Neuroeconomics: A rational choice
An interview with Frans van Winden
State-space fever!
Corporate taxes in Europe
In this issue

Up close

Neuroeconomics: A rational choice
An interview with Frans van Winden
David Hollanders

In depth

State-space fever!
Siem Jan Koopman
Corporate taxes in Europe
Ruud de Mooij

Letters from Alumni
Wilko Bolt, De Nederlandsche Bank

In short

Papers in journals
Discussion papers
Thesis
References

References
Neuroeconomics? What is it?

Neuroeconomics is the application of neuroscientific methods and techniques to economic problems. That includes techniques such as brain scanning, but also the measurement of skin conductance. When people are aroused by emotions, their skin gets wet due to sweating and perspiration, which means that it better conducts electricity. This can be perfectly measured, and captures an idea of emotionality. This is the aspect of neuroeconomics that first caught my attention, somewhere around 2001.

How did you indeed become interested in neuroeconomics?

I conducted experiments with a modification of the ultimatum game, the power-to-take game. In this game, two people are both endowed with some fixed amount of money. The first mover can claim any percentage between zero and one hundred percent of the endowment of the other. This claim is called the take-rate. Subsequently, the other person can choose to destroy any
The first mover receives the claimed percentage of what is left intact. Results indicated that people destroyed more when the take-rate was higher. It is sub-game perfect for the second mover not to destroy anything, provided the take-rate is below 100%. Even more interesting: the higher the difference between the actual take-rate and the expected take-rate was, the more was destroyed. Expectations, which we solicited, turned out to matter. As this was a one-shot game, expectations about the take-rate should play no role after the observation of the actual take-rate, from an economist’s point of view. Expectations do, however, play a big role in emotions. We also asked participants about their emotions. People reported feeling anger, irritation and contempt. This role of emotions was confirmed by skin conductance, which provided a double check. Some people consider the latter to be a more solid measure, although self-reports have become more acceptable in economics—for example, in happiness studies. The advantage of a self-report is that you can elicit expectations and types of emotions. With skin conductance you can measure emotional arousal, but it’s not clear which emotions you’re measuring.

The advantage of a self-report is that you can elicit expectations and types of emotions. With skin conductance you can measure emotional arousal, but it’s not clear which emotions you’re measuring.

Here’s an analogy—not perfect, but interesting—using taxation. High taxation may lead to an emotional reaction of wanting to hurt the one levying the tax; this differs from the usual tax distortions. In the form of a diminished tax base it can generate a pure welfare loss that hurts both the taxpayer and the one levying the tax. We called this emotional hazard, and it may occur even in the presence of lump-sum taxation.

How did neuroeconomics start off? Are there founding fathers and specialized journals?

The first conferences were held at the end of the nineties. Pioneers in this field are John Dickhaut, Vernon Smith (Nobel prize winner for his work on experimental economics), Kevin McCabe and Colin Camerer. Games & Economic Behavior had
a special issue in 2005 (Volume 52), and a good overview paper appeared in the Journal of Economic Literature in 2005, by Colin Camerer, George Loewenstein and Drazen Prelec. Another name that comes to mind is Ernst Fehr.

Currently, there is a Journal of Neuroeconomics, linked to the Society for Neuroeconomics, which started in 2005, and another journal called NeuroPsychoEconomics. It is somewhat dangerous to start your own journal right away. It might be better to have papers first accepted in the top journals. Otherwise, referees will suggest that you send your paper to the specialized journal.

How does neuroeconomics differ from behavioural economics?

Some definitions might help here. Behavioural economics is the incorporation of robust psychological findings in economic theory. Already, I see two differences. First, neuroeconomics uses ‘harder’ techniques from biology, neurophysics and medicine. It goes beyond psychology. Second, there is a practical difference. Neuroscientists seem to be more open to economics. They especially appreciate the modelling approach that economists use so well. For example, in his book ‘Decisions, Uncertainty, and the Brain: The Science of Neuroeconomics’, the neuroscientist Paul Glimcher argues that a mathematically rigorous description of neural processes will have its roots in microeconomic theory. He also claims to have found a biological substratum in the brain corresponding with probability weighting and utility maximization.

Neuroeconomics is more of a joint endeavour of neuroscientists and economists, who actually take part in neuroresearch. There is a twist here: whereas economists have become more critical of their traditional expected-utility models, neuroscientists seem to appreciate them. Psychologists are more reserved about economics. Their reaction often is something like, “ah, they finally get it”. You don’t see many economists participating in psychological research. These are two differences, but if you want to see neuroeconomics as part of behavioural economics, it’s fine with me. In the end, the two disciplines are complementary.

What about added value? Does neuroeconomics solve old questions (anomalies) that were previously not answered satisfactorily, or does it address new questions?

Not everyone will agree, but yes, I think it adds value. First, what neuroeconomics proves (well, you may perhaps never fully prove)— what it strongly suggests, is the important role of emotions in decision-making. Although there has been some theoretical research on regret and disappointment, economists, in general, miss this connection completely. Emotional or affective responses take place in an older part of the brain, which is often called the limbic system. Cognition takes place in the neo-cortex, situated roughly at the top and forefront of our brain, which is recent, from an evolutionary point of view. Affect has to do with effortless, parallel decisions without introspection. These are thus analytically two separate systems that are strongly interconnected— although there are actually more connections from the old part of the brain to the neo-cortex than the other way around. So, for example, the fight-or-flight decision is taken in a split second in this older part of the brain. It’s a reaction without thinking; there’s no refined input from the neo-cortex. Thinking would take too much time. This is really the primacy of affect. Affect can hijack the brain, and determine your decision. Researchers are scrambling now to devise a model describing the interaction between affect and cognition. Although this is interesting and relevant, it won’t provide any definitive answers— for even if that interaction could be modelled satisfactorily, the affect-cognition dichotomy remains a simplification. Affect covers many different emotion systems, which may all need to be modelled separately.

The second thing neuroeconomics may add is improvement of predictions. Economists have regarded emotions mainly as noise. But models can be improved when one realizes that emotions matter. For example, people seem to discount hyperbolically, giving current consumption a disproportionately large weight. This is called the immediacy effect, and it can be detected in the brain. When people make intertemporal decisions situated in the future, brain imaging shows that the prefrontal cortex is active— that is, the part of the brain where planning takes place. However, deciding whether to do something now or later triggers another part of the brain, the striatum, which can be seen as a sort of a reward area. We used to think that short-term planning and long-term planning were similar, but apparently they are not. Of course, one should be careful not to read too much into these brain images, or— as some have already put it— to give in to ‘fMRI porn’. Careful statistical and theoretical analysis is required.

But such an approach may help to explain low voluntary pension savings, or addiction problems; you plan to stop, but you never actually do. Another example: some extensive and normal-form games
When people make intertemporal decisions situated in the future, brain imaging shows that the prefrontal cortex is active— that is, the part of the brain where planning takes place. However, deciding whether to do something now or later triggers another part of the brain, the striatum, which can be seen as a sort of a reward area. We used to think that short-term planning and long-term planning were similar, but apparently they are not.

may be logically equivalent, but may not be experienced as such by the brain. I think that economists should take emotions into account, just as they should do with cognitive limitations and peculiarities.

