Interview with Jerry A. Hausman: Taking heterogeneity seriously

Interview with Bengt Holmström: In search of the unexpected

inDepth
Owen O’Donnell / Eddy van Doorslaer: Lifting the lid on socioeconomic inequalities in health
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The economics of social networks

Sanjeev Goyal

Sanjeev Goyal is Professor of Economics at the University of Cambridge and Fellow of Christ’s College, Cambridge. He has been a research fellow at Tinbergen Institute since 1995.

Further Reading


The network of social communication is comprised of ties between individuals. Creating and maintaining ties is costly in terms of time and effort. A tie with another person gives access not only to the information and ideas that this person has—but also to information that she may have acquired from others through her own connections. It is more attractive to form a tie with someone who is well connected, as this person is more likely to be better informed. So the decision on whether or not to form a tie will be sensitive to the tie formation decisions of others.

Workers find jobs via personal acquaintances, firms collaborate to introduce new technologies, doctors prescribe new drugs based on conversations with colleagues, farmers learn about crops from neighboring farms, and pupils strive to conform to the work ethic of their peers at school. Our ideas, opportunities and choices are shaped by the connections we have. Our awareness that connections matter leads us to invest in them—and this gives rise to such things as friendship circles, Twitter, the World Wide Web, inter-firm alliances and many other networks that we see around us.

In a series of pioneering studies in the 1950s, Elihu Katz and Paul Lazarsfeld identified a key feature of social communication: a very small fraction—about 20%—of the population, whom they called ‘opinion leaders’, served as the primary source of information for the rest. In the intervening decades, a number of studies on information and communication have confirmed that this is a robust feature of social networks. Malcolm Gladwell, author of “The Tipping Point”, calls this the law of the few.

The law of the few

The core-periphery structure is efficient, as it economizes on the number of links and at the same time has little information decay/delay (due to short distances between the individuals). However, it also exhibits significant inequality: the members of the core are much better connected than members of the periphery—and this is often reflected in unequal economic outcomes.

An important insight gleaned from the research on network formation is that economic pressures give rise to networks that exhibit the law of the few. These networks have what is called a core-periphery architecture. The core contains a small fraction of the population; a member of the core typically has a substantial number of ties (with most members of the core, and with a small fraction of the periphery). The periphery is comprised of the vast majority of the population; an individual in the periphery has a few links—most of which are with members of the core. When there is a single core member, this gives rise to a ‘star’ network. Everyone is at most two ties away from everyone else. This is a small world indeed.

Notes


You have written on numerous
topics, both in theoretical econometrics and applied econometrics. What do you think has been your main contribution to economic research thus far?
I’d have to say it is the Hausman (1978) test, without a doubt. And, more in general, introducing the idea that when we can estimate an economic model in different ways, we should get approximately the same results if this model is correctly specified.

You must have developed the Hausman test with some specific applications in mind. Have you ever encountered a paper using the Hausman test in an area or field that you never expected it would be applied to?
It happens all the time, actually. At a conference in China last summer I met George Tauchen (Professor of Economics and Finance at Duke University), who was talking about the use of Laplace transforms in financial economics. I would never have thought that my test would be applied in this type of research.
“Especially in these kinds of models with nonlinear prices (which are a consequence of nonlinear taxation) it is very important to take heterogeneity into account.”

You have written some papers on duration models. To date, these models are mainly used in mortality studies and in labor economics. Do you think there is scope for using these methods outside of these fields? What are the advantages of using these methods? And what are their limitations?

An example of the use of duration models outside of labor economics concerns the studying of defaults— for example, on home mortgages. Suppose you give out a loan and someone pays you back each month. Then you want to know what the probability of a default is. The problem with a loan is that the probability to default on the loan is very high in the beginning of the period. When individuals do not default in the beginning, the probability of default becomes much lower. The fact that we see this behavior in the data has much to do with unobserved heterogeneity: some individuals are ‘movers’, whereas others are ‘stayers’.

Another example therefore can be seen in the moving behavior of households. What researchers sometimes do is to fit a logit model for each period and estimate the probability of a default or a move. But that really does not take into account unobserved heterogeneity. Then you do not get a correct estimate on the effect of your covariates. Instead, the estimate tells you something about your stochastic disturbances. Duration models are able to take this unobserved heterogeneity into account, and can therefore be applied in these fields as well.

The main defect of duration models is that they cannot take into account simultaneity problems. Their other main weakness is that the econometric modeling should be more closely connected to economics. Currently, we just think of some variables that can plausibly affect our dependent variable and put them in our duration framework. It would be better to derive the framework from a more structural model of, for example, a demand equation or search models.

Talking about structural models: there has been a long ongoing debate in economics concerning the use of structural versus reduced-form modeling. What is your stand in this debate?

I am leaning more toward the structural side—although I do think that reduced-form modeling is useful in the following sense: I share the view of Richard Blundell (UCL), who was involved in a tax reform in the UK. His view was that when you need to convince policymakers of the fact that when taxes change, people’s behavior changes, you often cannot explain that to policymakers who are not economists using a structural model. Structural models are far too complicated for policymakers to understand. But if you present a reduced-form model, and you explain that taxes changed last year, and at the same time people’s labor force participation and hours worked changed as well, then that is very easy to comprehend. This gives policymakers more faith in reduced-form results. The problem with that, however, is that reduced-form modeling often reveals very little about the parameters that you need to know. That is where you really need a structural model. It is good if you can convince a policymaker that when taxes go up, people will buy fewer goods, but what you really want to know is what the elasticity is, such that you can advise on optimal taxation.

