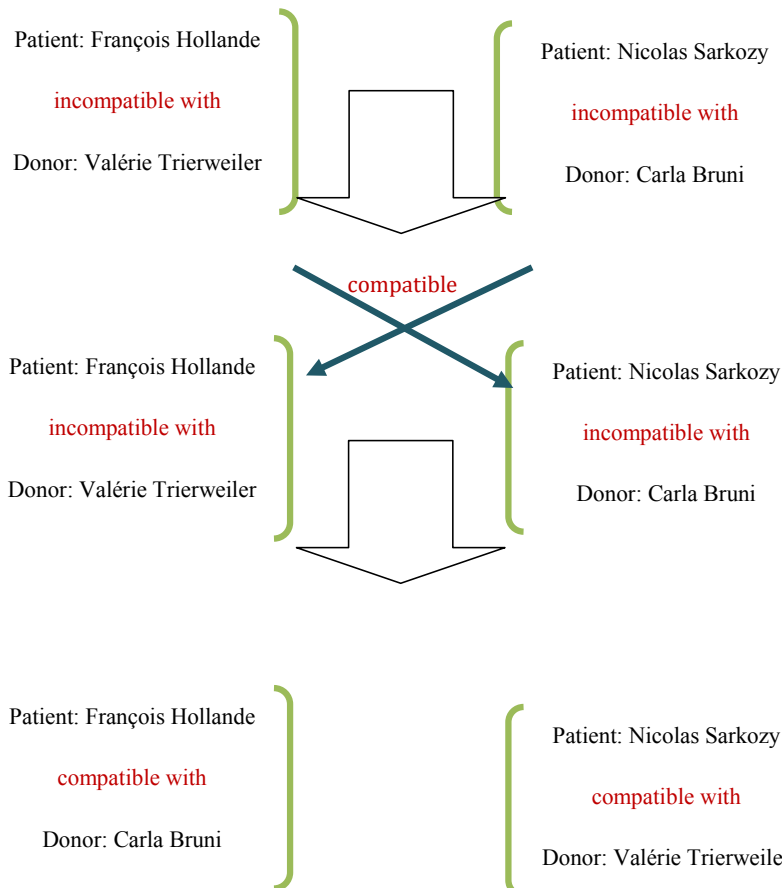
A key solution in one-sided matching with non-transferable

utility is the **top-trading cycle algorithm** (TTC).

Consider a set of agents and a set of indivisible objects, say houses, without using side-payments. Each agent initially owns one house and each house cannot be shared. The basic idea is that we may repeatedly find a subset of agents who could all obtain their preferred houses by swapping among themselves.

More formally, the TTC works as follows:

Step 1: Each agent “points to” the owner of her favorite house. Since there are a finite number of agents, there is at least one cycle. Each agent in a cycle is



assigned the house of the agent she points to and removed from the market with her assignment. If there is at least one remaining agent, proceed with the next step.

Step t: Each remaining agent points to the owner of her favorite house among the remaining ones. Every agent in a cycle is assigned the object of the agent she points to and removed from the market with her assignment. If there is at least one remaining agent, proceed with the next step.

Shapley and Scarf (1974) proved that the TTC algorithm, being attributed to David Gale, always produces a stable allocation. Abdulkadiroğlu and Sönmez (1999) later generalized the model to allow for the possibility that some agents do not initially own any objects, while some objects have no initial owner.

This model of one-sided matching may seem a bit too abstract, but Roth, Sönmez and Ünver (2004) notice that it can be extended to kidney exchange, which is an important real-world situation.

Suppose that there are two imaginary figures in our world: François Hollande, who is in need of a kidney transplant, and his girlfriend, Valérie Trierweiler, who is willing to donate one of her kidneys to him. Unfortunately, as it usually happens in real world, the two's blood types do not match, and therefore Trierweiler's kidney cannot be used in Hollande's body. In a competitive market, Hollande could just purchase a kidney if he could afford it, or if not, Trierweiler could sell one of her kidneys and use the money to buy a compatible one for Hollande. For various reasons, this kind of transaction is repugnant and cannot happen. This is then very similar to the house allocation problem, except that Hollande “owns” a house in which he is not able to live. More importantly, there are many patients in a situation like Hollande – it may not be difficult to find someone to give you a kidney, but you have to

be very lucky to have a compatible donor.

The idea of TTC can then be used to improve the lives of patients in this case. The information of all patient-donor pairs as Hollande and Trierweiler can be gathered, and figuratively each pair points to a pair who is willing to donate a compatible kidney. Whenever we can find a cycle among these pairs, we may perform the transplant for the patients in the cycle. A simple example is illustrated below. Suppose that there is another incompatible patient-donor pair Nicolas Sarkozy - Carla Bruni. Each pair alone is in a desperate situation, but, luckily, the two

pairs together can form a cycle and lives can be saved.

One important limitation of these cycles is that there is a small probability of finding pairs among whom we can carry out the swapping. Bruni is willing to give Hollande her kidney only if Sarkozy is receiving a compatible kidney from Trierweiler – This happens rarely. Fortunately, there are also extremely generous people who are willing to donate their kidneys to anyone in need. In this case, as there are altruistic donors, we can form kidney exchange chains which make more transplants possible. For example, the following figure shows 30 transplants initiated by an altruistic donor. Note that the last patient, Donald C. Terry Jr., bottom right, does not need to find a donor for the first donor, Rick Ruzzamenti, upper left, or for anyone.

60 Lives, 30 Kidneys, All Linked¹



FROM START TO FINISH A donation by a Good Samaritan, Rick Ruzzamenti, upper left, set in motion a 60-person chain of transplants that ended with a kidney for Donald C. Terry Jr., bottom right.

Al Roth and his co-authors have been and still are working on issues related to human organ transplants. One of the most important tasks is to make patients, donors, and also hospitals to participate in this kind of transplant chains. The thicker the market is, i.e., the more people who participate, the more chains can be formed. Certainly, the idea of the TTC algorithm can be applied to other cases of one-sided matching with non-transferable utility.

¹The details are available in the New York Times report, "60 Lives, 30 Kidneys, All Linked," which also has the copyright of this figure. The article is available at: <http://www.nytimes.com/2012/02/19/health/lives-forever-linked-through-kidney-transplant-chain-124.html>

The Contribution of Lloyd Shapley to the Theory of Cooperative Games¹

By Michel Le Breton²



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A Brief Introduction

Lloyd Stowell Shapley and Alvin E. Roth have been awarded the 2012 Nobel Memorial Prize in Economic Sciences “for the theory of stable allocations and the practice of market design”. Shapley, born³ on June 2, 1923 is one of the sons of the distinguished Harvard astronomer Harlow Shapley. Student at Harvard when he was drafted in 1943, he served in the Army Air Corps in Chengdu, China and received the Bronze Star decoration for breaking the Japanese weather code⁴. After the war, he returned to Harvard and graduated in mathematics in 1948. After working for one year at the RAND Corporation, he went to Princeton University where he received a Ph.D. in 1953. His thesis and post-doctoral work introduced the Shapley value and the core solution in game theory. After graduating, he remained at Princeton for a short time before going back to the RAND corporation from 1954 to 1981. Since 1981, he has been a professor at UCLA.

Shapley is considered in the profession as an exceptional scholar and a true giant. Von Neumann already considered him as the brightest young star in game theory research. Later on, in 1954, von Neumann wrote “I know Shapley very well and I think that he is very good. I will put him above Bohnenblust and I would bracket him with Segal and Birkhoff”. According to Bohnenblust, “he is second only to, John von Neumann, the creator of the theory of games⁵”. Aumann, laureate of the 2005 Nobel Memorial Prize in Economic Sciences writes, in his Nobel lecture (Aumann (2006)), that he considers Shapley “to be the greatest game theorist of all time”. More recently (2013), he adds: “*Shapley’s work in game theory, both applied and mathematical, is truly astounding in scope, in depth, in beauty and in importance. On each of these counts, Shapley has done more than all the previous game theory Nobelists, even when taken together*”.

Shapley’s seminal contributions to game theory and economics are so numerous that it is not possible to provide a fair account of his achievements in this short note. I will exclusively focus on some parts of his contribution to the theory of cooperative games. My colleague Jérôme Renault will offer a guided tour of his contributions to the theory of non-cooperative games. The theory of cooperative games is an important and lively part of game theory. According to Aumann (Van Damme (1998)). “*Cooperative game theory is doing*

1. Shapley is one of my heroes. It is a honour for me to contribute to the diffusion of his ideas.

2. I would like to thank Stefan Ambec, Yinghua He, Yann Kervinio and Karine Van Der Straeten for their comments on an early version of this note.

3. Some of the information reported in this brief portrait are taken from Nasar’s book (1998) on John Nash (Chapter 11 entitled “Lloyd” is entirely dedicated to the relationships of Nash and Shapley) and also from the Wikipedia entry dedicated to Shapley.