A big eye-opener for me as a political economist was to realize the huge gap between the very little information political agents typically have and the amount of information that economists presuppose agents to have. For example, politicians make decisions with very little information. There is not even a probability distribution over events. It is uncertainty, not risk. People have little information and are cognitively constrained, so even if we had the information, we could not process it. Most of us are far removed from that man with Asperger’s syndrome who could memorize decimals of the number pi for two and a half hours.

Economists often say that emotions and irrationality are ‘weeded out’ by learning in repeated games and/or market competition, or that emotions involve only minor decisions...

Well, with regard to the latter, I would say the exact opposite. The more important the decision, the bigger the role is that emotions seem to play. Work by the psychologist Ap Dijksterhuis suggests that when it comes down to big decisions such as buying a house, it is better not to reason too much. People that were distracted from consciously contemplating their decision turned out to make better decisions. This does not necessarily mean that information is unimportant: in fact, the idea is that information is unconsciously processed. Furthermore, as far as learning by doing is concerned, many situations are not replicated. We are always busy winning the last war, and new situations are often not similar to old ones.

It is true that institutions such as the market may enforce behaviour that seems to support the predictions by rational-choice models. But we have to be careful not to claim too much here. For example, Gode and Sunder simulated an auction with robots as sellers and buyers. The only restriction was that bidders could not bid above, and sellers could not sell below, their value—but otherwise the bidding was essentially random. The result? It turned out that the price pattern conformed to predictions of rational-agent models.

What is the main critique of mainstream economists on neuroeconomics?

The first critique is that neuro-economists are overselling. That is to some extent understandable, as a new field has to fight its way in, and showing up with all kinds of self-criticism would hardly help things along. Still, I think that it’s a valid critique. Actually, I think that overselling occurs in economics on a much larger scale. People are overselling their results, playing down other possible explanations. I think this is not a good development: it goes against Popper’s idea that science is about falsification of your own hypothesis. People respond that they will not get their article published otherwise. This seems to typify the current academic culture.

A more fundamental critique was given by Faruk Gul and Wolfgang Pesendorfer. They pleaded for Mindless economics. They state that economics is about the mapping of assumptions into predictions, and that the accuracy of the predictions is what counts. Process, or throughput as they call it, is not
important. This goes back to Friedman’s view on the methodology of economics. I don’t agree, because of the simple fact that we are not very good at predicting. That begs the question how models and predictions may be improved upon. Of course, one may also have an intrinsic interest in the process of decision-making.

How do you see the future of neuroeconomics?

The debate is still fierce, but I think that it’s here to stay, and will end up in the economist’s toolbox. It’s not going to replace other methods in economics, but will be complementary. I think we live in such a complex world that we should grasp any means that we have to understand it, be it theory, experiments, field data analysis, computer simulations or neuroscientific techniques. The possibilities are not yet exhausted. There is the possibility of hyperscanning, for example, where the brains of interacting people are scanned simultaneously. Or take TMS (Transcranial Magnetic Stimulation), a technique with which you can temporarily deactivate part of the brain of healthy people, providing a new window on establishing causality. Of course, I hope they stay healthy afterwards!

What research are you undertaking yourself?

My main research in this area at the moment concerns a project with the neuropsychologist Richard Ridderinkhof, supported by NWO, which focuses on social ties. The idea is that social interaction may induce people to attach a positive (or negative) weight to the welfare of those with whom they interact. A tie can be formalized as utility interdependence. Its development has little to do with strategic behaviour, but is mostly an autonomic affect-driven process, going on unconsciously. A social tie can be seen as stock variable in which people (largely unconsciously) invest through interaction. An implication is that preferences become endogenous, and that social cohesion may be a means to overcome externalities. If so, this has implications for the welfare consequences of labour market mobility, for instance, as mobility may break up affective social networks. We are interested in how social ties are represented in the brain. We have already some indirect experimental evidence, but this time we hope to find more direct biological support with a model-based fMRI approach.

References


Camerer, C., G. Loewenstein and D. Prelec (2005), Neuroeconomics: How neuroscience can inform economics, Journal of Economic Literature 63(1), 9-64.


Gul, F. and W. Pesendorfer (2005), The case for mindless economics, Princeton University mimeo.


Winden, F. van (2001), Emotional hazard exemplified by taxation-induces anger, KYKLOS, 54, 491-506.
State-space fever!

The group of time-series econometricians at Vrije Universiteit Amsterdam (VU University) consists of a relatively small but growing number of energetic researchers. The current research agenda for the coming years is broadly oriented and innovative within the field of time-series econometrics. Although we focus on the development of new methods and results, we also work on interesting applications. The projects on models for measuring credit risk, interest rate yields and crime rates, for example, may be relevant to policymakers in economics and finance. This article describes some recent contributions we have made in the field and our plans for future research work.

My case of state-space fever started in my early days as an undergraduate student in Amsterdam and later as a PhD student at the London School of Economics. Influenced and motivated by many in Amsterdam and London, but perhaps most particularly by Piet de Jong and Andrew Harvey, I investigated various aspects of linear Gaussian state-space methods, developed some new results and was able to get the findings published in good journals. In my later years at the LSE, at Tilburg University and in the early years at the VU, I worked with James Durbin on non-Gaussian and nonlinear state-space methods. This fuelled my interest in the use of simulation methods. Our results found an outlet in some good journals, and together we wrote a textbook on state-space methods.

A brief intro to Kalman filtering, smoothing and simulation

Many TI Magazine readers may be unfamiliar with state-space models and the Kalman filter, or may find it very specialised. A few words on state space may therefore prove useful. For a given observed time series $y_1, \ldots, y_T$, we assume that the time series is generated by a number of dynamic processes. These dynamic processes cannot be observed directly from the data, and are treated as unobserved components. The aim is to find an appropriate model specification for the series. When the dynamic processes are identified, the resulting model can be used to forecast time series or to analyse features that are relevant in economics and finance. For an accessible introduction to this approach of time-series analysis, see [1].

Siem Jan Koopman

Siem Jan Koopman is professor of econometrics at Vrije Universiteit Amsterdam. When he's not pursuing new developments in the field of time-series econometrics, he focuses his energy on programming, travelling, reading and walking.

State-space modelling provides a unified methodology for treating a wide range of economic time-series analyses.

State-space modelling provides a unified methodology for treating a wide range of economic time-series analyses. Some examples are given below. A key tool
for state-space time-series analysis is the Kalman filter. For a given time-series model and a set of observations, the Kalman filter produces one-step-ahead predictions and their variances. In other words, at a certain point in time \( t \), the filter predicts the next observation \( y_{t+1} \) on the basis of past observations: that is, \( y_1, \ldots, y_t \). The unobserved components can also be predicted by the Kalman filter. A smoothing algorithm can be used to estimate unobserved components on the basis of all observations \( y_1, \ldots, y_T \).