Then how do you feel about all the quasi-experimental methods, natural experiments and field experiments being used?

I did a lot of work myself on actual experiments a long time ago. The problems with these experimental methods (and these are well-known drawbacks) are that when an effect is measured in, say, a village in India, you do not know what the effect will be in the next village— let alone the effect in a village in Pakistan. The second defect, as I mentioned earlier, is that experimental methods do not allow us to estimate relevant policy parameters. The last issue is that you should take selective attrition into account. For example, in medicine, where researchers use double blind experiments for drug testing, results are often biased as follows: when a medicine is first developed and goes on trial, it usually comes with a host of side-effects. Later on, doctors figure out how to deal with these. So if there is heterogeneity, the people that the drug started to work on stay in the sample, whereas the ones that the drug did not start to work on drop out in an attempt to escape the side-effects. This is selective attrition. The only thing that a researcher can do is to assume that for the people that dropped out the drug had no effect, which will give a lower bound on the estimate of the effectiveness of the drug.

More generally, individuals can behave in a way that the researcher did not intend. Say that you are distributing mosquito nets. Who is to say that these things are actually used in the right way? And: who is monitoring whether these people use the nets? And I could think of numerous other examples… Non-random attrition is a huge problem when doing experiments— and researchers should worry more about it. Unfortunately, there is not a whole lot you can do about it, and people tend to forget the things they cannot do anything about.

Another example is the estimation of Local Average Treatment Effects using quasi-experimental methods. I am not a fan of that at all, because why do we do statistics? With statistics, we can have a random sample and draw inferences for the population. With a Local Average...
Treatment Effect you are studying a group of people, for whom the results cannot be extrapolated to a population of interest.

You mentioned a few times that it is important to take heterogeneity into account when doing economic modeling. Could you give an example in which not modeling heterogeneity—or modeling it “the wrong way”—could lead to detrimental (policy) conclusions?

Back in the ’80s, I did some work on the effect of taxes on labor supply. I modeled heterogeneity in a labor supply model, and it turned out that especially in these kinds of models with nonlinear prices (which are a consequence of nonlinear taxation) it is very important to take heterogeneity into account. I found that the effect of taxes on labor supply is much larger than what was found without incorporating heterogeneity. It used to be thought that for men, there was no effect of nonlinear taxes on labor supply at all. Now we understand that the effect is sizable. And policy reacts to those results: we used to have fourteen tax brackets, now we have three. Blomquist and Newey (2002) modeled this for Sweden, and found similar results.

Can you give another example in which you could directly influence governmental or business policy using insights from your work as a researcher?

An early paper of mine written in the ’70s explored the issues involved when individuals consider buying more efficient appliances, which use less electricity. There is the trade-off that efficient appliances cost more, but then are less expensive in usage. I discovered that there is quite some heterogeneity—in that especially among poorer people, individuals tend to pay too much attention to the initial cost and not to the cost of the electricity usage. Because they are financially constrained, they acted as if they had very high discount rates. I later used these insights when I worked with a mobile telephone company in the ’80s and advised them to offer a contract with a low initial price of the mobile phone that makes it possible to pay off the phone over a period of two years. And the insight this research provided is not only used in the mobile phone industry: if you buy an alarm system in the US, it is free when you sign a two-year contract. The same applies with a satellite dish in England. These examples show both the effect of econometrics on real life and how important heterogeneity is.

The Netherlands is unique in that it has a bachelors/masters program in econometrics separate from the economics bachelors/masters. However, this distinction between economics and econometrics currently disappears in the PhD phase. Do you think that this would be a good idea (for the quality of econometric research in the Netherlands) to have specialized courses for econometricians in the PhD phase as well?

I’d have to say ‘no’, since most econometricians will end up doing a mixture of applied economics and econometrics, and the methodology is much more useful when it has applications. If we train econometricians just to do statistics and math, it is easy to lose sight of the usefulness of new methods in applied work. So at MIT, in the first two years of their studies students take courses in both economics and econometrics—and I think they are good because of that.

In the Netherlands, I think there is something that should be reinstated in the graduate economics programs. I once taught some lectures in NAKE courses, which students from all over the Netherlands attended. Such specialized courses with lecturers from all over the world are truly valuable. However, the Netherlands is obviously doing really well, since it beats many of the larger European countries in terms of the number of excellent econometricians.

Notes


In search of the unexpected
**Bengt Holmström** is the Paul A. Samuelson professor of Economics at MIT in Cambridge, Massachusetts and holds a joint appointment with MIT’s Sloan School of Management. In September 2011, he gave the Tinbergen Institute Finance Lectures on liquidity and financial crises. He is currently president of the Econometric Society. Besides his academic activities, Holmström is also on the board of Nokia.

Now that the TI Finance Lectures 2011 have taken place, could you please share your impressions about the atmosphere and the students at Tinbergen Institute?

One of the reasons I had for coming here had to do with wanting to know what the students are like at Tinbergen Institute, and what their interests are. This visit also allowed me to meet some of the faculty, including Enrico Perotti, whom I know very well. It’s been nice to see—for the first time—where his intellectual home is, and it’s been a pleasure to communicate with the students, who seem happy and enthusiastic about what they are doing. Overall, a great experience.