4. According to Nasar (1998). In contrast, the author of the Wikipedia entry reports “He needed the Soviet weather reports over Siberia to help predict the weather over Japan 1 or 2 days later. Some sources have this wrong.” The author claims that this information comes “from personal conversations with Shapley”.

5. Von Neumann and Morgenstern (1944).

actually quite well. I have already said in that interview that many of the most interesting applications of game theory come from the cooperative side. On the cooperative side, there are three or four central solution concepts: value, core, nucleolus, stable sets but much less flexibility in constructing the model. The model is much better defined".

Hereafter, I will focus on the Shapley value, his most cited contribution, and I will illustrate the model and the concept through a simple example of cooperation. I will superficially discuss some other contributions and provide guidelines for further reading.

Cooperation

A cooperative game with transferable utility (TU) is a pair $\{N, V\}$ where N is a (finite) set of n players and V is a function from 2^N , the set of subsets of N , into R^n such that . Every subset S of N describes a coalition of players and $V(S)$ represents the maximal aggregate amount of utility units (surplus) that the coalition is able to distribute to its members. The function V , called the characteristic (coalition) function of the game, describes the strength (worth) of each coalition. In practical applications, V has to be constructed from basic primitives and in some cases, it may be necessary when defining V to make specific assumptions on the (expected) behavior of the players outside S . Irrespective of the treatment of this question, cooperation within a group of players means coordination on a joint course of actions combined with possible compensations across players.

In many applications, the objective is to share a cost rather than to share a surplus. Such a problem is defined by a function C from 2^N into R where for each $S \subseteq N$, $C(S)$ represents the minimal aggregate cost that the coalition must distribute among its members.

When is cooperation potentially a good thing? Mathematically, a cooperative game exhibits gains from cooperation when:

$$V(S \cup T) \geq V(S) + V(T) \text{ for all } S, T \subseteq N \text{ such that } S \cap T = \emptyset$$

i.e. when the function V is superadditive; by joining their forces, two disjoint coalitions can do at least as well as the sum of what they can obtain separately. In the case of a cost game, gains from cooperation translates, instead, into a property of subadditivity:

$$C(S \cup T) \leq C(S) + C(T) \text{ for all } S, T \subseteq N \text{ such that } S \cap T = \emptyset$$

Given a cooperative game (N, V) , a feasible (efficient) payoff is a vector $x \in R^n$ such that $\sum_{i=1}^n x_i \leq (=) V(N)$. Let V be a set of cooperative games. A *solution*⁶ (value,...) on V is a function ϕ which associates to each game (N, V) in V an efficient payoff $\phi(N, V)$.

A player i is a dummy in (N, V) if $V(S \cup \{i\}) - V(S) = 0$ for all $S \subseteq N \setminus \{i\}$. Players i and j are interchangeable in (N, V) if $V(S \cup \{i\}) - V(S) = V(S \cup \{j\}) - V(S)$ for all $S \subseteq N \setminus \{i, j\}$.

Shapley Value

Is there any "good" solution which apply to all (or at least to a large class) of cooperative games? An important branch of cooperative game theory⁷ uses an axiomatic approach to answer that question. Such an approach consists in sorting out a list of properties that we would like the solution to satisfy: the identity card of the solution. The Shapley value (Shapley 1953) is derived from such an approach. What reasonable properties (axioms) could we expect from ϕ ? Let ϕ be a solution of the whole class V of cooperative games with N as set of players. Shapley investigated the implications of the following three axioms.

Axiom 1 (Dummy player) If i is a dummy in (N, V) , then $\phi_i(V) = 0$

Axiom 2 (Symmetry) If i and j are interchangeable in (N, V) , then $\phi_i(V) = \phi_j(V)$

Axiom 3 (Additivity) For any two games V and W , $\phi_i(V + W) = \phi_i(V) + \phi_i(W)$ for all $i \in N$

The first two axioms are rather uncontroversial. If a player does not contribute to the creation of the surplus, why should he receive a share of the surplus? If two players are perfect substitutes, why should we treat them differently? The last one is open to discussion⁸. Shapley has proved⁹ that there is a unique non empty valued solution satisfying these three axioms on the domain V of all games

6. We assume hereafter singlevaluedness and Pareto efficiency. The reader will find a more general definition of solution in Peleg and Sudhölter (2003): they define a solution as a multivalued mapping: $\phi(N, V)$ is a subset (possibly empty) of the set of feasible outcomes (possibly containing inefficient payoffs).

7. Myerson (1991), Peleg and Sudhölter (2003), Owen (2001) and Osborne and Rubinstein (1994) offer an excellent coverage of cooperative games.

8. On the Shapley value, you can consult the textbooks already mentioned but also Monderer and Samet (2002), Roth (1988) and Winter (2002).

9. There are several equivalent formulations of the Shapley's result. This version is taken from Winter (2002).

(Shapley, 1953) There is one and only one solution ϕ satisfying axioms 1, 2 and 3. This solution called the Shapley value is described by the following formula

$$Shi(V) = \frac{1}{n!} \sum_{\pi \in \Pi} [V(S_i(\pi) \cup \{i\}) - V(S_i(\pi))]$$

where Π denotes the set of all $n!$ orderings (permutations) of N and $S_i(\pi)$ is the set of players preceding i in the ordering π . The Shapley value can be expressed as follows¹⁰:

$$Shi(V) = \sum_{S \subseteq N, i \in S} \frac{(s-1)!(n-s)!}{n!} [V(S) - V(S \setminus \{i\})] = \sum_{S \subseteq N, i \notin S} \frac{(s)!(n-s-1)!}{n!} [V(S \cup \{i\}) - V(S)]$$

This formula offers a handy solution to share the gains from cooperation attached to any coalitional game (N, V) . It is as if we draw randomly an ordering of the players and offer to each player his incremental contribution to the surplus along that ordering.

The proof while using elementary arguments in linear algebra is an insightful illustration of the axiomatic approach. The set V of games with N as the set of players is isomorphic to the Euclidean space R^{2^n-1} . Existence: it is straight forward to check that the solution described by the above formula meets all three axioms. Uniqueness: Let ϕ be a solution that satisfies axioms 1, 2 and 3. For each $S \subset N$, let U_S be the game defined as follows:

$$U_s(T) = \begin{cases} 1 & \text{if } S \subseteq T \\ 0 & \text{otherwise} \end{cases}$$

I leave it as an exercise to prove that the class of games $(U_s)_{S \subseteq N}$ (called unanimity games) forms a linear basis of R^{2^n-1} . Further, it is easy to deduce from axioms 1 and 2 that:

$$Shi(U_s) = \begin{cases} \frac{1}{s} & \text{if } i \in S \\ 0 & \text{otherwise} \end{cases}$$

The conclusion follows then from axiom 3.

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¹⁰. S denotes the cardinality of S

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An elementary presentation of a few, among many, major contributions of Lloyd Shapley to game theory.

By Jérôme Renault



Jérôme Renault is Professor in Applied Mathematics and University of Toulouse I Capitole and Toulouse School of Economics. He holds a PhD from University of Paris I. His research interests include applied mathematics and game theory.

The Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel 2012 was awarded jointly to Alvin E. Roth and Lloyd S. Shapley "for the theory of stable allocations and the practice of market design". According to R. Aumann, Nobel Prize winner 2005, Prof. Shapley is, without any doubt, the most outstanding game theorist of all time; he has contributed far more in breadth and in depth to this discipline than any other scientist, living or dead. Leaving aside in particular all the major contributions of Shapley to cooperative games (presented in the note of Michel Le Breton), I will try here to describe in a elementary way a few, among many, major contributions of L. Shapley to game theory.

Stable marriages: do they exist, what are they useful for ?

Let us start with the celebrated theory of stable allocations. The fundamental article in this area is a joint paper by David Gale and L. Shapley in the early sixties: "College Admissions and the Stability of Marriage", American Mathematical Monthly 69, p.9-15, 1962.

Consider a population of n men (Alan, Bob, Chris, David...) and n women (Alice, Barbara, Cindy, Diana...). Each individual wants to get married to exactly one individual of the opposite sex, and has a linear order (preference, without ties) over the individuals of the other sex. An example is when

$n = 3$, the preferences of the men are the following: Alan: $A \succ C \succ B$, Bob: $A \succ B \succ C$, Chris: $B \succ C \succ A$, whereas the preferences of the women are given by: Alice: $B \succ A \succ C$, Barbara: $A \succ B \succ C$, Cindy: $C \succ B \succ A$.

A matching is defined as a collection of heterosexual couples, where each individual belongs to exactly one couple. In the above example, $\{ (Alan + Alice) (Bob + Barbara) (Chris + Cindy) \}$ is a matching. However this matching is unstable, in the sense that Bob and Alice would be willing to divorce to settle together!

A matching is called stable if there does not exist a man and a woman both preferring each other than their partner in the matching.