Kalman filtering and smoothing methods apply when time-series models are linear, and the resulting estimates have optimal properties when the model is subject to Gaussian errors. In economics and finance, however, many theories and phenomena require non-linear and/or non-Gaussian relations and dynamics. Methods that account for such features are usually based on simulation methods (importance sampling, MCMC, Gibbs sampling, particle filtering).

The application of simulation methods in state-space requires devices that exploit the time-series structure in an effective manner. Recent work with Borus Jungbacker (NWO PhD student) has led to a simulation device for a wider class of state-space models (see [2]). In projects with Drew Creal and Charles Bos (both VU), we explore simulation methods further and develop new devices.

**Periodic and seasonal effects in time series**

Decomposition of a time series into trend, seasonal and irregular is one of the first notions in the statistical literature on time-series analysis. With the possible addition of other dynamics in a time-series model, this decomposition can form the basis of seasonal adjustment methods (removing seasonal effects from a time series). A notorious problem in seasonal adjustment is the occurrence in time series of outliers and breaks, which greatly impact seasonal adjustment procedures. John Aston (Academica Sinica, Taiwan) and I developed an unobserved component time-series model in which the components are generated by processes based on heavy-tailed distributions (t-distribution, mixture of normal densities). The developments lead to robust parameter estimation and robust extraction of the seasonal components (see [3]).

Seasonal time series with dynamic properties that change with the season are referred to as periodic time series. For example, the dynamics in employment time series may be different in summer and winter. Marius Ooms (MO), Irma Hindrayanto (TI PhD student) and I developed periodic state-space methods for estimation, decomposition, diagnostic checking and forecasting. On the basis of a new class of such models, we investigated periodic cyclical behaviour in US unemployment. Collaboration with MO and Angeles Carnero (University of Alicante) led to the development of an extended periodic model for daily electricity prices and volatility for daily prices obtained from four European electricity markets. We emphasized the importance of periodic effects in the modelling of electricity price series (see [4]). An external project initiated by Electricité de France (EDF) focuses on the modelling and forecasting of hourly electricity loads. A joint project with MO and Virginie Dordonnat (EDF PhD student) resulted in the development of a multivariate time-series model that incorporates hourly, weekly, monthly and yearly periodic components.

**Credit risk and default analyses**

The VU time-series group have joined forces with André Lucas (AL) and other members of the VU Finance group to develop quantitative methods for credit risk. The main focus is on the analysis, modelling and forecasting of rating transitions. Credit ratings, which provide a simple qualitative classification of the solidity, solvency and prospects of a debt issuer, play a prominent role in the credit industry. The importance of these ratings has increased significantly with the introduction of the new regulatory framework of Basel II. The framework stipulates that ratings can be used to determine the size of a bank’s capital buffer. Also, given the global impact of the recent housing market and mortgage crises in the US, credit-risk research has become even more highly relevant—leading many quantitative analysts in the financial industry to focus on these and related problems worldwide. Another joint project [5] develops a model for rating transitions in continuous event-time. The model is subject to dynamic latent factors and can handle micro databases consisting of transitions to different rating classes (including defaults) for each firm over a long time span. The databases originate from credit-rating agencies (S&P and Moody’s). A related dynamic model based on counts of defaults in fixed periods, for different rating classes and for different groups of industries, was explored in [6]. A current project with Roman Krauessl and AL concerns the estimation of effects on rating transitions caused by macroeconomic, monetary and financial variables. This problem is tackled in a related project with AL and Bernd Schwaab (TI PhD student) incorporating hundreds of explanatory variables that are summarized by dynamic factor components. The joint work with the VU Finance group has also led to collaborations with Albert J. Menkveld and
Given the global impact of the recent housing-market and mortgage crises in the US, credit-risk research has become even more highly relevant.

**The dynamic Nelson-Siegel model for the yield curve**

Fitting and predicting a cross-sectional time series of interest rates for different maturities (the yield curve) has proven to be a challenging task. As is the case with many topics in empirical economic analysis, there is a trade-off between the goodness-of-fit that is obtained by employing statistical models without a reference to economic theory, and the lack-of-fit by economic models that do provide a basis for the underlying economic theory. Francis X. Diebold (University of Pennsylvania) and his co-workers have recently focused attention on the Nelson-Siegel model for the yield curve in a series of papers. Although their model provides some economic interpretation through the three latent factors that are present, it is not consistent with the no-arbitrage requirement for interest rates. The Nelson-Siegel model is a special case of the state-space where factors are dynamic latent processes. The resulting forecasting performance of this approach outstrips that of many other approaches. A joint project with Max Mallee (VU student) and Michel van der Wel (TI PhD student) extends this framework further by incorporating time-varying features in the loadings of the factors and in the volatility of the yield curve. By introducing some flexible functions of time, we establish that the underlying dynamics in the yield curve are not constant over time. This dramatically improves the fit of the Nelson-Siegel framework, and may also lead to more precise forecasts.

**Measuring business cycles**

Undertaking fiscal and monetary policies requires information about the state of the economy. Given the importance of this knowledge for the policymaker, a clear economic picture needs to be present at any given time. Assessment of the economic situation can be a challenging task, however, when one is confronted by noisy data sending mixed signals about the overall state of the economy. In order to avoid a subjective procedure in the economic analysis, one should be able to extract the relevant information through a statistically rigorous method capable of providing a clear signal regarding current economic developments. Collaborative work with João Azevedo (University of Stanford) and António Rua (Bank of Portugal) allowed us to establish an on-line methodology that is able to extract the business cycle from many time series with different frequencies (monthly, quarterly) and with the inclusion of leading, coincident, lagging and counter-cyclical indicators (see [8]). Collaborative work with Kai Ming Lee (PhD student) and Soon Yip Wong (TI PhD student) investigated the stability of dynamics in business cycle models, a subject that has recently received a great deal of attention in the macroeconomic literature, and is known as the great moderation. It emphasizes the empirical fact that dynamic properties in macroeconomic time series have changed since the beginning of the 1980s. We further explore symmetric business cycles, non-linear cyclical effects and business cycles extracted from model-based time-varying spectral functions.

**Dynamic modelling of crime rates**

A multidisciplinary team consisting of AL, MO, Kees van Montfort (VU), Victor van der Geest (Leiden) and myself investigated the criminal careers of juveniles from a Dutch Judicial Juvenile Institution over a period of 13 years (see [9]). The data were decomposed into a systematic component and an individual-specific component, of which the former reflects the general time-varying conditions including the criminological climate. Within a model-based analysis, we treat shared effects of each group with the same systematic conditions, strongly non-Gaussian features of the individual time series, unobserved common systematic conditions, changing recidivism probabilities in continuous time and missing observations. For this purpose we adopt a non-Gaussian multivariate state-space model that deals with all of these issues simultaneously. While taking account of significant heterogeneity determined by personality characteristics and initial crime records, we found a common dynamic factor in the recidivism behaviour of the juveniles. We interpreted the factor as the underlying criminological climate, and modelled it as a set of trend components. These trends vary among groups with different levels of consciousness. We found that the trend component for juveniles with...
We found that short-term unemployment brings crime levels down, whereas long-term unemployment seems to boost them. The state-space methodology was instrumental in being able to separate these effects.

