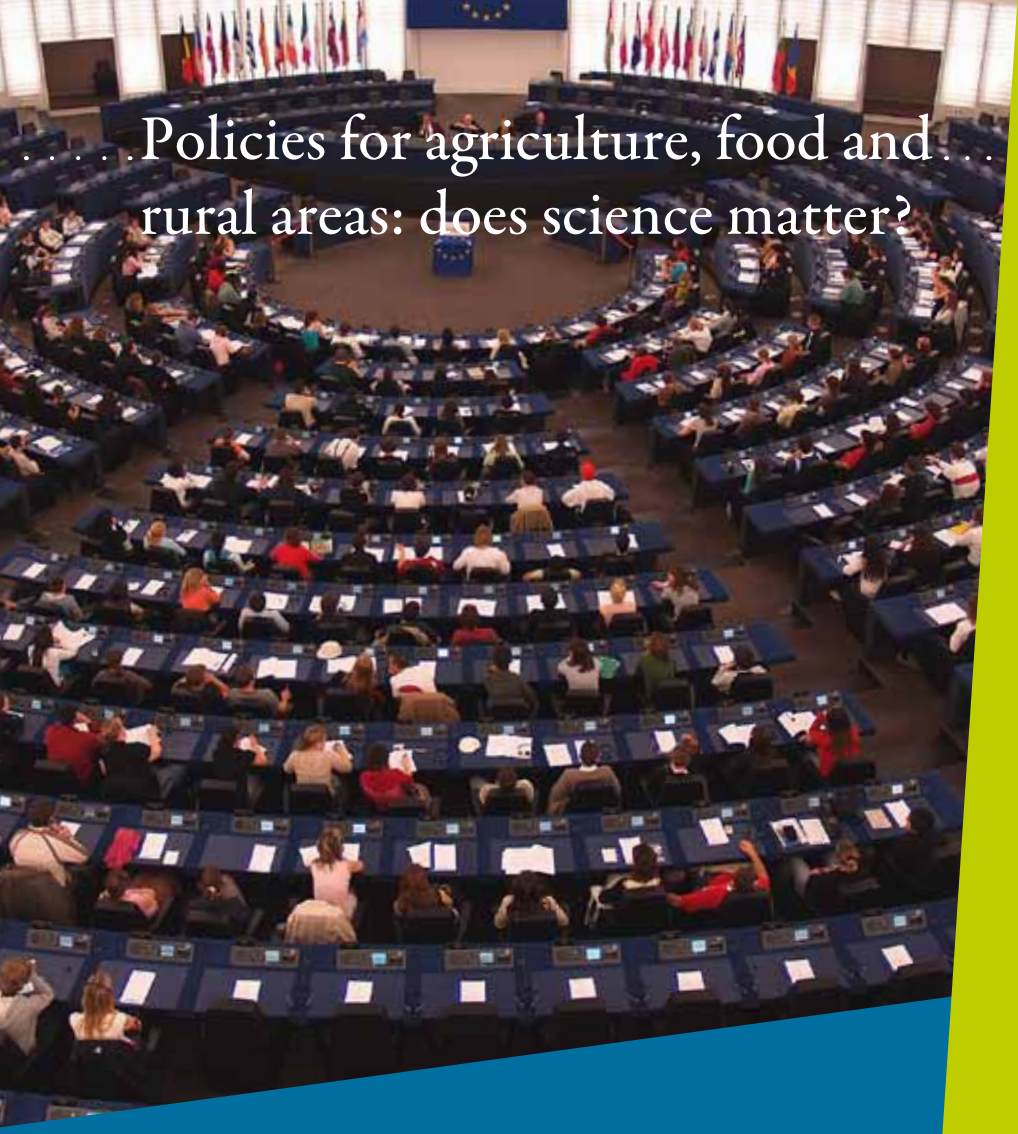
. . . . . Policies for agriculture, food and . . . rural areas: does science matter?



Prof. dr. ir. A.J. Oskam

Farewell address upon retiring as Professor of
Agricultural Economics and Rural Policy
at Wageningen University on 22 October 2009

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Abstract

Existing policies are difficult to change or abolish, while new ones are difficult to introduce. Any such changes cause societies transaction costs, which, up to now, have not been incorporated adequately in theory, methodology and policy advice. Most economic researchers still rely narrowly on neoclassical economics, political economy or institutional economics. Recent scientific developments make clear that basic approaches are not functioning. I illustrate this by examples, and sketch a way out via paradigm shifts. But how to introduce these shifts? Generational shift?

I thank Joy Burrough-Boenisch for correcting my English and Ken Thomson for his critical reflections on my Farewell Address. That does not make them responsible for the text.

ISBN 978-90-8585-282-7

Policies for agriculture, food and rural areas: does science matter?

Mr Rector, let me begin with some philosophy

Having read some of the philosophical literature of logical positivists and much of the ideas of Karl Popper when I was a student, I am surprised by current scientific developments. I will not explain logical positivism here, because the few of you who might be interested can find much better explanations on the internet (Stanford Encyclopedia of Philosophy, or even Wikipedia). Nowadays the relevance of logical positivism is disputed. But I will devote a few words to the philosophy of Karl Popper because it plays a role in my farewell address. His book *The Logic of Scientific Discovery* (Popper, 1943/1968) was an eye-opener for me. Not only because of its richness of subjects, but also because of what at that time was even more thought-provoking: its falsification criterion. Simply stated, this is: you can never be sure that a scientific theory on what we see around us is true. But if you observe something that is not in line with your theory[1], then that theory is wrong and should be amended or replaced. I admired the idea that somebody could simply state that a theory or an approach was wrong because it did not fit a clear observation and that therefore we had to change it. Moreover, Popper sketched this approach as a path to scientific improvement. As I have already mentioned, the standard term for this is falsification; if a theory is falsified we have to search for a better one. Or, to use a metaphor: if the roof of a house leaks after rain, you have to repair it.