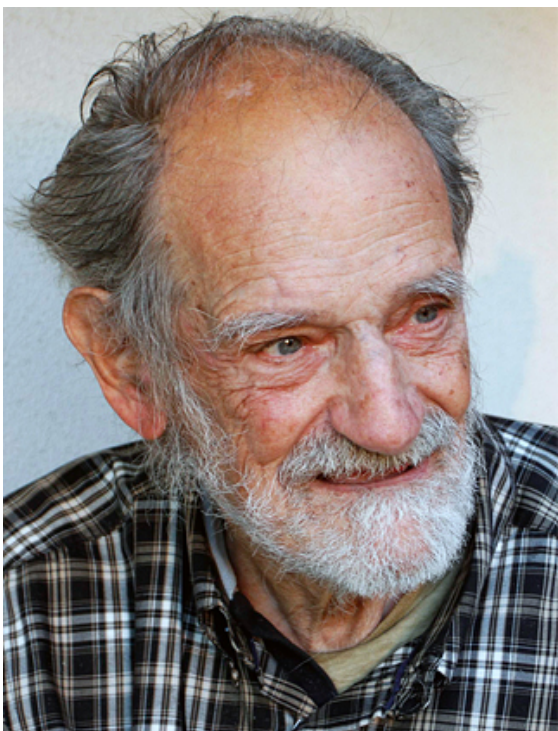
In the example, $\{ (Bob + Alice), (Alan + Barbara), (Chris + Cindy) \}$ is a stable matching, as well as $\{ (Bob + Alice), (Alan + Cindy), (Chris + Barbara) \}$.

Natural questions are now: *Do stable matchings always exist? How to find them?*

Gale and Shapley invented the following algorithm. You may imagine mentally that each woman stays at her place, whereas the men are going to visit the women.

Day 1: Each man visits his favorite woman. Any visited woman keeps at home her favorite visitor (a woman with a unique visitor just keeps him). Stop if everyone belongs to a couple. If not, at the end of day 1 there are couples, as well as lonely men and women.

Later days: Each lonely man comes to visit his favorite woman among the women he has not visited so far. A woman having several choices keeps only her best choice. Stop if everyone belongs to a couple.



Lloyd S. Shapley and Alvin E. Roth

Example: $n = 4$, with the preferences of the men given by:

1. $a : A \succ B \succ C \succ D$,
2. $b : A \succ D \succ C \succ B$,
3. $c : B \succ A \succ C \succ D$, and
4. $d : D \succ B \succ C \succ A$,

and the preferences of the woman given by:

1. Alice: $d \succ c \succ a \succ b$,
2. Barbara: $b \succ d \succ a \succ c$,
3. Cindy: $d \succ a \succ b \succ c$ and
4. Diana: $c \succ b \succ a \succ d$.

The algorithm runs here as follows:

Days:	1	2	3	4	5	6
Alice	$a \ b$	a	a	$a \ c$	c	c
Barbara	c	c	$c \ d$	d	$d \ a$	d
Cindy						a
Diana	d	$d \ b$	b	b	b	b

Stable matching: $\{ (c + A) (d + B) (a + C) (b + D) \}$

Theorem (Gale and Shapley): the algorithm always converges to a stable matching (in at most n^2 days).

A few remarks:

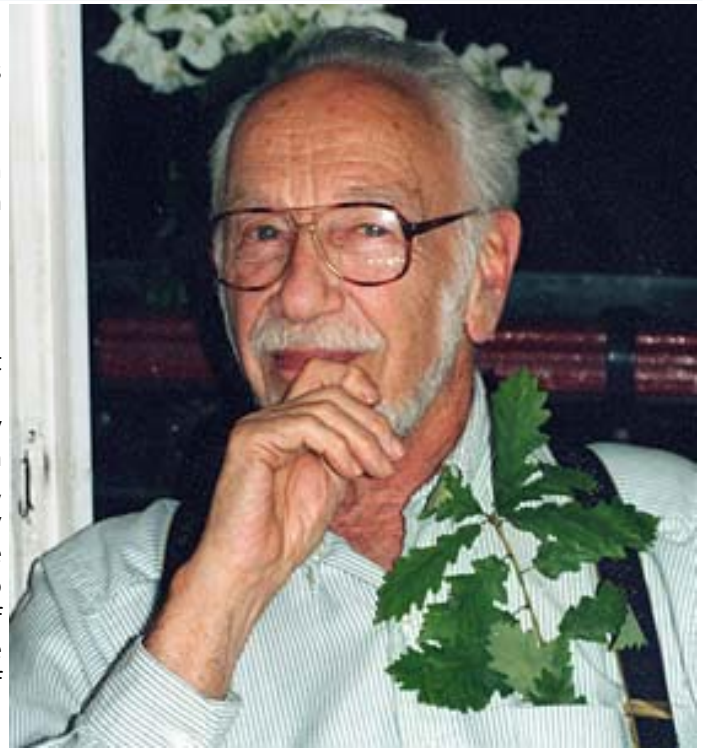
several stable matchings may exist, and the above algorithm selects the matching which is the most favorable to men, in the sense that each man weakly prefers his wife in this selected matching than any woman he may be associated to within a stable matching. Of course, exchange the roles of men and women to get the symmetric conclusion.

in the above algorithm, no man has an incentive to misrepresent his preferences: considering the game played by the $2n$ individuals defined by the algorithm, it is a dominant strategy for each man to follow the algorithm, that is to visit the women from the favorite one to the least preferred one. On the contrary, depending on the preferences of the population a woman may have incentives to misrepresent her preferences, that is at some point not to keep her favorite visitor. It can be proved that no stable matching procedure exists for which truthful revelation of preferences is a dominant strategy for all agents (Alvin Roth: The Economics of Matching: Stability and Incentives, Mathematics of Operations Research 1982).

the above analysis can be extended to the case of students and schools, doctors and hospitals, etc... (polygamy/polyandry, an hospital may hire several doctors whereas each doctor is only affected to one hospital).

in the case of a single community of $2n$ individuals where each member has a preference over the other members (homosexual community, or students looking for roommates), the existence of a stable matching is no longer guaranteed.

matching problems have many important applications (not particularly to marriages !): college admissions, doctors affectations, kidney exchange... see the works of co-Nobel Prize winner Alvin Roth, presented in the note of Yinghua He.



David Gale (1921-2008)

Note

We are very grateful to **Yinghua He, Michel Le Breton and Jérôme Renault** for writing this insightful and detailed contribution. Due to space constraints, we could not publish the full article, kindly find the full version online on www.tseconomist.com



PhD Minds

Doctoral students exchange visits

The TSEconomist had a series of short interviews with three TSE doctoral students that have been on exchange in other universities such as UChicago, MIT and Harvard.



Andre Veiga at U Chicago

What is your main research topic?

I am interested in the industrial organization of health insurance and networks.

Did this visit help you to advance your research project(s)?

Definitely. I was able to meet several students and faculty who were very helpful and who gave me a different perspective on my work. I even started a couple of projects while I was abroad.

Did you like the academic environment there? Is it very different from that of TSE? What are the main differences?

I visited U Chicago and Stanford for a few months and in both places I found the faculty and the students extremely welcoming and the academic environment great and quite similar to TSE's in many ways. I will highlight some of the differences I personally found most striking.

I visited the University of Chicago to attend a course on "Price Theory" which is Chicago's approach to micro. The course was taught by Gary Becker and Kevin Murphy (who some people call the Sherlock Holmes of Economics) and it offered an interesting new perspective that takes aggregate market quantities such as demand curves as primitives. The course focused on thinking through difficult economic problems

using only creativity and basic concepts such as elasticities and the Slutsky equation, and essentially no mathematics beyond univariate calculus.

The thing that surprised me the most was the emphasis on empirical work. It was very surprising to tell people about the generality of the models I had been working on, only to find them asking me about the magnitudes of the effects or about how a much simpler version of my model could be empirically tested. Because TSE has a large share of theorists, it is important for TSE students to be aware of the value placed on empirical research in the current job market.

On a similar note, I also felt that the US departments placed a lot of emphasis on preparing students for the job market. For instance, students tend to focus on their job market paper for most of their PhDs. One can debate if this is ideal for the profession, but it does seem to be a fact. Moreover, I got the impression that US students practice presentations and interviews more often than European students.

Another important difference was student collaboration. Especially in Stanford, I felt that a majority of students were working on papers in groups, which seemed to make the whole experience faster, more fun and more rewarding. Staring at an equation/regression for days is a lot less frustrating if there is someone else around that is just as invested. Perhaps it should even be a rule that students should co-author one of their dissertation chapters.

The last major difference was sandwiches. There were a large number of catered lunch seminars in both universities I visited where students and faculty typically present ongoing work or a recent working paper. While lunch time is a good break from a long day of economics, catered lunch seminars attract lots of participants to come together in an informal environment to discuss each other's work, create a good sense of community and are a great way of adding an hour of productivity to one's day with little extra pain. I went for the free food but ended up meeting several people and had a number of ideas while attending. I suspect that investing in sandwiches has a dramatic impact on a department's research output but I don't have the data to prove it.