Measuring risk in time series

Risk is at the centre of many policy decisions in companies, governments and other institutions. The risk of road fatalities concerns local governments in planning countermeasures, the risk and severity of counter-party default concerns bank risk managers on a daily basis, and the risk of infection has actuarial and epidemiological consequences. Collaborative work with a group of time series statisticians, including Jacques Commandeur, Frits Bijleveld (both at the Institute for Road Safety Research, the Netherlands) and Philip Gould (Monash University), has led to the development of a methodology for the time-series modelling of risk. The new model we developed has proven itself effective in empirical work (see [10]).

Conclusions

Our group has set itself the challenge of remaining a key player in state-space time-series research. Use of the word ‘challenge’ is appropriate here: the development of state-space methods occurs in a highly multidisciplinary environment. The state-space fever started in the 1950s and 1960s, when much of the research focused on sending rockets to the moon and other planets. This research had important bearings on the popularity of the Kalman filter during that time. In the 1980s and 1990s, the fever became positively contagious. Time-series statisticians (classical and Bayesian) made various important contributions. More recently, state-space methods have become more relevant for various topics in both economics (DSGE models, dynamic factor models) and finance (stochastic volatility, portfolio analysis, credit risk)—and also in such fields as biology and medicine. Moreover, research on climate change (where a wealth of time-series data is available) has started to adopt state-space methods. Given this new application and others, new methodological developments can be expected to fuel state-space fever for some time to come.

References

The Dutch government has predicted that it will raise 18.8 billion Euro through the corporate income tax in 2008. The share in the total tax bill is 8.5%; in GDP 3.2%. An economist equipped only with knowledge from the neo-classical textbook would be extremely surprised to see this. Economic theory, after all, suggests that a small open economy should not levy source taxes on capital. The reason is that such a tax violates the familiar Diamond and Mirrlees (1971) condition for production efficiency: it reduces aggregate output below its production possibility frontier. Also distributional concerns cannot justify source taxes on capital. The reason is that such a tax violates the familiar Diamond and Mirrlees (1971) condition for production efficiency: it reduces aggregate output below its production possibility frontier. Also distributional concerns cannot justify source taxes on capital, since their incidence is shifted onto less mobile factors of production such as labour. Directly taxing labour is always a more efficient means to raise a given amount of public revenue than indirectly taxing it via the corporate tax, because the direct tax avoids production distortions. The optimal tax on corporate capital is therefore zero in a small open economy like the Netherlands.

The withering of corporate taxes

The aforementioned economist may find confirmation in the international trends. We observe indeed that corporate income tax rates have been falling considerably during the last few decades. Figure 1 shows that the average rate in the old EU-15 countries fell from 48% in the early 1980s to around 30% today. In the new member states, rates fell from around 35% in the mid 1990s to 18% in 2006. The Dutch government reduced its rate from 48% in the early 1980s to 25.5% in 2007. For the neoclassical theorist, this is a natural response by governments to the growing international mobility of capital. He might even applaud such a development on a normative basis: after all, the optimal tax in a small open economy is zero. Yet, the implications of a withering of corporate taxes are subtler than what may be suggested by this simple reasoning. In fact, many people dread this ‘race to the bottom’ in corporate income taxes in the European Union.

Why care?

Why care about the race to the bottom? There are at least two reasons why corporate taxes can be part of an optimal tax system. First, the corporate tax is not only a tax on the return on capital, but also an effective means to tax economic rents. The presence of such rents— especially those induced by agglomeration economies that are bound to a particular location— finds its theoretical underpinning in, for instance, the new economic geography literature. Taxing location-specific rents is not distortionary, since producers will not immediately move their investment in response to the tax: the rents are, after all, specific to the particular location.1 This provides a rationale for taxing corporate income.

A second reason why corporate taxes can be part of an optimal tax system has to do with the difficulties that governments may have in distinguishing between labour income and capital income. Taxing the income from corporations is therefore necessary as a backstop for the personal income tax. To illustrate, the UK recently abolished the corporate income tax.
on small business profits. The result was a considerable inflow of self-employed persons into the corporate legal form. The UK is now about to abolish the zero-rating in order stop the erosion of the personal income tax base. More generally, using a panel of European countries on legal form data, De Mooij and Nicodeme (2007) find that each percentage-point difference between personal and corporate income tax causes a 1% shift from sole proprietorships into corporations. It suggests that the corporate tax is indeed an important tool to avoid arbitrage.

The recent developments in corporate taxation in Europe provide intriguing policy challenges that call for innovative solutions. There is now a broad agenda for economic research on how governments can respond effectively and efficiently.

To analyze this, I intend to develop a model— with fellows from the Oxford University Centre for Business Taxation— in which the corporation tax system affects several margins: the scale and location of investment, the choice of finance, and the location of profit. Within that framework, we will explore whether a narrow-based tax on rents with a higher rate would be more desirable for a small open economy that hosts a large number of multinational companies than a broad-based corporate income tax with a lower rate.

**Corporate tax reform**

One response to the withering of corporate tax rates is to fundamentally reform the tax structure. For instance, an idea developed in the literature is to introduce an allowance for corporate equity. This idea—put forward by the Capital Taxes Group of the Institute for Fiscal Studies (see e.g. Devereux and Freedman, 1991)—involves providing a deduction for equity, equivalent to interest in computing the company’s taxable profits. It effectively removes the impact of the corporate tax system on the cost of capital, and transforms the corporate tax into a pure tax on economic rents. This has several desirable properties, such as neutrality with respect to investment and financial decisions. While this may indeed be true in a closed economy, the proposal has not been thoroughly analyzed in an open economy framework, where capital and profits can flow across national boundaries.

To analyse this, I intend to develop a model— with fellows from the Oxford

**Tax coordination**

A second remedy to the withering of corporate taxes is tax coordination. This literature, which is based on Oates’ theory of fiscal federalism, has matured during the past decades (see e.g. Wilson, 2004). Although studies in the field reveal several subtle arguments for or against coordination, and model simulations suggest only small aggregate welfare gains, the most forceful arguments point towards coordination (Keen and De Mooij, 2007). In light of the expected welfare gains, the European Commission has, for quite some time, been making proposals for coordinating the corporate tax systems of EU member states. All high-profile proposals have thus far failed to gain adequate support, however, due chiefly to imperfect political institutions, such as unanimity voting. In particular, the literature suggests that the welfare effects of tax coordination are asymmetric, both between and within countries. For instance, Sorensen (2000) finds that small countries are more likely to win tax competition games than large countries, and that the poor are more likely to gain than the rich. These asymmetric effects make it difficult to obtain the agreement necessary to realize the collective gains from mitigating tax competition.