Could you summarize in a few main messages what you wanted to communicate during the lectures?

I spoke about approaches to analyzing liquidity provision. Although I had initially planned to go through a canon of models, I eventually decided to focus on my own work, because I thought it would be of interest for the students not just to learn how the models work, but also to hear why we approached the questions the way we did.

In my work with Jean Tirole, the main messages relate to the demand for and supply of insurance. More specifically, how do firms meet their need to arrange future funding in advance through credit lines, bonds and related instruments, and what are the constraints placed on the suppliers of such insurance? To be credible, all insurance contracts must be backed up by income from productive assets. In a world in which all income cannot be pledged, as we assume, there may be a shortage of collateral. Collateral shortages have been one of the hallmarks of the current financial crisis. Our analysis of collateral shortages suggests that the government has a key role to play in helping markets to stay sufficiently liquid and avoid crises. Private markets will not be able to do an adequate job, because they lack the ability to tax current and future generations. Central bank interventions of the kind we have seen, where the taxpayer foots part of the bill, can theoretically be justified along these lines—although our analysis does not include the costs of moral hazard.
During the lectures I also discussed the work I am currently doing with Gary Gorton and Tri Vi Dang. This work emphasizes the role of trust in money markets. These markets are designed in a way that minimizes the amount of information that participants need to acquire. This is why debt contracts are used. The virtue of debt is that— properly collateralized—it requires less information than other securities, including equity. Contrary to the prevailing wisdom, lack of transparency is not an anomaly in money markets—rather the opposite. I know that this is a radical thought, but our argument is more plausible than the common claims that only a handful of outsiders saw what really was taking place on Wall Street and in the economy. There must be a reason why so little information was acquired, and the reason we are suggesting is that instruments in money markets are designed exactly with that purpose in mind. Of course, someone has to make sure the instruments are credible; issuers, raters and the government all have to share that responsibility.

“What would you consider to be your most influential work? How do you perceive your contribution after so many years of research?

I am best known for my work on moral hazard, and I am pleased with the scientific flow of this work. My early papers focused on uncovering the logic of the basic moral hazard models: how those models “think”. I found that they are fundamentally about the optimal use of performance information, as if performance is a signal of what the agent does. This view is surprising, because the model assumes that the principal knows what the agent does, once a contract has been signed. The information perspective led to precise prescriptions for the type of information that is of value in a contract, including the value of relative performance evaluation. The characterization of the optimal contract is highly intuitive, but also reveals that the early models overemphasized the role of detailed information. This led to me to wonder, with Paul Milgrom, why linear contracts are so frequently used. They fit poorly with the basic agency model, because linear contracts aggregate information. Our analysis of linear contracts led us to discover the importance of multi-tasking and the role of alternative instruments. This completely changed our perspective on agency models. It made us see, for instance, the virtue of low-powered incentives and bureaucracy, which are so prevalent in firms. The thought that these features are anything else than liabilities

“Contrary to the prevailing wisdom, lack of transparency is not an anomaly in money markets—rather the opposite.”
within firms is a fairly radical (but I think fundamentally correct) idea that can be supported by casual observation. Incentive provision within firms is much more about indirect instruments such as job design than about direct instruments.

What often intrigues me most are insights that run against the prevailing wisdom. This is true of my current work on ignorance and liquidity, but it has been present in most of what I’ve done. My work with Milton Harris on downward wage rigidity showed that the widely held belief that worker commitment is required for wage insurance is false. Even if workers can walk away whenever their productivity proves to be high, downside protection can be offered by having the worker pay for the insurance in advance by taking a lower pay early in their career. In the field of dynamic agency, it was thought that the agent’s concern for reputation will alleviate incentive problems. Actually, “career concerns” are often the source of incentive problems rather than the solution. For instance, ‘short-termism’ by firms is probably driven by the attempt to influence perceptions about value in capital markets. Political pandering has similar roots. Transparency in these models may worsen these problems.

Turning things upside down — in a revealing and constructive way— gives me quite a bit of pleasure. The best lectures are those where the listener walks in with the conviction that A is true, and after the lecture is convinced not only that A is not true, but that it is obviously so.

There are plenty of different explanations for the global financial crisis, including greed, wrong actions or inaction by the US and other governments. What is your view of the global crisis? Greed alone cannot be the explanation. People have been greedy for as long as we have studied human behavior. The question is which additional ingredient made 70 years of relative financial calm turn into calamity. A popular view seems to be that the crisis was caused by opaque and complex instruments. My work with Tri Vi Dang and Gary Gorton questions this view. Collective trust and ignorance are at the heart of liquidity provision in money markets.

The problem is that liquidity may be oversupplied, making the system susceptible to a loss of confidence and panic. Globalization created trade imbalances that led to unprecedented demands for safe investment instruments that would allow excess savings to be parked at low or no risk. The shadow banking system in the US was ideally positioned to satisfy the demand. Securitization could deliver AAA-rated securities out of relatively low-grade collateral—and the system was highly scalable, thanks to the large housing market and the reuse of home equity.