Overall, did you enjoy this experience? Do you recommend to other TSE students to visit another university for some months during their PhD studies? Do you want to add anything else about your experience?

I enjoyed my experience a great deal and would very strongly

recommend it. While most departments are not able to offer money and frequently have little desk space, I found faculty and students extremely welcoming to someone willing to make the effort to visit them.



Charles Angelucci at Harvard

What is your main research topic?

My work falls into two fields of economics: (applied) Microeconomic Theory and Political Economy. My job market paper is on the topic of Persuasion. Games of Persuasion consider instances in which a decision-maker must make a decision in a risky environment. To inform this decision, better-informed but self-interested experts are asked to provide information. Although the fact that experts are biased is a concern, it is typically thought that relying on polarized experts helps reaching a satisfying outcome. I revisit this issue in a model that puts emphasis on the incentives experts have to gather information. What I find is somewhat surprising since I show that when polarized experts have high stakes in the decision, which is being made, it can be the case that there is generally little diversified information being provided. The benefits typically associated to polarization are diminished. I am currently working on an empirical strategy to test the model's predictions using data on Civil litigation.

I am also working on a series of papers, together with fellow TSE student Simone Meraglia, investigating the determinants of political and economic institutions. In these projects, we are particularly interested in the role played by the threat of expropriation by the state (e.g. the military, the bureaucracy) in the shaping of institutions. Our main contention is that market economies are fragile in that the created wealth is easily appropriable. As a result, to foster trade and extract large revenue from taxation, the state has no choice but to grant political institutions to curb its own strength. We make the case that this logic explains particularly well the grant of autonomy to towns involved in trade in Medieval times.

Did this visit help you to advance your research project(s)?

Absolutely. It allowed me to discuss my work with some of the leading researchers in my fields by giving talks in various universities and U.S. conferences. On that note, I found that coming from Toulouse usually facilitated these interactions: TSE students enjoy a good reputation abroad. This experience also helped me understand better what made a good job market paper. For instance, the great emphasis put on empirical relevance convinced me to test some of the predictions of my model on Persuasion. Finally, I made great

use of Harvard's library to have immediate access to History books relevant for my work on Institutions.

Did you like the academic environment there? Is it very different from that of TSE? What are the main differences?

I did like the academic environment at Harvard, although I wouldn't say that it is very different from that of TSE. Several differences between Harvard and TSE do however come to my mind. PhD students are supervised by several Faculty members there, which I think is a good way of fostering student-faculty relations and having students work on both theoretical and empirical analyses of their topics. I also think it is much more common for PhD students to work as research assistants, which is a good way of developing research skills early in the PhD. On the other hand, students in Toulouse seem to cooperate more and better amongst themselves. In terms of teaching, greater emphasis seems to be put on the acquisition of modeling tools in Toulouse.

Overall, did you enjoy this experience? Do you recommend to other TSE students to visit another university for some months during their PhD studies? Do you want to add anything else about your experience?

My spell at Harvard was a tremendously positive experience and I certainly recommend such experiences to other students in Toulouse. I think it is best to do such a visit in the third year of the program, once a field of research has already been chosen. As a last piece of advice, I recommend to TSE students visiting other departments to present frequently in seminars, as this is the best way of connecting with fellow students and Faculty members. Staying anonymous in big departments is easy!



Eric Mengus at MIT

What is your main research topic?

I am interested in macro and finance and, more precisely, I am working on a topical subject: sovereign debt. A recent argument for explaining why countries honor their debt is the presence of internal costs of default: debt is usually in the form of bonds partially held by domestic residents. Thus, when defaulting, a sovereign inflicts damage to its own country. My research tends to explain why the government

cannot perfectly make up for such internal costs, using, for example, bailouts or any other forms of compensation. This has some implications for domestic financial development and its degree of complexity or opacity, through, for example, credit derivatives or interbank markets. Because of these markets, governments have difficulties to assess precisely domestic exposures, and so they are unable to make up for internal cost of default. It is not ex post desirable, but ex ante, this allows the government to credibly commit. Now, I am considering other forms of bailouts: why does a country want to bail out another country? In concrete terms, why do European countries want to (at least partially) save Greece or Portugal?

Did this visit help you to advance your research project(s)?

Yes! It did help me a lot and it is still helping me for my research. First of all, visiting another department, wherever it may be, forces to present to other faculties or students ideas or projects that have had already been presented. That helped me to ask once again some questions and to reformulate some results in a new and, sometimes, more interesting way. It was also useful because after one year of full-time research, I had the feeling that I had accumulated a lot of questions or ideas without having sufficiently ordered them.

For sure, no need to say that I have also received a lot of new advices and comments on my research, and, on top of that, I had the opportunity to work on new topics leading to new research projects.

Did you like the academic environment there? Is it very different from that of TSE? What are the main differences?

The academic environment is exceptional at MIT, even though, in general it might seem not fundamentally different compared with TSE. There are a lot of high-quality seminars and workshops. Possibilities of interactions with faculties or other students are numerous. However, at MIT as in Toulouse, these interactions arise only because I created them.

In overall, did you enjoy this experience? Do you recommend to other TSE students to visit another university for some months during their PhD studies? Do you want to add anything else about your experience?

I really enjoy my visit at MIT and I do recommend to TSE students to make visits during their PhD. I really think that this is a necessary experience for doing research, especially in economic sciences where it is usually about presenting and sharing ideas.

Carlos III for your ENTER visit



Natalia Fabra, PhD Director, University of Carlos III, Madrid

If you are thinking of visiting another university during your PhD as part of the ENTER program, do not hesitate to come to University Carlos III. With a large PhD program and an excellent faculty it is very likely that there will be many other people who share your interests and are willing to discuss your work.

Economists working across a variety of fields such as micro, macro and econometrics are based together in a single compact campus, making it particularly easy to approach the faculty members and discuss your work with other students. Moreover, Carlos III maintains strong links with other universities and institutions in Madrid so that you will be part of an even larger network.

Carlos III has a very active research-orientated department with a number of seminars organized each week. There are also three weekly reading groups in macro, micro and econometrics where students and faculty come together to discuss the latest research. Moreover, there are a number of seminars offered both from internal and external speakers which are a good opportunity to learn what is happening outside your immediate field. There are also a series of student seminars which is an excellent setting for presenting and getting feedback on your work.

The university also has very good sports facilities, such as a swimming pool, a fully equipped gym and tennis courts right next to the campus. Besides these facilities, there are also a wide range of activities and sports organized that you can get involved in through the university during your stay. Running groups, squash tournaments and snow-walking in the mountains just north of Madrid are a few examples of these activities.

The economics department is very international with PhD students from every continent and faculty from around the world. Although speaking a little Spanish is useful when going out in the evenings, the international focus of the department means that this is not

essential. Moreover, Carlos III is a very friendly university and welcoming to visitors. There are regular social activities, such as a weekly football game in which both students and faculty participate. Meanwhile, afternoon reading groups are often followed by further discussion over a beer at one of the nearby bars.

In addition to all the benefits the university has to offer Madrid is a great city to visit. The university is a short 20 minute train ride from the heart of the city. Here, there are many bars, cafes and restaurants catering to all tastes and budgets, as well as a

number of world class museums such as the Museo del Prado and Reina Sofia. As the capital and located in the centre of the country, Madrid is also an ideal starting point for visiting other Spanish cities by bus or high-speed train. Just make sure you have the time to enjoy it all!

We are always keen to host ENTER students, whether for a short visit or longer stays. If you are interested to find out more please contact me at natalia.fabra@uc3m.es.



Universidad Carlos III de Madrid



Student internships

Julia Lassébie at RBB

What was your mission?

RBB is a consulting firm that provides expert economic advice on all aspects of competition law. During my stay at RBB, I worked on one cartel case, a merger case and a follow-up damage claims case, at both the European and French levels. More specifically, my work focused mainly on the empirical aspects of the case, handling a lot of data: I helped to analyse data provided by the clients to support our theoretical arguments.

How did you use what you learnt in TSE?

Competition law is rooted in economic theory and more specifically in the theory of industrial organization. As such, for each case I worked on, I have been asked to apply theoretical concepts and quantitative techniques I learnt in different classes at TSE, obviously in Competition Economics but also in Microeconomics, in Industrial Organization and in Econometrics. As a consultant, you have to work hard and be able to deliver under pressure, two skills I'm sure you have developed while studying successfully in TSE! I think that a school like TSE is the best place to be well prepared to work at RBB.



How did you get this internship? Any advice for students wanting to find one in this field?