To escape the impassable route of unanimity voting, the European Union is now exploring the opportunities of partial tax harmonisation among a subset of countries. Yet, it is not clear whether this will yield similar welfare gains. For instance, model simulations with a computable general equilibrium model by Sorensen (2004) suggest that the welfare gains from corporate tax harmonisation are far smaller when only a subset of countries participates. Under which circumstances, then, may partial tax harmonisation be desirable? This appears to be a blind spot in the existing literature on tax coordination. Konrad and Schijelderup (1999) explore whether a group of symmetric countries can gain from harmonizing their capital income taxes if the rest of the world does not join. They find that partial tax harmonization increases welfare both within and outside the federation if tax rates are strategic complements (i.e. others

![Figure 1: Statutory corporate tax rates in the European Union, including local taxes and surcharges, 1982-2006. Source: De Mooij and Nicodeme (2007)](image-url)
raise their tax if EU members raise theirs). Natural extensions to their analysis include the introduction of asymmetries in the participating countries. Moreover, empirical analysis should teach us for which countries strategic complementarities apply.

Research plans
Together with Leon Bettendorf and Hendrik Vrijburg, I am now exploring the welfare and distributional implications of partial tax harmonisation in models of asymmetric tax competition. Thereby, countries differ in e.g. the share of multinational companies they are hosting, which is an important determinant of the magnitude of interdependencies across countries. Such differences allows for varying degrees of strategic complementarities across countries. Next to analytically solving these models, we intend to estimate the presence and strength of strategic tax complementarities in a spatial context. Indeed, the strength of tax interdependencies may differ across regions, which can have important implications for the welfare effects of partial coordination and, ultimately, for the optimal coalition of participating members. A final goal of our research is to use the insights from the small economic models as well as the estimates on the magnitude of cross-border spillovers of taxes for the modelling of partial tax harmonisation in an existing computable general equilibrium model. The model, developed by Bettendorf and others (see e.g. Bettendorf et al., 2007), is calibrated with data for the European Union. Overall, the project thus aims to combine theoretical rigour and empirical validation with, ultimately, numerical simulations to contribute to the European policy debate on tax coordination.

References
Mooij, R.A. de, and G. Nicodeme, 2007, Corporate taxation and incorporation in the EU, Oxford University Centre for Business Taxation working paper 07/16.

Notes
1 For similar reasons, also taxes on housing are virtually non-distortionary; see my recent joint work with Casper van Ewijk and Bas Jacobs (2007).
Letters from Alumni
life after the PhD thesis defense

You can’t fool all of the people all of the time
Wilko Bolt*
De Nederlandsche Bank

Time flies. It is now more than ten years ago that I defended my PhD thesis in Amsterdam. The thesis focused on game theory—bargaining theory, in particular, and had an easy research question: How to divide a cake among two players before it gets stale? As it turned out, the answer to this ‘easy’ question could get really complicated—but that was nothing compared with the difficulty in explaining to your family and friends why you spent five years working that out. Yet, if I had to, I would do it all over again.

But let me step back for just a moment. After graduating in econometrics, I started my PhD track in March 1992 at Vrije Universiteit Amsterdam, where Gerard van der Laan and Harold Houba were my ‘local’ supervisors. At that time, Tinbergen Institute had just moved to the Keizersgracht in Amsterdam, reviving its ambitions to become a strong graduate school and research institute in economics and econometrics. Correct me if I am wrong, but I still like to believe that those days were the heyday of TI at the Keizersgracht! Chaos, anarchy, research and drinks. A pretty good atmosphere in which to produce successful PhDs...

In August 1996, while still a PhD student, I started working in the research department of De Nederlandsche Bank (DNB). DNB is at the heart of financial and monetary policy and academic research. And I was lucky. I could nicely apply my game-theoretic background to various economic issues. After all, a central bank is continuously playing games with the public to shape expectations. While she may fool you once, though, she can’t do it all of the time! History has taught us the hard way.

In the beginning of my DNB career, I tried to capitalize on my thesis. Every ‘new’ doctor does. I tried to sell some chapters to journals. I think this worked out quite well. Jointly with Harold Houba, I was invited to write a manuscript on non-cooperative bargaining theory. The book Credible Threats in Negotiations: A Game-theoretic Approach was published in 2002 by Kluwer Academic Press. We’ll certainly never get rich from it! This marked for me a farewell to the complex theory of extensive bargaining.

During the last five years I’ve been involved in the industrial organisation of payment systems. Payment systems worldwide have recently attracted a lot of antitrust scrutiny with regard to pricing and governance. Fundamental research is strongly needed here. Payment economics has taken me far, you could say—even to the Big Apple. For the first seven months of 2007 I visited the research department of the Federal Reserve Bank in New York doing ‘payment stuff’. As New Yorkers like to say, “what’s going on?” I asked myself that same question every day, over and over again.

Back in the Netherlands now... And, I’ve got to admit that Amsterdam is charming, too. I bought a house there a couple of years ago, close to the canals and the Jordaan district. Taking the bike everyday from the Prinsenstraat to Frederiksplein—well, I still love it!
A great deal of econometric research on duration models for heterogeneous populations has been inspired by the finding that the long-term unemployed are less likely than the short-term unemployed to find jobs. This fact suggests that prolonged unemployment reduces individual skills and motivation, and thus individual job-finding rates. It may, alternatively, reflect the fact that workers who are well-adapted to the labour market find jobs relatively quickly, leaving their less fortunate peers to be sorted into long-term unemployment. On average, then, the long-term unemployed have low job-finding rates, even if individual rates are not affected by unemployment.

The distinction between these competing explanations is crucial for policy. If the first explanation is correct, then policymakers may want to avoid the adverse effects of long-term unemployment by intervening early with training and job-search programmes. If the second explanation dominates, then early interventions may waste valuable resources on the wrong group of unemployed. In that case, targeting the long-term unemployed (a dynamically selected group of ill-adapted workers, in this case) may be more efficient.

Unfortunately, distinguishing empirically between individual effects and sorting effects has proven to be difficult, even with complete data—and is next to impossible with left-truncated data. This paper shows that left-truncated data are much easier to handle if one is willing to assume Gamma heterogeneity, and then uses the main result to argue for a Gamma approximation of the heterogeneity distribution in left-truncated samples. Applications to simulated data confirm that empirical procedures exploiting this approximation do indeed perform well.


Privately informed investors can be good for a firm!

It is intuitively clear that if some investors have private information on the future dividends of a stock, then uninformed investors will be taken advantage of in an anonymous trading process. They will thus risk trading with the informed investor. In such trades, however, they will be on the wrong side of the trade and will lose money. Easley and O’Hara (2004) claim that these investors need to be compensated through an increased required return, which will raise the firm’s cost of capital.