The general idea of securitization was prevalent, as most of Wall Street was following this course. The problem was not qualitative. It was quantitative. The scale got too big and the underlying collateral proved insufficient and susceptible to correlated risks. There is a deep underlying paradox with regard to liquidity. Making the system safer increases the risk of large collapses, as investors become less wary of risks. Europe is facing the same problem right now. Excess trust in the euro led to excess issuance of debt. Regulation is needed, but it’s not obvious to me what structure it should have. I like stress testing, and prudence suggests that bank capital should be increased. But what is enough? Transparency is not the obvious answer people seem to think it is, either.

As a Finnish citizen you must be concerned about the future of the euro. The current crisis has raised a lot of questions and debates, but somehow the whole situation seems to be a longer term, structural problem. Where do you see the Euro zone, say, within 20 years? Will we have a European government deciding on fiscal policy? Certainly there is a significant probability that things will end up badly for the euro: for the first time in its brief history the Euro zone might become fragmented. Like the rapid expansion of shadow banking in the US, the euro is a historical experiment. There are many problems with the euro. I
don’t think that fiscal coordination is necessarily the biggest one. I would focus initially on redesigning the banking system. European banks fall under separate jurisdictions, but ‘life support’ for the banking system is provided by a central agency, the ECB. The ECB is responsible for something that it cannot really control. Detaching responsibility from authority is certainly a bad principle. I would consider giving the ECB jurisdiction over all the banks in the Euro zone. Europe could adopt something similar to the US system. If a Californian bank goes bankrupt or comes close to filing for bankruptcy, it is handled by the FDIC (the Federal Deposit Insurance Corporation), not by the state of California. Another key element of the US system is that the FED never buys state bonds the way the ECB is buying Greek, Spanish and Italian bonds. There is no bailout. As a result, California and other states have adopted balanced budget amendments to be able to raise funds more cheaply. They have done so voluntarily, without any federally imposed requirements. This may be the long-term structure 20 years from now.

Do you think that all of the knowledge and insights we have gotten from financial crises can help to prevent future crises?

There will always be the potential for crises. Calls for “never again” probably raise the likelihood and size of the next crisis. People will be more trusting, which sows the seeds for another bout of excess liquidity. Not perhaps soon, but eventually. It may well be good for the system if people were slightly wary of crises. Awareness of the possibility of a crisis will naturally reduce liquidity. But we have miles to go in trying to understand how to regulate the amount of liquidity so that there’s not too much or too little of it. And investors may seize on odd assets, as they did during the ‘tulipmania’ that took place here in the Netherlands in the 1600s. Bubbles like these are a response to the demand for liquidity. There’s disagreement on what the government should do about bubbles. In the end, liquidity is ephemeral, because it’s a belief structure, partly detached from fundamentals.

Theoretical models usually rely on quite restrictive assumptions. However, empirical work tends to prove the reality to be different. Perhaps you could identify some of the critical assumptions in contract theory that you find of most concern? How relevant do you think unrealistic assumptions are for the practical applicability of the models? All models are unrealistic. The art of...
modeling is about figuring out what can be left out without losing relevance, not what can be fit in and still be solvable. This is a lesson each of us has to learn as we progress from being students to skilled modelers. None of the models I discussed in the lectures are realistic by any stretch of the imagination. The right question is whether the models can deliver some important insights—and to do that effectively, the models have to drop everything that isn’t relevant.

So how relevant is contract theory, then? Throughout my career I’ve been involved with business practice in some way or another—most of the time as a board member. One of the premises underlying contract theory is that parties strive to maximize the total pie before dividing it up in some type of bargaining process. My experience with negotiations suggests that this logic is foreign to most businessmen. They’re looking at things from their own angle much more than our theoretical constructs suggest. This is one issue that has given me some pause. It is also evident that people are motivated in much richer ways than our theories currently allow. Digging deeper into the multitude of motivations behind human behavior and what this implies for the design of incentives should be a high research priority.

Do you perhaps have some advice for the graduate students here at Tinbergen Institute?

The best advice I can give has to do with the way one teaches about theories and models. It is important to provide context for theories. Why did we study this kind of model at that particular time? How does a particular model fit into the long journey of discovery? For me, it is very difficult to make sense of models in isolation. I think this is something that science shares with art and culture. Another bit of advice I can offer is that it’s important to have your heart in your research. Economics is serious business that matters for the world and the welfare of humanity. Finally, I might add that models are conversation partners—and an intelligent model is a very interesting conversation partner. Learn to listen to what the model says and wants. Don’t silence it with assumptions when it doesn’t go where you want it to go. This is similar to the empiricist’s advice not to torture the data. Empirical research and theoretical work are more similar than we think.

Notes

1) This interview reflects his personal views, and not necessarily those of his employers.
Health differs by socioeconomic status. The socially and economically advantaged enjoy better health—irrespective of whether it is measured by morbidity, disability or mortality. In the Netherlands, for example, men and women with a university degree can expect to live six to seven years longer than those with a primary education only (see Figure 1). The difference in the expected number of life years in good health is even greater: between sixteen and nineteen years.

Understanding the causes and consequences of such strong socioeconomic disparities in health is the core of the research agenda of the health economics group at the Erasmus School of Economics (ESE). In the past, much of our work has been concerned with the measurement of health inequalities. We have proposed summary indices and identified their normative implications. Our colleague Tom van Ourti is testing whether there is popular support for these norms and, with Guido Erreygers of Antwerp University, is re-considering the suitability of these measures for application to health data that are typically not ratio-scaled. Good measurement of health inequality requires good measurement of health. Toward this end, we have designed and tested methodologies for correcting biases in health data reported in surveys.