To get my internship, after attending a presentation from one RBB partner at TSE, I simply sent the company my CV along with a cover letter. I then attended one interview in Brussels, completed a short written test, and had the pleasure to learn one month later that I had been selected to be part of RBB for a 6 months internship. My advice to anyone highly motivated in working in that field: be ready for challenges, and go for it!

Thomas Larrieu at Orange



What was your mission during your internship?

I worked as a junior consultant for France Telecom – Orange in the strategy and regulatory affairs in Paris.

My job was to study the current model of private copying levies and to create a new one to respond to the forthcoming change in regulation. In a nutshell, a private copying levy is a “tax” that you pay when you buy a device where you can burn or store music or movies on it; it allows you to make private copies of the songs/movies from the original support to device such as CDs, USB, iPod... This tax is redistributed to rights holders (songwriters, singers...) who fight for a high tax against people like France Telecom, Apple or Samsung who want as low a tax as possible. The questions were: Who should pay (consumers, industries...) ? How much per song/movie? Can we consider copies in the cloud (Dropbox, Google Drive) as private copies and thus relevant to the Levy? This last question is in debate at the European level as consumers are more and more using these services to store their data (and thus their music, movies, etc.).

In addition to this, I worked on the economic aspects of net neutrality (Do content providers have to pay for network facilities?) and cloud computing development.

How did you use what you learnt at TSE?

During this internship I mainly used the incentive and taxation theory that I learnt in TSE. As I was working in the economists' team, my background in game theory and industrial organization was obviously helpful to interact with my co-workers on other concerns.



The part on private copy levy was mainly applied strategy, as a matter of time, we had to go straight to the point and I didn't use clean economic theory. However, I had to go through many papers on network theory to tackle the issue of net neutrality and cloud computing.

How did you get the internship? Do you have any advice for students wanting to find one in that field?

I found my internship on the TSE website, in fact, the school has a strong network, so I advise you to use it! Search everywhere and don't hesitate to send dozens of CVs.

Seeing the many things we study at TSE, we sometimes tend to forget that one of these subjects might be very relevant to the internship you're applying for. If addressed and illustrated in a simple way during your interview, you can demonstrate to the interviewer your knowledge of economic theory as well as your ability to put it into practice in empirical situations, which might be just what you need to get the internship!

Pierre Rialland at UNIDO

What was your mission during your internship?

I carried out a three-month internship at UNIDO where I worked in a research branch. During the first part of my internship, I had to compile a data set from several different sources. I was in charge of undertaking a literature review, which was carried out in order to select the papers they should use to complete the upcoming annual industrial report. Finally, I had to help perform an econometric analysis of a working paper they wanted to improve.

How did you use what your learnt at the TSE?

What I learned at TSE helped me in many ways. First of all, the theoretical skills we develop at TSE turned out to be invaluable when undertaking the literature review. Indeed, being able to understand what is at stake in a paper requires some specific math and econometric skills that we acquire at TSE. The classes we have on the software R could have been useful for the data management work they asked me to perform, but unfortunately they used another software. Finally, the official language was English, so the fact that our classes are in English did help me in this matter.

How did you get the internship, any advice for students wanting to find one in that field?

First of all, as trivial as it seems, applying early does increase your chances of getting in, as you have to compete with hundreds of applicants. Moreover, I would advise students to write quite specific cover letters in order not to make it seem that you wrote a general cover letter that you reused many times. In addition, I think recruiters in this field do care a lot about your language skills and also about your experience in international environments. So, do not forget to highlight them in your CV! Despite the rigid appearance of the application procedures, it may help you to contact people directly to show your interest on top of sending in the application.



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Company presentation



BS initiative:

a network
of economists
grouping TSE
alumni

BS-Initiative is a non-lucrative organization gathering PhD students and young professionals that are eager to share their analysis and expertise on economic and financial matters. Created in October 2012, it aims at promoting the contributions of its members, in order to add a scientific dimension to the public debate on economics issues. BS-Initiative's editorial and organizational pillars are informing, understanding, analyzing, proposing and sharing ideas. The diversity of our members' backgrounds and the high number of contributions and ideas makes the BS-Initiative a source of high-quality economic thoughts, analyses and facts.

The association follows two goals: to build up a dynamic network of economists and to propose valuable analysis that contributes to the public debate in an effective and lasting way.

An international network

The BS-Initiative is structured around an editorial committee responsible of guaranteeing the accuracy and coherence of the propositions published by our contributors. Economists following (or have followed) a doctoral formation from this editorial committee. At the beginning of 2013, BS-Initiative consisted of 16 contributors from French universities (Toulouse School of Economics, Paris School of Economics; HEC, Dauphine; Sciences Po Paris) and international universities: Italy (University of Venice), Belgium (Université de Louvain), Germany (University of Mannheim), and Australia (University of Sydney).

Most of the contributors studied at the Toulouse School of Economics and have contributed to the development of the student network at the school (especially through their involvement in the TSE Junior Etudes).

In addition, economists from the domains of Banking, Finance and Insurance have joined us. They usually work on country risk analysis on and economic and financial forecasting in their respective organization. By sharing their analyses on bs-initiative.org they are allowing young graduates to enter a privileged network of economists as well as developing a platform where information is exchanged and discussed.

A wide distribution of our contributions

In less than six months, a user-friendly website has been developed and regularly updated. It supports the long

term strategy of the organization.

In addition, multiple partnerships have been developed especially with the 'Cercle les Echos', first economic daily newspaper in France, and the 'Economie Matin', a former journal nowadays published exclusively online.

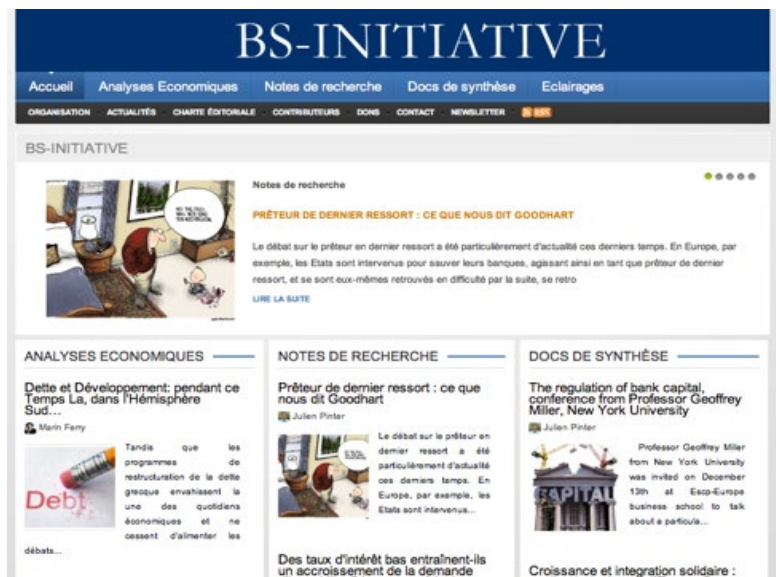
In « Economie Matin », BS Initiative publishes in the « Experts » rubric, along with other important contributors such as Jean-Paul Betbèze, previous chief economist at Crédit Agricole.

BS Initiative is highly supported by a network of professionals, graduating mainly with a master of finance from « Université Paris 1 Panthéon Sorbonne », which allows it to have a large access to the professional sphere as well as to the university.

Our contributors also have been asked to participate in radio programs linked to economic news as well as publishing reports (like the one coming out in march 2013 « L'Ecole une utopie à reconstruire » edited by La Découverte).

An opportunity open to every economist

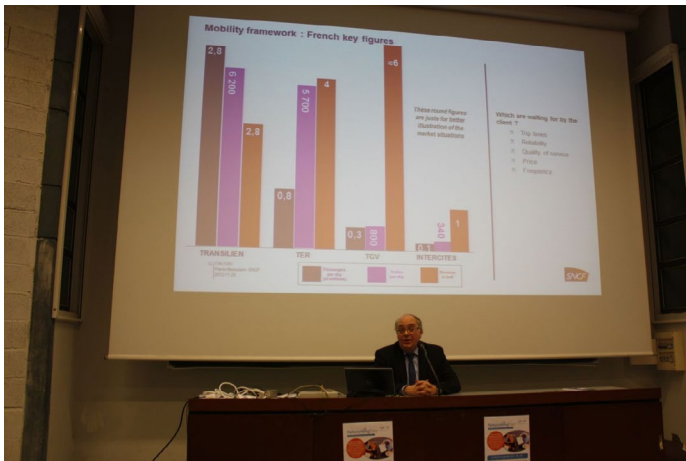
As it develops, BS Initiative continues to recruit a large number of people with a PhD in Economics, professionals in Finance, as well as young PhD students, eager to share their research and their knowledge at the service of public debate. We highly encourage you to read and share our contributions at www.bs-initiative.org!



TSE launches the Business Talk series!

As part of the School's commitment to give students the opportunity to meet business economists, TSE launched on October 25th 2012 the Business Talks series. The series is aimed at introducing the students to economists from the business world, coming from all kinds of sectors and working on very diverse kinds of jobs. Speakers will usually present a topical issue, as well as their work life, giving an idea to students how does the job market look for economists.