This paper shows that, in equilibrium, the greater appetite for the stock of informed investors (who, effectively, bear less risk) might more than compensate the reduced appetite of uninformed investors. The study shows supportive evidence of the Chinese equity market, where the same share trades in an A-share market (where only Chinese investors trade) and in a B-share market (where only foreign investors trade). The assumption is made that some of the Chinese investors are privately informed, whereas foreign investors are uninformed. Various measures of informed trading support this assumption. The stock price difference across these markets is then related with the proportion of domestic informed trades. The results indeed suggest that the required returns in the domestic market relative to the foreign market are lower for stocks that show a higher proportion of (domestic) informed trading. The conclusion for this case: a higher proportion of informed investors leads to lower required returns, and therefore a lower cost of capital.

example, another actor j may not vote, but when i changes her action, then j gets to vote and has an influence on the outcome. Therefore, changing her action might lead to a different outcome (depending on the voting behaviour of actor j, who did not vote in the original profile).

The paper therefore distinguishes between strong and weak swings. Actor i has a strong swing if, by changing one of her actions, she changes the outcome with certainty. Actor i has a weak swing if a change in her actions still allows other outcomes, although also the original outcome is still possible. The power score of an actor is defined as that person's expected number of strong swings plus a proper fraction of the expected number of weak swings. A power measure for a particular actor is defined by dividing her power score by the expected number of alternative actions in action profiles in which she is a member, yielding a sequential analogue of the famous Banzhaf measure, which is widely applied in simultaneous voting.

By René van den Brink (VU) and Frank Steffen (University of Liverpool Management School), Positional power in hierarchies, T1 07-038/1

Interlocking boards and firm performance

An interlock between two firms occurs when they share one or more directors. For example, Heineken NV and Philips NV are interlocked because Kees van Lede is both chairman of the supervisory board of Heineken NV and member of the supervisory board of Philips NV. This paper investigates the effect of interlocks on firm performance using a new large panel database on 101 large Dutch firms over the period 1994 to 2004. The main finding is that interlocks negatively affect firm performance. There are two reasons for this. First, interlocking directors seem to be ‘too busy to mind the business’. A negative linear relationship was found between the percentage of busy directors in the board and firm performance, similar to the findings of Fich and Shivdasani for the US. Second, interlocking directors form a homogenous ‘old boys network’, and a board that mainly consists of interlocking directors therefore lacks diversity and independent thinking. The paper found an inverse u-shaped relationship between the percentage of ‘old boys’ in the board and firm performance. This implies that a small number of ‘old boys’ in the board increases the performance, probably because of their experience and knowledge. When the number of ‘old boys’ grows larger, however, the lack of diversity gains the upper hand, and performance dwindles.

Although the effect of interlocks on firm performance has received a great deal of attention in the literature, the empirical results are mixed. This paper is novel in three respects. First, there are no recent studies concerning interlocks and firm performance in the Netherlands. Second, this study is the first to investigate empirically the effect of a homogenous group of directors. Third, this paper is one of the few using panel data. A panel dataset offers the advantage of allowing correction for both firm and time effects, and facilitates also the study of dynamic effects. Time effects are considerable, particularly for performance measures that are based on stock prices. The study also found quite prominent dynamic effects: current interlocks strongly affect firm performance one year ahead.


By Mariëlle C. Non (EUR), Philip Hans Franses (EUR), Interlocking Boards and Firm Performance: Evidence from a New Panel Database T1 07-034/2

The benefits of being economics professor A (and not Z)

Every economics scholar is judged nowadays on his or her publications. Highly refined indices are used to rank authors and to evaluate them in terms of decimals and percentages for their value to economic science. However, in recent times it has been argued that, at least in the economic literature, one very improper factor may have a significant effect on authors’ success scores. Einav and Yaariv (2006) found that a significant fraction of Nobel Laureates in economics and tenured professors at high-ranking departments were found among the first letters in the alphabet. Actually, the percentage was significantly higher than what could have been expected on the basis of the letter frequencies in the population. Independently from Einav and Yaariv, Van Praag and Van Praag investigated the same suspicion in their study of a database of 1,278 multi-authored articles from first- and second-ranked journals in the US and Europe. Indeed, about 85% of all economics articles seem to be ordered alphabetically by author. This contrasts sharply with the practice in many other sciences. In psychology, for instance, the percentage of alphabetically ordered articles is only 40%. Thus, compared to the practice in psychology, there seems to be a strong convention in economics to list authors alphabetically, and not necessarily in terms of their real contributions to the paper.

This paper investigated the c.v.’s of ’Professors A’, and determined that they published more articles during their lifetime and experienced a faster growth rate over the course of their career than did ’Professors Z’. This may certainly be a result of getting a greater reputation and more visibility. Moreover, authors, according to the study, seem to realize that name ordering matters, and indeed take ordering seriously: Several characteristics, such as major differences in age, experience, or publication track records of authors within a group, motivate the infrequent decision to deviate from the default alphabetic order.

The paper suggests making a correction for the effect of alphabetic name rank on academic output. A Z-author should deserve a 16% premium on his observed weight as compared to an A-author. This is a non-negligible correction. Perhaps the same mechanism might be at work elsewhere—witness Bush, Brown, Cheney, Balkenende and Bos.

Identifying reduced-form relations with panel data

The possible existence of inverted U-shaped relationships has been investigated in the economics literature for a number of important topics such as the link between inequality and growth, environmental quality and economic growth, and, recently, innovation and competition. The existence of an inverted U is particularly attractive because it suggests that trade-offs may disappear—for instance, if a country experiences enough growth over time. The literature that tests for such U-shaped relationships using panel data usually reports widely divergent (parametric and non-parametric) empirical findings. This paper explains why lack of identification lies at the root of these differences, and proposes a new identification strategy. This new strategy makes the lack of identification explicit from the very beginning by using a framework for making inferences based on a distinctive between what can be identified (and thus estimated) on the basis of the data, and what would be the consequences of a subjective choice related to particular identification assumptions. The paper starts from the minimal requirement of a common (flexible) time trend between only two cross-sectional units to (exactly) identify the parameter of interest. It then generates in a panel with N cross-sectional units potentially N(N-1)/2 possible common time trends, and for each country there are N-1 possible link functions. The paper then models the subjective selection between cross-sectional units sharing the same time trend by using priors over pairs of cross-sectional units.

By means of a robustness analysis in terms of different but reasonable prior choices, the paper investigates the sensitivity of the outcomes to the subjective choices. The methodology is then applied to the pollution-income relationship of both CO2 and SO2 emissions. Interestingly, this approach yields estimates of both income-scale and time (composition and/or technology) effects for these reduced-form relationships that are insensitive to the required subjective choices and are consistent with theoretical predictions.

By Herman Vollebergh (EUR), Bertrand Melenberg (Tilburg University) and Elbert Dijkgraaf (EUR), Identifying Reduced-Form Relations with Panel Data, TI DP 07-072/3

A women's empowerment programme in rural India: An impact evaluation

There is an increasing call among taxpayers and financial donors for evaluations of the effectiveness of development aid. Quantitative impact evaluations of development projects are still limited, however. This dissertation provides an impact evaluation of the Mahila Samakhya programme in Bihar. Bihar is the poorest state of India. Two-thirds of the population lives below the poverty line. Government services are of poor quality. Corruption and discrimination are widespread. In these circumstances, the Mahila Samakhya programme stimulates women from the lowest castes and poorest families to set up a women's group in their community to address jointly the most urgent problems in their daily lives.

