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Laudatio for Jean Tirole

In deciding to honor Jean Tirole the CES has further contributed to dispel the notion that economics is a dismal science. Jean Tirole is one of those who clearly enjoys "doing economics" and transmits this pleasure to their readers and audiences. His research agenda is complex and far from my own area of competence, but the occasional reading of some of his papers has convinced me over the years that he is one of the most productive, original and ultimately socially useful economists of his generation.

Jean initially trained in engineering. Graduating top of the crop from Ecole Polytechnique, a prestigious military school established by Napoleon to train top artillery sharp shooters, he became a specialist in road and bridge construction at the Ecole des Ponts et Chaussées. This is the archetypal cursus of honor for the brightest mathematically-minded French students. Most of them go on effectively administering the network of roads or railways. Few escape, and among those can be found many of French economists with an international reputation (Maurice Allais used to teach in the sister institution, Ecole des Mines, which nominally trains engineers to dig and exploit and iron mines that no longer exist.) He went from maths in engineering schools to applied maths at the University of Paris and finally to economics at MIT where he received his Ph.D. in 1981. Since then he has oscillated between France and the US, taking up positions at the Ecole Polytechnique, Harvard, Ecole des Hautes Etudes en Sciences Sociales, Stanford, University of Lausanne and MIT. He has now settled in Toulouse.

Over the last fifteen years, Jean has produced a steady flow of work, publishing each year six or seven papers in the top reviews, plus six books. One of his books, *The Theory of Industrial Organization*, has been translated in many languages, including Mandarin Chinese. To graduate students all over the world, and their teachers, it is known as "the Tirole", and is required reading from the first to the last page.

How can one person be so productive? The first answer is that it is not one person. Indeed, Jean has formed a few high-power partnerships with Drew Fudenberg, Jean-Jacques Laffont, and Eric Maskin, to name the most regular ones. The second answer, however, is that he is remarkably effective. Not only do good ideas come in quickly but speed of execution is also there to guarantee a quick process from idea to end-product. Along with his co-authors, Jean has changed the field of industrial organization. It used to be a mixture of conventional wisdom and empirical work with little theory. Jean has contributed to bring in

rigor and to build a rich body of theory. Industrial organization has now become the field that probably attracts the largest contingent of thesis-writers, a sure sign that major improvements are taking place. As I understand it, the new field is born when two bodies of theories, so far unused for that purpose, were brought together: game theory and the theory of information. With game theory, firms can be formally analyzed as strategic units. Information theory allows another feature which may seem obvious today: each firm has more information about itself than about its competitors. Put together these two theories provide an analysis of the market place where each firm discovers what the others are up to and reacts by changing prices but also its products in an infinity of ways, including design, variety, advertisement, etc.

Having done that, Jean has gone on applying his toolbox to other issues, transforming a few more fields along the way. For example, he has invaded sociology through organization theory, when he has started to study how firms structure themselves. Starting from the idea that two firms may find it useful to merge in order to share information and to avoid competing, he went on to ask where to draw the border in lumping firms together: size but also should integration be vertical or horizontal? He then extended his foray into sociology by asking whether the experience with private firms can be used to better design public organizations? He even went on wondering about the social and economic functions of lawyers (as a profession, of course). Pursuing this line in another direction, one quickly comes to face the perennial question of competition versus efficiency. This has led Jean to revisit regulation: asking how to make it more efficient, and how to use information instead of applying a heavy hand? This book is a perfect example of the line of thought that Jean and his colleagues now follow. This is not pure armchair theory anymore. Many of the new ideas that have emerged from this research have found their way into regulation reform all over the world.

From anti-monopoly to pollution, new legislation bears the imprint of new ideas developed over the last decades by Jean. Finally, someone who wonders about the business of extracting information from each other, it is a natural step to look into the functioning of financial markets. This has led Jean to produce some papers influential in as far a field as macroeconomics. He has clarified the logic of speculative behavior. In particular, he has offered a rigorous analysis of speculative bubbles: under what conditions such irrational phenomena may arise in markets dominated by rational traders? And then he has produced work which is currently influencing those in charge of regulating banks and financial markets. It seems a safe bet that regulation of the telecommunications industry will, one way or another, reflect one day some of the ideas presented in the following pages, and that we will all be better-off for that.