The TSEconomist have committed itself to cover the Business Talks, and when possible interview the speakers. Coverage of the Talks and exclusive interviews with the speakers are published on our new website: www.tseconomist.com



Pierre Messulam, SNCF

November 29th, 2012

Director of the Strategy Department

Industrial and economic models: relevant examples from the railway system Pierre Messulam gave an introduction of the economics of railways using industrial and economics models and examples from the European railway system. His talk gave a lot of interesting insights and showed that there will be new job challenges for economists at the SNCF for the future since it is no longer a technical company but an economical company. Indeed, there will be an increasing need for economists, in particular in the field of economics of Internet and estimation of pricing.

Valérie Meunier, Vice CEO, Compass Lexecon

November 15th, 2012

Competition policy and economics: a practitioner's perspective Valérie Meunier introduced the job of an economics consultant at Compass lexecon, specialized in competition economics. Since she recently has joined Compass, she couldn't work about the cases she currently works on, however exposed two very interesting cases, that she have worked on in her previous occupation at the Aurorite de la concurrence. The first being the temporary work policy aimed at promoting low-skilled employment (by reducing employer-paid payroll taxes), while the other dealing with the merger of Canal + and TPS.

Laurent Clerc, Banque de France,

25th October, 2012

Director of the Financial Stability Department

Laurent Clerc exposed mainly the viewpoint of a central banker about financial stability. His talk was divided into two parts: the first dealing with the importance of financial stability, and how does the Banque de France works towards achieving it, while the second dealt with more practical issues, and where he presented three of his current activities: standard business (preparing meetings), writing reports and doing research. He also presented the structure of the BDF and explained how the recruitment process works.

Interested in covering a Business Talk and interviewing a speaker with one of our members? Don't hesitate to contact us via e-mail (tseconomist@tse-fr.eu) and we'll be in touch with you to organize it!

Business Talk Interview with

Marc Lebourges

of France Telecom Orange

By Daniel Westrik

On Friday February 1st, a surprisingly warm winter afternoon, Marc Lebourges, Director of European and Economic Regulation at France Telecom Orange, greeted a room full of TSE researchers and students to begin the first of the New Year's Business Talks on the issue of Net Neutrality. You can find details of his talk on www.tseconomist.com.



I noticed you hold a PhD in Computer Science. How did your career unfold to lead you to becoming an Economist?

I specialised in Operations Research so I worked in, what was at the time, the Research Department in Operations Research, Queuing Theory and Network Modelling. I have a degree in Telecommunication Engineering and Computer Science in the domain of the areas just mentioned, so I became an expert

in Network and Traffic Modelling.

I then switched to Strategic and Regulatory Studies and Economics because the topic of Economic Network Modelling became very important for Network Cost calculation in the context of the opening of telecommunications to competition. I came to the Strategic and Economic Research Division of France Telecom during the debate of opening up the network

to competition. In particular I was working on financing universal access.

I came to be an expert in Network and Electronic Communication Economics by having contact with academics, being part of regulatory debates and then being involved in competition law issues. After some years in more operational positions in marketing within France Telecom, I had the opportunity to come back to Regulatory Affairs and organise a team of economists, some dedicated to practical issues, others to research questions.

Are there many professional Economists working at France Telecom?

There are some: on one hand, there are economics graduated who are working at France Telecom no longer as Economists and on the other, people like me who have a different background but who tend to work in economic studies.

To be more specific, I work in the domain of Regulatory and Competition issues with people of different backgrounds: for example, there are engineers, who work on network cost calculations or service cost calculations, as well as management graduates from business schools and PhDs in economics. Often they need to have legal knowledge as well as economic expertise, as we work very closely with legal experts.

There are also people working in the Marketing and Strategic Division who may have an economic background. There are people in R&D developing new types of business models such as long-term business models and the evolution of the service. France Telecom also has Economists in the Accounting and Finance Division.

If France Telecom wants to raise debt for instance, we have Macroeconomists checking, very precisely, the market conditions around the world in order to decide where best to issue the debt.

Is there a graduate scheme for young economists to grow through the company, or is it the case, as you've said, that people are either taken from other areas within the company or taken as experienced hires?

In general, Economists tend to study firms from the outside rather than from the inside. It is more management science within the company, so being an Economist is not a standard position within France Telecom. Standard positions are in Marketing, Engineering, Finance and Accounting.

Economists are needed due to regulatory debates and competition law cases. Economic analysis is used to inform debate on public policy issues. It is also important that we can justify our position to our competitors and various forms of Public Authorities.

During the Business Talk you spoke briefly about the long relationship between France Telecom and TSE. Could you give us some insight into this partnership?

France Telecom has supported the IDEI (Institut D'Economie Industrielle, the research wing of TSE) since its creation in 1991. At this time the issue of regulation of networks was very important and this was the expertise of Jean-Jacques Laffont and Jean Tirole. In particular Access Pricing and Interconnection Issues have been a very important field of research in our sector.

We were involved in trying to encourage the use of high quality economic research and analysis to create a rational regulation and market structure. We were looking for economic research to enlighten political decisions in this field.

Currently, Bruno Jullien and Wilfried Sand-Zandman are researching a Net Neutrality issue, which will have significant

practical consequences. It regards how the network should allocate its cost; either to Internet users or content providers. The problem is that there is traffic sent to subscribers that is not required by these users. However, even for the traffic that is required by users, the quantity of traffic generated is not controlled and cannot be predicted by the user or the provider. Therefore if the end user is to be charged for this traffic we have an inefficiency in the market because they do not have full information regarding controlling their consumption.

In certain circumstances the content provider doesn't have full information either so there is a theoretical issue of how to price in a two-sided market when neither side of the market has the correct information to be efficiently priced.

On the one side it is the cost of information, on the other, it is the demand of the value information, both of which are not available. It appears difficult, but we need a theoretical approach to decide on a satisfactory pricing system. The working paper by Jullien and Wilfried Sand-Zandman has been presented at different conferences and helps to analyse this problem.

Are you working with other researchers at the IDEI?

Our relationship with the IDEI is made up of three main parts. Firstly, researchers at the IDEI keep us informed on economic developments on critical issues that concern France Telecom. Secondly, we ask the researchers at the IDEI to verify that our reasoning in our own economic analysis, used in our on going debate with public authorities, is sound or not.

Finally, there is a list of research topics that they have been working on. For example whether local authorities should subsidise or develop their own networks in parallel or in complement to privately owned networks. The IDEI have also generalised the issue to a more generic contract theoretical problem.

Other topics include Access Pricing and Margins Squeeze. To what extent should margins squeeze be banned or not and what are the economic consequences of this? Is brand loyalty strategy welfare enhancing or not? Should companies be allowed to develop them or not? Wilfried and Bruno have also done work in these areas.

Is the IDEI your main academic partner and to what extent do you use Economic Consultancies?

The IDEI is our main academic partner. It is useful to society to use rigorous economic analysis to inform public decisions. Therefore it is in our interest to contribute to the fact that this economic analysis is shared within the academic community. We also have partnerships with more sector specific economic specialists, for instance with the laboratories of Telecom Paritech and of École Polytechnique.

We also use consultancies but it is usually on a short-term basis. For example, we use their economic expertise on a case when we are in court with a competitor or competition authority. With consultancies we are defending our case while with academic partners we are trying to help inform public decisions.

What proportion of your team's time is spent conducting research? Where do you source the majority of your data?

I am working on operational issues and also have management duties so I do not personally do research. In my team there are 4 Operational Economists, 2 Research Economist's and 3 PhD students. So that gives you the proportion of the activity.

In terms of data, we buy outside data from public databases (such as Informa) and we also use our own anonymised data from the company (from our subscribers etc.). I would say its 50:50.

The TSE Alumni Association at your service

Alumni Testimony with Grégoire Viguié, Hakim Lalhoul & Rafael Vadares.



Audrey Berthomieu

As the president of the TSE Alumni Association I would like to present to you the objectives of the association we defined during our last General Assembly on the 30th of November 2012.

The TSE Alumni Association has three **long term objectives**:

The first is to develop strong links between the alumni across the world and to ensure solidarity within the TSE Alumni community. The association will contribute to developing this network by putting in place regular meetings between alumni in different geographic areas.

The second is to promote "Toulouse School of Economics-TSE" within the professional world in order to encourage professionals to offer internships and jobs to TSE students and graduates. To achieve these goals we need the help of all graduates to promote the school in their professional life and to actively open the door of the professional world to our students through the new TSE alumni platform (more information below).