From measurement to explanation
With evidence on the existence and persistence of socioeconomic inequalities in health firmly established, the focus of the health economics group at ESE is turning towards achieving a better understanding of causality and the mechanisms underlying health disparities. Despite the accumulation of evidence across a range of disciplines that clearly documents this phenomenon, remarkably little is known about its causes. The public health field tends to emphasize causality running from socioeconomic status to health, through material deprivation and psychosocial stress, while economists place greater weight on ill-health interfering with the acquisition of human capital and the generation of income.

Our research agenda is based on three premises. First, a life-cycle perspective is crucial to understanding the socioeconomic gradient in health. Second, it is likely that the relationship is bidirectional, and careful design is essential in identifying causality. Third, the mechanisms will only be understood through the construction and testing of theories.

The gradient varies across the life cycle
A striking observation is that socioeconomic differences in health tend to widen from early adulthood until late middle age.
“It seems unlikely that socioeconomic differences in health are wholly, perhaps even mainly, attributable to the **impact of health on income through labor market outcomes.**”

before narrowing in old age. This is apparent for the Netherlands in Figure 2, where health profiles are distinguished by income quartile. This pattern is remarkably similar to that observed for the US. Despite their starkly different health and welfare systems, in both countries mean self-reported health declines much more rapidly until middle age for low-income individuals.

But this age pattern in health disparities by income disappears, for the most part, after controlling for employment status. Health differences between high- and low-income individuals who are in work are limited and increase only slightly with age, while mean health declines rapidly with age for non-working individuals, irrespective of their income. The health-work nexus appears central to understanding both the level and the age profile of health disparities by income.

In contrast to the US, income-related health inequality is not greater among the younger cohorts of the Dutch and other European population than among the older cohorts. The reasons for this continental difference, which have not yet been explored, may help pinpoint the structural characteristics of society, the economy and health systems that are responsible for sustaining health inequalities.

**Uncovering causality**

In recent research together with Pilar Garcia Gomez and Hans Van Kippersluis, we estimated the magnitude of causal effects of ill-health on employment and income in the Netherlands using acute, unscheduled hospitalizations as a source of exogenous variation in health. On average, an acute hospital admission lowers the employment probability by seven percentage points and results in a 5% loss of personal income (30% for those entering disability insurance) two years after the shock. A more interesting finding is that there is no subsequent recovery of either employment or income. Further, there are sizeable negative spillover effects on the earnings of the spouse, with household income falling by 50% more than that of the disabled person.

The results also have implications for the magnitudes of both income- and health inequality. Lower income individuals are more likely both to suffer a health shock and subsequently to leave employment as a result. They also experience a larger relative loss of income and so income inequality is raised. In the Netherlands, where disability benefits are strongly related to previous earnings, the income loss arising from ill-health is constrained. In the UK, for example, where disability benefits are paid at a flat rate, the fall in income following the onset of disability is far greater. This policy difference presumably helps explain why the Netherlands has one of the weakest correlations between health and income in Europe, while the UK has one of the strongest.

Nevertheless, it seems unlikely that socioeconomic differences in health are wholly, perhaps even mainly, attributable to the impact of health on income through labor market outcomes. For example, it is more difficult to explain health inequalities among children in this way. Correlated unobservable characteristics, such as time preference, risk attitudes and genetics, make it difficult to identify the causal effect of socioeconomic status on health. Together with Hans van Kippersluis, we used the 1928 Dutch schooling reform, which raised compulsory schooling from six to seven years and led to many male pupils (but not females) entering high school, to estimate the impact of education on mortality in old age. At the beginning of the period of analysis, the first cohort that was subjected to the 1928 reform was already 81 years old.

Conditional on survival to this age, an extra year of schooling is estimated to reduce the probability that a man will die before reaching 89 by almost three percentage points relative to a baseline probability of 50 percent. Of course, not everyone survives to 81. This analysis does not capture any impact of education on mortality at younger ages. It is nonetheless striking that socioeconomic determinants of health maintain their potency even in old age.

**Towards an economic theory of health inequalities**

While representing a step forward from the measurement of associations, causal effect analysis can only take us so far in understanding health inequalities. The mechanisms generating the effects largely remain hidden inside a ‘black box’. Conceptual understanding of the reasons why health varies along specific dimensions of socioeconomic status requires the elaboration and testing of theories of health behavior. In economics, the relevant workhorse remains the health capital model developed by Michael Grossman some forty years ago. Titus Galama of RAND and our colleague Hans van Kippersluis recently extended this model with the aim of providing a richer understanding of how education, wages...
and wealth impact on health behavior through occupational choices and lifestyles. The ESE health economics group is currently working with RAND on a US National Institute of Aging project that, among other objectives, aims to test the predictions of this model.

Looking forward

A recent initiative sponsored by Harvard University identified the most pressing research question in the social sciences as follows: ‘How can we induce people to look after their health?’ This prioritization is persuasive in the context of growing obesity, ageing populations and ever-greater shares of GDP absorbed by health care. But the continued existence of substantial socioeconomic disparities in health alongside increasingly effective medical treatments suggests a more refined question. How can we induce individuals of low socioeconomic status to better look after their health? We suspect that answers to this question will require a departure from the utility-maximization-under-certainty model of human capital that Galama and Van Kippersluis have proposed. In any case, it is likely that the search for answers to these and related questions will keep our group busy for some time to come.