Despite the growing popularity of community-based development programmes and their increasing share in development aid, little quantitative evidence exists on their effects. This dissertation examines the impact of Mahila Samakhya on social capital, cooperation, and a number of socio-economic indicators. The quasi-experimental research design is based on a unique dataset, collected by the author in 2003, of almost 2,000 households in more than one hundred villages. The programme had been implemented in two-thirds of the villages. It was not yet active in the remaining one-third.

The results show that Mahila Samakhya has had a positive direct effect on the levels of trust and cooperation among participants in the women's groups. It also increased immunization rates, school enrolment and access to informal credit for participants' households. Interestingly, the programme has generated substantial external effects on families who do not participate in the women's group themselves, but who live in a village where the programme is active. Not taking into account such spillover effects on the broader community would seriously underestimate programme impact. No evidence is found, however, that a community-based development programme such as Mahila Samakhya can set in motion the expected self-reinforcing mechanism of increasing social capital and enhanced collective action.

TI alumna Wendy Janssens was the winner of the 2006 competition for the best PhD thesis in International Development, a prize awarded annually by the World Bank/AIID. She also received the Societal Impact Award 2007 from VU University. Congratulations, Wendy!


Consumer search and oligopolistic pricing

In real world markets, the acquisition of price information is costly. This observation has led to an important research program in economics aimed at understanding how firms compete in the presence of consumer search. Differences in search activity across consumers might induce firms to maximize surplus from either price-comparing consumers (who will be charged a relatively low price), or consumers who do not search a lot (who will face a relatively high price). Firms will start charging different prices, resulting in price dispersion.

Despite the substantial amount of theoretical work on the subject, it has received relatively little attention from empirical economists. Although...
existing empirical work shows that market characteristics (such as consumer search costs, valuations, and marginal costs) are important in explaining firm pricing behaviour in search markets, few studies exist that explicitly try to recover these market characteristics from the data. The recovery of market characteristics is of importance because successful implementation of competition policies requires explicit knowledge of the underlying characteristics of the market.

This thesis devises methods to estimate consumer search models, using a limited amount of data. This thesis is part of a relatively new strain of the consumer search literature that uses the structure of search models to identify and estimate search-cost distributions. The techniques developed in this thesis are applied to several datasets obtained from price-comparison sites on the Internet. Results indicate that the models developed in this thesis match very well with the empirical data. Moreover, an interesting finding is that consumers either search once or twice, or they search very extensively and obtain prices from all firms in the market—for example, by using price-comparison sites.

Papers in TI-ranked journals by TI fellows

Theses

408 MATTHIJS WILDENBEEST (21/07/07), Consumer Search and Oligopolistic Pricing: A Theoretical and Empirical Inquiry.

409 EMILY GUSTAFSSON-WRIGHT (11/10/07), Baring the Treads: Social Capital, Vulnerability and the Well-Being of Children in Guatemala.

410 SEBLE WORKU (09/10/07), Marriage Markets and Fertility in South Africa with Comparisons to Britain and Sweden.

411 JAN FREDERIK SLIJKERMAN (14/09/07), Financial Stability in the EU.

412 WARD VAN DEN BERG (20/09/07), Private Equity Acquisitions.

413 YEBIN CHENG (12/09/07), Selected Topics on Nonparametric Conditional Quantiles and Risk Theory.

414 MICHEL DE POOTER (27/09/07), Modeling and Forecasting Stock Return Volatility and the Term Structure of Interest Rates.

References

Theses

408 MATTHIJS WILDENBEEST (21/07/07), Consumer Search and Oligopolistic Pricing: A Theoretical and Empirical Inquiry.

409 EMILY GUSTAFSSON-WRIGHT (11/10/07), Baring the Treads: Social Capital, Vulnerability and the Well-Being of Children in Guatemala.

410 SEBLE WORKU (09/10/07), Marriage Markets and Fertility in South Africa with Comparisons to Britain and Sweden.

411 JAN FREDERIK SLIJKERMAN (14/09/07), Financial Stability in the EU.

412 WARD VAN DEN BERG (20/09/07), Private Equity Acquisitions.

413 YEBIN CHENG (12/09/07), Selected Topics on Nonparametric Conditional Quantiles and Risk Theory.

414 MICHEL DE POOTER (27/09/07), Modeling and Forecasting Stock Return Volatility and the Term Structure of Interest Rates.
---


**TI-ranked (chapter(s) in) books**


**Discussion Papers**

**Institutions and Decision Processes**

**07-040/1**

Benoit S.Y. Crutzen, Otto H. Swank, Bauke Visser, EUR, *Confidence Management: On Interpersonal Comparisons in Teams*

**07-051/1**

Hendrik P. van Dalen, EUR, *Global Aging and Economic Convergence: A Real Option or still a Case of Science Fiction?*

**07-054/1**

Maarten C.W. Janssen, EUR, José Luis Moraga-González, Groningen University and CESifo, *On Mergers in Consumer Search Markets*

**07-055/1**

Otto H. Swank, Bauke Visser, EUR, *Is Transparency to No Avail? Committee Decision-making, Pre-meetings, and Credible Deals*

**07-062/1**

René van den Brink, VU, Yukihiko Funaki, Waseda University, Tokyo, Japan, Yuan Ju, Keele University, Keele, UK, *Consistency, Monotonicity and Implementation of Egalitarian Shapley Values*

**07-070/1**

Harold Houba, VU, Quan Wen, Vanderbilt University, Nashville, TN, *Extreme Equilibria in a General Negotiation Model*

**07-073/1**

René van den Brink, VU, René Levinsky, Max Planck Institute of Economics, Jena, Germany, Miroslav Zeleny, Charles University, Prague, Czech Republic, *The Balanced Solution for Co-operative Transferable Utility Games*

**Financial and International Markets**

**07-045/2**

Joseph Francois, EUR, Joh. Kepler University (Linz) and CEPR, Julia Woerz, The Vienna Institute for International Economic Studies (WIIW), *Producer Services, Manufacturing Linkages, and Trade*

**07-046/2**

Konrad Banachewicz, André Lucas, VU, *Quantile Forecasting for Credit Risk Management Using Possibly Mis-specified Hidden Markov Models*

**07-056/2**

Leon Bettendorf, EUR and CPB, Albert van der Horst, CPB, Ruud A. de Mooij, EUR, CPB, Netspar, and CESifo, *Corporate Tax Policy and Unemployment in Europe: An Applied General Equilibrium Analysis*

**07-064/2**

Leon Bettendorf, EUR and CPB, Hans Dewachter, Catholic University of Leuven, *Ageing and the Relative Price of Nontradeables*

**07-069/2**

Lorenzo Pozzi, EUR, *Idiosyncratic Labour Income Risk and Aggregate Consumption: An Unobserved Component Approach*

**07-075/2**


**07-076/2**

Albert van der Horst, CPB, Leon Bettendorf, EUR and CPB, Hugo Rojas-Romagosa, CPB, *Will Corporate Tax Consolidation improve Efficiency in the EU?*

**07-077/2**

Jelle Brouwer, Richard Paap, Jean-Marie Viana, EUR, *The Trade and FDI Effects of EMU Enlargement*
Labour, Region and Environment
07-041/3
Gerard J. van den Berg, Bas van der Klauw, VU, If Winning isn’t Everything, Why Do They Keep Score? A Structural Empirical Analysis of Dutch Flower Auctions

07-042/3
Herman R.J. Vollebergh, EUR, Differential Impact of Environmental Policy Instruments on Technological Change: A Review of the Empirical Literature

07-044/3
Jan Rouwendal, Jos van Ommeren, VU, Recruitment in a Monopsonistic Labour Market: Will Travel Costs be Reimbursed?