The third is to contribute to the high level objectives of the school relating to the economic education by ensuring a permanent relationship with the steering board, the teachers and the students. Feedback from the professional world is essential to give the right direction to the education that the school provides. You can come with your company and share your experience and the expectation of the company with the students and teachers during the "Business Talk" day organized regularly at the school. This platform aims to be a place of exchange between students and graduates and it offers you a lot of possibilities to develop your network:

- Create groups across levels of responsibility, geographic areas, professional fields etc.
- Consult the network directories to find someone.
- Increase your professional network.
- Be aware of upcoming events.
- Receive the newsletter of the association.
- Post internships and job offers.
- Be visible to the other alumni and students (provide personal and professional information).
- Launch discussions about individual initiatives, ideas to be shared, topics to be discussed etc.

How to get access to the platform?

Contact Sylvie SEGAS

05 61 63 37 81

sylvie.segas@tse-fr.eut

We are also available on:

- **Facebook** (TSE ALUMNI group)
- **LinkedIn** (Toulouse School of Economics alumni group)



Grégoire Viguié *vice president of the association*

What are you doing currently? I have been working in the General Inspection Division of the Credit Agricole Group since 2010; I am currently the Deputy Head of Mission. The General Inspection Division acts for the Group General Management in implementing audit and advisory missions related to all the activities of the Bank in France and abroad. For instance, I have been involved in the following projects: - Credit Agricole Group liquidity monitoring and management system - Emporiki Corporate Credit Risk - Market risk exposures on AFS and trading portfolios - ALM risk control and monitoring procedures - Grameen Credit Agricole Microfinance Foundation. The Department has a young, international and gender-balanced team of 110 inspectors, with around thirty of them newly recruited each year.

After graduating, what was your path from your masters to this currently role? What are the key elements that help you in your decision-making? After graduating from the Toulouse

School of Economics Master 1, I joined the ESSEC Business School for three years, finishing my academic track with a 6-month study period at the ESSEC Singapore Campus. During this time, I was determined to pursue a career in the Banking industry, as I believed this sector was the best suited to my skill set. During my 2-year placement in the industry research Group of BNP Paribas, I have been working within the automotive, aerospace and green-tech team. I have been helping to create a global outlook of the automotive industry, running financial analysis and pitching about a broad range of companies. I have also been involved in numerous projects covering a wide variety of equity research tasks such as financial modelling, sector analysis and stress testing. Such a long internship gave me valuable exposure to the company's needs and encouraged me to utilise my technical and reasoning skills.

What are the most useful skills that you use in the professional environment? Starting my career, I have used the fundamental concepts shared within the financial services industry (financial analysis, market finance, risk management, etc.). Generally speaking, the most useful skills are accuracy, reliability and flexibility. However, communication skills (both oral and written) are the most important, especially in an environment in which you need to convince somebody (client, auditee, colleague) of something.

Do you have any advice to give to TSE students? Since joining in 2010 I have learnt a great deal, not only about the operational banking activities, but also about the structure of Credit Agricole and how it adapts to a changing environment. Thus, as a TSE Student, I think that you need to be open-minded, curious and highly adaptable. Moreover, to work in fast-paced environments, you will have to demonstrate your organizational skills and your ability to adjust to an environment involving large volumes of quantitative work combined with strict deadlines.

Hakim Lalhou *responsible to develop the network on Paris*

What is your current activity? My current position is technical advisor in the cabinet of the Director General for Civil Aviation. It belongs to the Ministry of Ecology, Sustainable Development and Energy.

What is your path from the master graduation to this currently post and what are the key elements which help you to make your choices? After my master graduation I joined the Directorate General for Civil Aviation as an engineer- economist in charge of studies and forecasts. During 3 years I worked on modelling, analysis and forecasts of the air traffic and I specialised on sustainable development subjects like the introduction of aviation in the European trading scheme in 2012 (airlines have to compensate their carbon emissions). It has been extremely exciting to work with very high skilled colleagues in economics and I learned a lot from them. After this, I had the opportunity to join the cabinet of the general director. I have worked in this position for a year. It is really fulfilling to work on strategic or political issues dealing with aeronautics. Our mission in the cabinet is mainly to coordinate and to synthesize the elements received from all our experts for the general director or the minister of transportation. When I make my professional choices I always think about the fact that I only have one life! This is not just a formula, this is a point of view.

According to your professional experience, what are the most useful skills that you get from your study time? I think that skills in economics (macro, micro etc.), finance and strategy are really important in our society, and have significantly gain in importance in the wake of the financial crisis. Real abilities in modelling are quite rare: it is an opportunity for TSE's young graduate students to make a difference.

Do you have some advice to give to the TSE students or for the School? I think that the TSE's program in economics is really good and that students who work hard will achieve a quite good level. Thus, if I had a piece of advice to give it would be to work hard on your communication skills (young graduates are used to presenting their work so as to show that what they are doing is hard, whereas intelligence is to present hard things by making them look simple) and languages. But the last and most important point: be confident in your skills and never forget that TSE's network is behind you!



Rafael Valadares *responsible of the network strategy*

What has been your path from the school to your current position? I had started my studies at the French School of Guatemala before coming to France to study mathematics and economics at the University Toulouse 1 Capitole. I finished my studies at TSE with the Master 2 in Economics of Markets and Organizations (EMO). I continued my training by obtaining an additional diploma in "Leadership and human resources management" at the Monterrey Tech in Mexico and I'm currently working on completing the programme "Principles and practices of organization development" at Colombia University (New York). After my master's degree at TSE, I completed an internship at Pierre Fabre, the third largest French pharmaceutical company, and then obtained a position in the office of the chief executive for one year. My job was to produce market analysis of the different business areas for the executive committee. I had to collect information from the Research and Development as well as the Marketing department, and then merge the information for strategic decision makers at the corporate

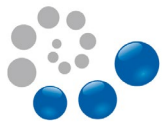
level. After this work experience in France, I was contacted by the law firm where I am currently working to develop strategies. For the first six months I assisted the CEO to understand the functioning of the firm before starting as chief project manager. I set up a project called "Case Life Cycle Management" to establish new standards and processes. This project aimed to assess the service quality and ensured the harmonization of the service across all customers. The success of the project convinced the CEO to nominate me as the chief of strategy.

What do you like about your current position? I like the entrepreneurial freedom, autonomous working atmosphere, and I enjoy participating in the negotiation with the customers.

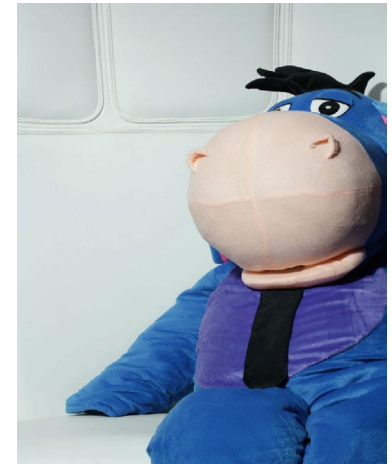
What are the required skills in your job? You need to develop your communication skills in two areas. You must communicate internally with your team and externally with your customers. This means managing to be accurate and specific about your customers' expectations and Another important part is time management and the prioritization of objectives.

How has your experience working with the TSE Students Association helped you in your career path? Effectively, I was the president of the TSE students' association and, although it was a small organisation of only 6 people at this time, I learned what "leading a team" means concretely. It means taking care of the different opinions and ideas of the members and defining a structure to organize events like the "Gala" (last party of the year). This gave me the opportunity to gain experience in team management.

School Activities



BDE • TSE
École d'économie de Toulouse



Dear Reader,

My name is Clémence (M1 Economics) and on behalf of the BDE team I want to introduce our association. The Bureau Des Etudiants (BDE) is the Toulouse School of Economics' student association, in charge of animating the student life in the school. In more detail, the BDE has several missions:

- Promote the TSE and give the students a feeling of affiliation (for instance through the clothes, mugs etc.)
- Organize great parties and events, like the Halloween party, the integration week-end, the ski week-end, and the main event: the TSE annual Gala.
- Help the students develop further their knowledge by organizing conferences and business talks.
- Support student initiatives like The TSEconomist (Student Magazine) and the football team.
- Help the students shape their future by offering them the opportunity to meet firms and alumni.

Focus on the networking day

TSE is one of the top economics departments in the world academically and our new dean, Jean-Philippe Lesne, wants it to become a leading force on the job market as well. This is why he asked the BDE to promote the Business talks and to help in the organization of the Business- Networking Day. We are glad that many of you went to this event, and we hope that it helped you figure out better your future career, perhaps even providing the possibility for some of you to secure internships or jobs. From January onwards, after the exams, the business talks will be back. We hope that they'll give you an idea about what an economist does and thus kinds of careers that are waiting for us after our graduation.

Ski trip

The BDE-TSE has an annual tradition of organizing a ski weekend in the Pyrenees. This year's weekend was as successful as the previous ones, if not more! The weather conditions were mostly bad, but this did not prevent the participants from having fun, skiing, partying, sledging, and above all celebrating the end of the exams or... the beginning of the new semester!