Notes


11) See note 7.


Taco C.R. van Someren, Managing Partner of Ynnovate
West Lafayette, Indiana

Taco C.R. van Someren graduated summa cum laude in 1991 with a thesis on non-technical innovations and their consequences for economic theory.

When I was young I had four dreams with regard to work: writing a PhD, becoming a professor, being a business consultant and having my own company. During my study of business economics at Erasmus University, before TI existed, I developed the idea to write a PhD thesis, but universities had no budget. No problem, I decided to get a job in the private sector and to experience what it meant to earn money—not a bad decision for a freshly born business economist. For several years I worked in various management positions for a consumer goods multinational. These experiences taught me about the importance of non-technical innovations (such as new organizational forms and international alliance management). These non-technical innovations intrigued me, and I prepared a one-page PhD proposal and applied for an appointment as a PhD student. My ideas appealed to an internationally renowned professor at the University of Amsterdam, H.W. de Jong, who had his own hands-on business experience. We agreed very quickly on my appointment.

Colleagues at my company called me crazy to give up excellent career perspectives to study dull papers in an ivory tower—and they were probably right! But I could not resist the hunger for knowledge, and had seemingly unstoppable curiosity to explore new fields and to create my own economic theory. I became one of the first PhD students at the newly established Tinbergen Institute. After four years, the bottom line result was a summa cum laude PhD graduation in the field of strategic innovations and new business models. My plan to establish my own research institute to work out the results was blocked, however, due to failing budgets. But my new insights gave me the confidence to apply for a job as a consultant. One of the Big Four multinationals in accounting and consulting offered me a job. I worked for this company for 12 years and built a career as a director in Germany and a partner in The Netherlands. During this period, I was more of an entrepreneur than a consultant. In Germany and the Netherlands I have on three occasions set up new businesses in the field of sustainable development and business innovation. Every time, the central ideas developed during my PhD research provided the foundation for these new ventures. In the mid-1990s, when working in Germany, even the Chinese central government discovered my innovative approach to sustainable development applied at companies like BMW. As a result, the Chinese government invited me to give a lecture, and I met a girl who worked in this field as a personal advisor to the Ministers. And … we got married. But I did not like the short-sightedness of many bosses and the strange corporate strategic decisions at the accounting firm, which led me to make plans to do something else. In conformity with both Chinese and my own European family’s tradition, we started our own consultant company, Ynnovate. Meanwhile, the European Commission asked me to become a Seconded Innovation Expert for programs aimed at establishing new industries, eco-innovation and international cooperation. For marketing purposes, we write a lot of articles and books — in which we still use the theory developed during my PhD research, and increasingly combine it with business experiences in all kinds of industries and countries. About five years ago, a Chinese university invited me to become a Visiting Professor in Beijing, and two years after that I also accepted a Chair at a private Dutch university (but I gave up the latter position due to the bureaucracy). Are there any dreams left? Sure. We are expanding our business into trading and M&A, and are aiming to share our experiences with the academic world. My experiences until now have taught me that as far as trading is concerned, no study or PhD is necessary—only guts and just getting to work. But all of the other activities in my life have been strongly and positively influenced by the great time I had during my PhD research at TI. It was there that my journey of realizing my dreams started.
Errors in judicial decisions: Experimental results

Popular television series such as CSI illustrate the progress of modern forensic science. Forensic evidence is essentially probabilistic, and in the more complicated criminal cases the judge (or the jury) has the difficult task of combining incriminating and exonerating evidence of different strength in a Bayesian way. However, little or no attention is given to instruction in probability theory and statistics in the typical law school curriculum, and many judges have great difficulty in understanding the basic notions of the normative model of decision making under uncertainty and its building blocks (such as likelihood ratios and types of error (false positive and false negative)). This leads to a certain level of frustration among judges and forensic experts—and opens the door, more importantly, to judicial errors.

The current paper is the first in a series of studies that attempts to establish how and when the interpretation of statistical evidence by judges leads to inadequate judicial decision-making in criminal cases. This provides a sound basis for constructing both effective methods for reporting forensic evidence to judges, and effective support tools for judges. An extensive literature shows that people deviate from rationality when dealing with probability. It seems therefore unavoidable that in difficult criminal cases, miscarriages of justice occur—but this is hard to study in the field. The project therefore uses a laboratory experiment to examine the relationship between evidence of which the diagnostic value is known, subjective probability of guilt and errors in verdicts for abstract criminal cases. There are two situations under examination: (1) all evidence is given and (2) evidence can be acquired. In both situations, verdicts are inaccurate. For given evidence, errors are biased toward the most serious type, unfounded conviction. In the situation where evidence can be acquired, participants do not acquire enough evidence, which results in many mistakes, evenly divided over unfounded convictions and unfounded acquittals.

Authors

Why do convertible issuers simultaneously repurchase stock?

Over the last few years, a substantial percentage of US convertible debt issuers have announced a stock repurchase simultaneously with their convertible offering. These combinations are intriguing. Why would a firm issue an equity-linked security, on the one hand, and then use part of the proceeds to repurchase equity, on the other?