07-047/3
Jan Rouwendal, Peter Nijkamp, VU, Homeownership and Labour Market Behaviour: Interpreting the Evidence

07-048/3
C. Mirjam van Praag, Bernard M.S. van Praag, UvA, The Benefits of being Economics Professor A (and not Z)

07-049/3
Bernard M.S. van Praag, UvA, Perspectives from the Happiness Literature and the Role of New Instruments for Policy Analysis

07-050/3
Wim Groot, Maastricht University, Henriëtte Maassen van den Brink, and Bernard M.S. van Praag, UvA, The Compensating Income Variation of Social Capital

07-052/3

07-053/3
Jani-Petri Laamanen, Kaisa Kotakorpi, FDPE and University of Tampere, Welfare State and Life Satisfaction: Evidence from Public Health Care

07-057/3
Jaap H. Abbring, VU, Mixed Hitting-Time Models

07-058/3
Wouter Vermeulen, CPB and VU, Jan Rouwendal, VU, Housing Supply and Land Use Regulation in The Netherlands

07-059/3
Teresa Bago d’Uva, EUR, Andrew M. Jones, University of York, Eddy van Doorslaer, EUR, Measurement of Horizontal Inequity in Health Care Utilisation using European Panel Data

07-060/3
Eva Gutiérrez Puigarnau, VU, Jos van Ommeren, VU and Frisch Center, Oslo, Welfare Effects of Distortionary Company Car Taxation

07-061/3
Yinjen Tseng, Erik Verhoef, VU, Value of Time by Time of Day: A Stated-Preference Study

07-065/3
Maria Francesca Cracolici, Miranda Cuffaro, University of Palermo, Peter Nijkamp, VU, Geographical Distribution of Unemployment: An Analysis of Provincial Differences in Italy

07-066/3
C. Mirjam van Praag, Peter H. Versloot, UvA, What is the Value of Entrepreneurship? A Review of Recent Research

07-067/3
Ellen van de Poel, EUR, Owen O’Donnell, University of Macedonia, Thessaloniki, Greece, Eddy van Doorslaer, EUR, What explains the Rural-Urban Gap in Infant Mortality — Household or Community Characteristics?

07-068/3
Erik T. Verhoef, VU, Herbert Mohring, University of Minnesota, Self-Financing Roads

07-071/3
Pieter A. Gautier, VU and CEPR, José Luis Moraga-González, University of Groningen, Ronald P. Wolthoff, VU, Structural Estimation of Search Intensity: Do Non-Employed Workers search enough?

07-072/3
Herman R.J. Vollebergh, EUR, Bertrand Melenberg, Tilburg University, Center, and Netspar, Elbert Dijkgraaf, EUR, and SEOR-ECRi, Identifying Reduced-Form Relations with Panel Data

07-074/3
Stefan Hochguertel, VU, Henry Ohlsson, Uppsala University, Compensatory Inter Vivos Gifts

07-078/3
Jan Rouwendal, VU, Simonetta Longhi, ISER, University of Essex, The Effect of Consumers’ Expectations in a Booming Housing Market

07-079/3
Henri L.F. de Groot, VU, Jacques Poot, University of Waikato, Hamilton, NZ, Martijn J. Smit, VU, Agglomeration, Innovation and Regional Development: Theoretical Perspectives and Meta-Analysis

07-080/3
André van Stel, EIM, Roy Thurik, Ingrid Verheuel, EUR and EIM, Lendert Baljeu, EUR, The Relationship between Entrepreneurship and Unemployment in Japan

Econometrics
07-043/4
Michiel de Pooter, EUR, Examining the Nelson-Siegel Class of Term Structure Models
Tinbergen Research Institute

Four themes distinguish Tinbergen Institute’s research programme:

I. Institutions and Decision Analysis
II. Financial and International Markets
III. Labour, Region and the Environment
IV. Econometrics and Operations Research

Each theme covers the whole spectrum of economic analysis, from theoretical to empirical research. Stimulating discussions on theories, methodologies and empirical results arise from the interaction of the Institute’s faculty – comprised of approximately 130 research fellows. These fellows are faculty members with excellent track records in economic research, active in organising research activities, teaching graduate courses and supervising PhD students.

Discussion Papers

Research is pre-published in the institute’s own Discussion Paper Series. Download discussion papers at www.tinbergen.nl (section ‘Publications’).

E-mail address for correspondence: tinbergen-magazine@tinbergen.nl

Tinbergen Graduate School

The Tinbergen Institute offers a five-year graduate programme, consisting of two years of intensive graduate coursework in its Master of Philosophy (MPhil) in Economics programme and three years of PhD thesis research.

The MPhil programme is a two-year research master in economics, econometrics, and finance that leads to an MPhil degree in economics. Due to the demanding nature of the programme, the MPhil is open only to a rigorously selected group of students. An excellent preparation for PhD thesis research, the MPhil programme is connected to three-year PhD positions in the economics departments of the Erasmus Universiteit Rotterdam, the Universiteit van Amsterdam, and the Vrije Universiteit Amsterdam.

The MPhil in Economics has been accredited by the Dutch and Flemish Accreditation Organization for higher education (NVAO), and eligible students can claim two years of financial aid (‘studiefinanciering’). In addition, the Tinbergen Institute allocates a limited number of scholarships each year based on academic merit.

Detailed information on the institute’s graduate programme and the application procedure can be found in the Graduate School section of www.tinbergen.nl. Please send any questions to applications@tinbergen.nl.

Board


General Director

M.C.W. Janssen

Director of Graduate Studies

J.H. Abbring

Research Programme Co-ordinators

Labour, Region and the Environment: E. Plug, C. Withagen.


Editorial Board


How to subscribe?

Address for correspondence/subscriptions:
Tinbergen Institute Rotterdam
Burg. Oudlaan 50
3062 PA Rotterdam
The Netherlands.

E-mail: tinbergen-magazine@tinbergen.nl

Address changes may be sent to the above e-mail address.
In this issue

- Neuroeconomics: A rational choice
  An interview with Frans van Winden
- State-space fever!
- Corporate taxes in Europe
- Letters from Alumni
- Publications and references