80 students bravely defied the heavy snowfalls to enjoy being together for a weekend. The experienced skiers hurtled down the slopes of Saint Lary while the beginners discovered the joy of sliding and were able to ski down at the end of the weekend! The BDE suggested 3 formulas: one for 2 days ski, the second for one day ski and the last for those who preferred to enjoy mountain landscapes and snowmen rather than ski. But most of the students chose to ski all weekend.

Join Us!

The BDE is made for the students and by the students, so don't hesitate to come and see us (MC205) whether you want to join our staff, attend our events, ask questions, or just be aware of the recent news (don't forget to check out our Facebook page!). It is also possible to receive all of the updates via email. Becoming a member of the association (10€ per academic year) allows you to have reductions on the TSE clothes, mugs etc. (new ones available soon!) and entrance to the parties, not to mention the free t-shirt you will receive!

Lastly, the BDE has a partnership with the LCL bank; you can come and see us to find out more about the advantages that this partnership could bring you!

The BDE-TSE Team is eager to see you soon and wish you the best for this new semester!

Clémence Grimonpont
President of BDE-TSE





A “Junior” in your school!

The TSE Junior Etudes is a student association, created in February 2010. Its aim is to provide students with professional experience inspired by the different courses taught at the TSE.

Our members have the opportunity to take part in projects which we call missions and provide consultancy services to private companies and researchers who seek our help. Thus the students can implement what they have learnt in university within a professional context. They also have the opportunity to get involved in the administrative work of the association. The association is composed of various departments, each having a well-defined set of tasks and diverse positions. All of our members work for the same purpose: to allow a maximum number of students to gain professional experience, develop their skills and demonstrate their abilities and successes.

The Junior Etudes exists for you and thanks to you!

Your Junior Etudes Team is a Pépinière Junior-Entreprise! It is official! As of the 28th of November, the TSE Junior Etudes has become a Pépinière Junior-Entreprise (PJE). But *what exactly is a PJE?* The Junior Enterprise is a student initiative with a European scope. In France, it is lead by the CNJE (Confédération Nationale des Junior-Entreprises), which is in charge of helping the juniors, informing them about the current legislations, but particularly controlling the quality of their services and their operations. Furthermore, it attributes, after an application process and a visit, “quality labels” to the work of students which are also recognized by professionals.

Obtaining this distinction has been possible thanks to all the motivated members, who gave a new spirit to the Junior Etudes, in addition to the support of our Dean, Jean-Philippe Lesne. The next step will be to apply for the Junior-Entreprise, a higher “quality label” recognized and awarded by the Confédération Nationale des Junior-Entreprises (CNJE).

The TSE Junior Etudes wants to give thanks for all the support we have received, an indispensable help to our development.

79 – Number of students members of the TSE Junior Etudes.

2010 – The 12th of February, creation of the association.

2011 – Junior Création (first “Quality Label”).

2012 – Pépinière Junior-Entreprise (second “Quality Label”).

2013 – Junior-Entreprise...?



Presentation of the “Prospection”(Search for missions)

Since the beginning of the year, the TSE Junior Etudes has been leading a mission of prospection in order to determine the skills of TSE students in all fields of Applied Economics. The purpose of the mission is to define the economic services that will be proposed by the Junior Entreprise, but also to promote the association to the TSE researchers and to companies. Proceeding in several steps, the mission is structured around the five fields of specialization of the Toulouse School of Economics: Environment, Development, Industrial Organization, Finance, Statistics and Econometrics. As a first step, TSE Junior Etudes members met the directors of each Master 2 program with the aim of defining the student knowledge and consequently the opportunities for the Junior Études to meet the needs of companies. We concluded that there are possibilities to implement missions such as economic translation, data analysis for econometric model settings, or economic literature summaries. More specific and complex missions can also be run with the collaboration of Master 2 and PhD Students, such as cost benefit analysis, which is a method used to describe the expected effects of a decision. It allows us to determine if the monetary and social benefits resulting from a project or a government decision are higher than its costs. A lot of companies need such analysis and thus this represents a good opportunity for further activities for the TSE Junior Etudes. Furthermore, another avenue for future projects is to run risk analysis through the help of mathematics and econometrics tools taking into account uncertainty, information asymmetries, and time according to economic agents. Therefore, this first step of analysis allows us to define the competences of the Junior Etudes and the solutions it can offer to the companies. The next step is already in process. It targets the companies directly and the objective is to pave the way for a long-term success of the TSE Junior Etudes.

Ludovic Vaudou

Chief of the Commercial Department

The Junior Etudes in Action: My Mission with La Tribune

La Tribune and the TSE have established a partnership for the “Trophées de l’Economie Sociale” (Social Economy Trophies). The Junior Etudes was asked to search for contributors and Jérémy Bonnefous, a member of the JE, contacted me for this urgent mission. The director of the mission briefed me on the objectives of the mission and I started my work immediately. In fact, I had only a week to design a survey for the nominated firms in a field that I had no prior experience in: social economics and solidarity (“l’économie sociale et solidaire”). After a long phase of research to understand the

characteristics of the field, I started writing the survey.

This exercise required a good understanding of the organizational structure of the firms (to avoid incoherencies and come up with a complete survey), the preferences of the client which are not always clear, and a clear organization of my ideas. For this reason, I made the decision to use a flexible survey, in which I introduced "mandatory" questions and "optional" ones, offering different choices to the client.

The survey was then put online, and the participating firms responded. My job was then to analyze the data. The final survey chosen by the client was very dense and contained many long written answers which increased the time I needed to process the data. I relearned how to use power point, and I was expected to outline the important elements of an application in a few lines.

In the end, I had to review all the applications that the firms had submitted, in relatively little time. In order to give you the whole picture of my experience, I will conclude with a piece advice based on a an issue with the project: I had misinterpreted the client's request, and therefore had to redo much of the work that he had asked of me. I learnt from this that it's always better to ask a second time to avoid misunderstandings!

Maxence Laumonier

More on Campus Events!

Ladies and Gentlemen!

Mark your calendars for the **biggest party of the year**: the TSE Gala! It will take place in the amazing setting of the Stadium de Toulouse on Friday March 29 th, 2013!

For more information, don't hesitate to contact the BDE. *Special feature*: this year's gala will witness the launch of **The TSEconomist Awards**, whereby awards will be distributed to the best teacher and the best TA, based on student votes, stay tuned for updates!

Ticket on sale!



Congratulations to the recently elected executive board of the TSE-Junior Etudes!!
From left to right: Aurélia Negre (Treasurer) Marion Fernet (Chairperson) Marlène Boura (Vice-Deputy) Felipe Acero (General Secretary)

The Business Networking day took place on Friday, November 30th, from 9 to 5 PM. This day was an opportunity for M1 and M2 students to discover jobs, businesses and internship opportunities and to talk with TSE graduates.



Picture Quiz

Which economic terms from the world of markets and organizations and behavioral economic are we looking for?

Submit your answers by April 1st to tseconomist.com and enter the draw to win a TSE sweatshirt and a TSE USB, generously donated by the BDE!



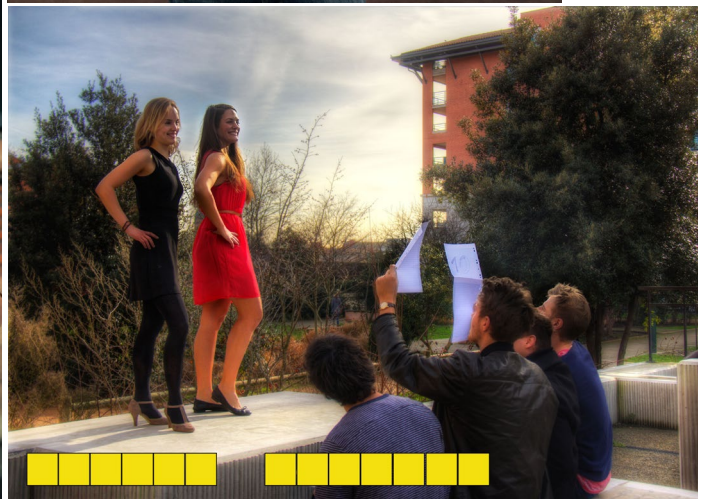
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Economic Joke

A mathematician, a theoretical economist and an econometrician are asked to find a black cat (that doesn't really exist) in a closed room with the lights off:

- The mathematician gets crazy trying to find a black cat that doesn't exist inside the darkened room and ends up in a psychiatric hospital.
- The theoretical economist is unable to catch the black cat that doesn't exist inside the darkened room, but exits the room proudly proclaiming that he can construct a model to describe all his movements with extreme accuracy.
- The econometrician walks securely into the darkened room, spend one hour looking for the black cat that doesn't exist and shouts from inside the room that he has it caught by the neck.

Want to share your favorite economic jokes with us?
Send them to: tseconomist@tse-fr.eu!

Meet The TSEconomist Team