This paper argues that hedge funds provide an explanation for this phenomenon. Convertible arbitrage hedge funds purchase around three-quarters of recent convertible offerings. These hedge funds combine their long position in convertibles with short positions in the underlying common stock of the issuer—and this short selling could create downward pressure on the stock price of the issuer. Convertible debt issuers routinely repurchase their stock in order to facilitate arbitrage-related short selling. In a first step, the issuer sells the convertible to an arbitrageur via an underwriter. Subsequently, the arbitrageur borrows issuer shares and sells them to the underwriter at a pre-agreed price. The underwriter then sells the shares back to the issuing firm, thereby completing the stock repurchase. The arbitrageur benefits from this transaction because he does not have to short stock at an uncertain price. The issuer benefits from the combination because, in return for acting as counterparty in the short-selling transaction of the arbitrageur, he can charge a higher price for the convertible offering. Moreover, by privately crossing the arbitrageur’s trades, the issuer avoids concentrated open-market short sales and their negative stock price effect. For this reason, investment bankers typically refer to the combination of a convertible issue and a stock repurchase as a “Happy Meal.” The results of this study indicate that firms, instead of remaining passive or trying to impede short selling, are able to adjust their corporate finance actions to cater to the specific needs of arbitrageurs.

Authors
Management practices: Are not ‘for-profits’ different?

How do management practices affect an organization’s performance? A growing body of evidence suggests that there are good and bad management practices, and that studying differences in their use helps in understanding differences in organizational performance. In the literature thus far, research has focused on for-profit organizations. Less attention has been paid to management practices in the not-for-profit sector and to how they compare with those in the for-profit sector—both in terms of their quality and their importance in terms of driving performance. This is the focus of the present paper.

Using unique survey data of around 160 firms in the nursing home and fostering/adoption agency industries in the UK, the paper compares the use of management practices in for-profit and not-for-profit organizations, and how this correlates with organizational performance as measured by independent public regulators of these industries.

The results confirm previous findings for for-profit firms: better management practices (i.e. higher management practice scores) are associated with better outcomes. Interesting differences were also found, however, between ‘for-profits’ and ‘not-for-profits’. Consistent with the paper’s theoretical predictions, ‘not-for-profits’ score lower than ‘for-profits’ on the overall management practices score. Examination of the relationship between managerial practices and the quality of output reveals that these poorer managerial practices do not map directly onto lower quality of output in the not-for-profit sector, in contrast with the findings for the for-profit sector. In fact, for some indicators, a negative relationship was found between performance and ‘good’ management practices. Hence, management practices that work for ‘for-profits’ may be less effective or even counterproductive in driving performance in ‘not-for-profits’.

From first-release to ex-post fiscal data: Exploring the sources of revision errors in the EU

Are the real-time fiscal figures produced by the Ministry of Finance reliable information about the final fiscal position of a country? Are there institutional arrangements that could improve the degree to which governments stick to their fiscal targets? These questions are of fundamental importance for the credibility of the fiscal consolidation process that European countries are currently undergoing. However, in order to address these issues, we first need to understand the nature of the fiscal budget process.

The fiscal budget process consists of three stages. The first is the planning stage, the second is the implementation stage, which leads to the real-time “first-release” outcomes published by the Ministry of Finance. Finally, the ex-post control stage produces the final outcomes. These outcomes are published by the national statistics office after having been scrutinized by Eurostat, and measure the budgetary situation of a given year most accurately.

This paper analyzes the credibility of the entire budget process from planning to implementation and ex-post control, and underscores the relevance of improving fiscal institutions and ownership of the EU fiscal rules at the national level for the improvement of real-time fiscal figures.

The paper’s findings indicate that, while fiscal plans are on average too optimistic relative to the first-release outcomes, first-release figures are overly optimistic relative to the ex-post figures. Ministers of Finance control the production of first-release figures and may have an incentive to be over-optimistic at this stage.

An improvement in the quality of institutions, whether measured by the tightness of national fiscal rules, the medium-term budgetary framework, or the degree of budgetary transparency, is found to reduce the degree of optimism at the first-release stage, which makes first-release figures more informative about the eventual outcomes. For example, an improvement in the fiscal rules index from its minimum to its maximum in-sample value reduces the average degree of optimism in the first-release.
relative to the ex-post outcome for the balance by more than one percent of GDP. These results thus support last year’s proposal by the European Commission to specify minimum requirements for national budgetary frameworks.

By Roel Beetsma (UvA); Benjamin Bluhm (Goethe University Frankfurt); Massimo Giuliodori (UvA); Peter Wiertz (De Nederlandsche Bank) TI11-080/2

On the effects of private information on volatility

Prices and volatility of financial assets are driven by the arrival of new information. Information can be classified as ‘public’ or ‘private’. Public information has to do with news that becomes available to all market participants at the same point in time—for example, in the form of announcements of important macroeconomic variables. Private information refers to news that is distributed asymmetrically amongst market participants, and could be related to advance knowledge of firm-related news such as earnings announcements. Previous literature has provided extensive evidence that various asset prices (including stocks, bonds, and currencies) respond to both public and private information. Similarly, the effects of public information on volatility have been well documented. The impact of private information on volatility in financial markets has not been studied before, however. This paper attempts to fill this gap. The paper develops a comprehensive framework based on the Spline GARCH model of Engel and Rangel (2008) to investigate this link, while controlling for the effects of public and private information on prices and the effects of public information on volatility.

Using a high-frequency dataset of transaction prices for the 30-year US Treasury bond futures, the study finds that proxies for private information, such as order flow (defined as the difference between the volume in buyer-initiated transactions and the volume in seller-initiated transactions) and bid-ask spread, are statistically and economically significant explanatory variables for volatility. Specifically, a larger degree of information asymmetry increases the uncertainty surrounding Treasury futures prices. Moreover, an interaction between public and private information effects on volatility is documented, with the impact of order flow on volatility depending positively on the dispersion of analysts’ expectations about macroeconomic announcements. Finally, the study finds that the effect of private information on volatility is larger during contractions than during expansions.

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Intention-based reciprocity and the hidden costs of control

There is a widespread belief in human resource management and the popular business press that more tightly controlling workers can damage the latter’s performance by eroding motivation. This view is consistent with numerous empirical studies from psychology and organizational economics. In contrast to the existing theoretical wisdom, the present paper shows that intention-based reciprocity can explain why exerting more control can cause motivational crowding-out.

The key assumption of the paper is that individuals differ in their propensity for reciprocity while preferences are private information. Some individuals are selfish and thus only care for their own payoffs, whereas others are reciprocal in the sense that they want to be kind to those who they perceive to be kind to them. In this setting, exerting less control is regarded as being kind to selfish workers, as it allows them to exert little effort. For reciprocal workers this is more complicated. Suppose that these workers reciprocate not being controlled, not controlling workers can still be kind, on average, if many workers are selfish. Reciprocal workers know that bosses do not know whether a particular worker is reciprocal. In consequence, reciprocal workers might perceive not being controlled as kind, and thus reciprocate with high effort.

Intention-based reciprocity as an explanation for motivational crowding-out complements standard theoretical arguments that are entirely based on signalling. In particular, only the present analysis can explain hidden costs of control in situations in which workers are well informed about the job environment. This demonstrates that intention-based reciprocity can be fruitfully applied to recent topics in organizational economics that are difficult to understand with standard economic theory.

By Ferdinand von Siemens (UvA) TI11-115/1
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theses

The moral herd: Groups and the evolution of altruism and cooperation

Our species is born and bred to be helpful, as attested by our very apparent capacity for collective action. But we are also prepared to be selfish and even harm others under specific circumstances. This thesis examines the origins of the human taste for helping behavior, by looking precisely at these complexities. The first part of the thesis studies the co-evolution of group formation and the tendency to cooperate within those groups. This co-evolutionary process gives rise to cooperative equilibria in large groups, which makes it possible to explain the provision of public goods between unrelated individuals. The thesis then proceeds to explain why cooperation often discriminates against outgroups by studying discriminatory strategies in a prisoner’s dilemma game. The results reveal that helping behavior (inside the group) always comes with hostility towards outsiders. In other words, from an evolutionary perspective, the advantages of helping often come with the disadvantages of discrimination.

Finally, the thesis turns to examine the evolution of strategies in repeated games. Reciprocity has often been considered crucial for human cooperation, but it is usually studied using restricted strategy sets. Studying the full set, the thesis finds that every equilibrium can be upset by a succession of mutants. Levels of cooperation that arise from repetition are thus meager. However, this can be repaired with small changes to the population structure: a marginal change in the probability that alike strategies interact goes a long way in promoting reciprocal cooperation.

A common ground to all of the models proposed in this thesis is that they consider strategies that are not too simple. All of the specific features studied in this thesis have previously been observed in the lab. A satisfactory theory of human cooperation should explain the source of all these features of social preferences. It is likely that no single approach will be able to deliver the whole picture. It would, therefore, be good to devote more attention to explaining how existing evolutionary explanations relate to each other.

Note from the author: I had a real stroke of luck with the timing of my defense. Being the author of ‘thesis 500’ came with the privilege of having a nice round number on my book, a surprise visit to my defense from Ti director Bauke Visser, and a huge cake courtesy of the institute. Rumors are that the next cake will go to number 1000.

Essays on teams and the social side of consumption

When making consumption decisions, people are often motivated at least in part by social concerns. Having the right brand-name clothes or the latest gadget can be about far more than just the product itself, it can also affect people’s views and beliefs about each other. These views also play a role in the workplace, with many firms now placing employees together into teams. The challenge in this case is to promote high effort and cooperation when people are rewarded based on team performance rather than individual performance. The first part of this thesis looks at how social concerns can affect consumer behavior, the second part examines social concerns in team production. The first chapter considers a firm’s choice of advertising when consumers value social status. Here, advertising informs consumers about the existence of products, but also allows them to recognize products that others buy. The analysis shows that a firm may use broad, non-targeted advertising to encourage conspicuous consumption, by allowing wealthy consumers to signal through their purchases. The results may shed light on why firms sometimes advertise expensive goods to a broad public, even though most consumers cannot afford to buy them. The second chapter looks at a firm’s choice of incentives, and looks at issues of credibility in relational contracting. It considers a setting in which output is observable but non-verifiable—so a principal can promise agents a bonus but then renege on his promise. The results show that team incentives can then make the principal’s promise more credible by smoothing payments over time. Finally, the fourth chapter looks at sustaining cooperation in teams in the shadow of future lay-offs, where some team members are selfish, others are conditional cooperators, and where type is private information. The analysis suggests that the best way to sustain cooperation is often in a sorting equilibrium, where cooperative types are able to identify and then work with one another.


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