Isn't it the dream of a scientist that we can make such judgments and then continue to search for a theory that better explains society? I will try to do something in that direction. But let me say first that we soon realized that if we were very strict, we

[1] A theory is here a coherent set of ideas about the 'real world' that explains part of reality. A theory is richer, if it explains more. We can also say that it is more relevant. A strict requirement of a theory is its internal consistency. The term 'scientific theory' refers to the types of theory that are put forward and explained by scientists.

would reject all theories and remain empty-handed. This was also picked up by the philosopher Imre Lakatos (1968), who developed the concept of 'research programs' consisting of sets of coherent theories. Not all theories completely confirm reality, but as scientists we use the ones that perform best and, I would also say, are easy to understand and to explain. Or to extend the metaphor: if we use a type of insurance against the leaking of the roof and if certain types of houses generate a much larger insurance premium, then it is time to think about changing the design of the roof or the materials it is made from.

Falsification was much more forcefully criticized by Paul Feyerabend (1975), who denied the importance of falsification, contending that it would make science much too limited and – more importantly – it was totally opposite to how scientists really behave. He argued 'Against Method' and made clear that, by following the path of Popperian rational empiricism and using the falsification criterion, we limit ourselves too much. What we see again and again is that scientists are searching for *confirmation* of their results rather than *testing* them. Rigorous scientific testing is contrary to their behaviour and to the incentive systems around them. Moreover, if new ideas (or, to use more philosophical language, 'conjectures') emerge, we should not immediately try to refute them: new ideas are like young plants, to be cherished so that they will grow and develop.

At this point, let me say that I think that both philosophers have something to say, and that we should take them both seriously. Established theories should be tested or compared on the basis of the falsification criterion, and this should be done even more strictly if we can compare different alternative theories. But developing new ideas and paths often goes 'Against Method' and should be permitted – at least in the development phase. More rigorous testing can be done later.

I will now discuss the group of behavioural economists including Kahneman, Knetsch, Thaler, Tversky and many others who have challenged standard economic theory.

The relevance of present economic theory: gains, losses and endowment effects

Let's imagine that I offer you a pencil. The typical question of an economist is: how much do you want to pay for it?..... Let's say one euro. Now if I sell it to you for that amount and you have it *in your hands* (so you are the *owner* of this pencil), then the next question could be: can I buy this pencil back from you? That is an experiment. Now, what has been observed again and again is that the price you want is much more than one euro. It could be two euros or even more. We call this the *endowment effect*. The simple fact that you own something makes it valuable. For reasons which will become clear later, I call the costs related to this experiment *'transaction costs'.* To go back to the original situation (no pencil in your hand) may cost at least one additional euro and that has to be paid by someone: in this case, the person organizing the experiment.

The literature contains overwhelming evidence supporting the existence of an *endowment effect* (see Kahneman, et al., 1990, 1991; Knetsch, 1989, 1992; for overviews see: Rabin, 1996; Knetsch, 2002) and the difference between 'gains' versus 'losses' that is experienced in risky situations (Kahneman and Tversky, 1979). I could review this literature for you, but one of the nice aspects of science is that we can stand on the shoulders of our giants.[2] But are they giants?

Of course, I am aware of the qualifications that people such as John List (2004) have imposed on these experiments. He showed clearly that experienced people operating in well-functioning markets experienced *no* endowment effect. I can accept that. Although small endowment effects may help them make a reasonable margin, it would be strange for experienced traders to experience major endowment effects, because if they did they would never sell the goods they had previously bought! So the crucial items here are: *experienced and the type of person*. If you are strongly influenced by endowment effects, you had better not go into trade. If you are very risk-averse, the endowment effect might even be larger.

[2] 'Standing on the shoulders of giants' is the slogan adopted by Google Scholar. Bernard of Chartres seems to be the first adopter of this metaphor in the 12th Century that was later used by Isaac Newton in the 17th Century – see Wikipedia.

But now I come to my point. What is our experience of major economic decisions like accepting a job offer, or buying a house or a farm? Do we really have experience in these things? No: for most people, such decisions are taken once in a lifetime, or very rarely.[3] So we have no experience of them and that makes us uncertain about the consequences of our decisions. But assume we have made that decision and somebody comes along after a while, with the question: could you give up the job, your house or your farm, because we need it, and what is the compensation we have to pay? Here the evidence for our expected response comes not so much from economic experiments, but from real life. People are very reluctant to give up a job or to sell their house or their farm.

So, it is quite clear from extensive literature overviews, and also from experience, that there are large and fundamental differences between the Willingness to Pay (what people are willing to pay for something that they obtain) and the Willingness to Accept (the compensation required to give up what has been obtained earlier).

Now I come to **two** points which are crucial in this farewell address:

1. If there is an endowment effect, then it will be difficult to change the existing situation. And that runs counter to standard economic theory. I could illustrate that by one of the standard figures economists use: the indifference curve, c

   Figures 1 and 2 illustrate that the whole approach is totally different. In Fig 1 there are no transaction costs. We can go forwards and backwards and the economy works as many like to see it. Fig. 2 illustrates an agent who is exactly (and by definition) at the kink in the indifference curve and so cannot go 'forwards and backwards'. Returning - after a forward step - to the initial position generates substantial transaction costs.

   List (2004) noted that "Several experimental studies have provided evidence that indifference curves are kinked around the current endowment level". But if they are kinked, then conventional economic theory no longer holds and we have to change the entire battery of tools we are using in economics.

[3] Of course there is a whole bundle of goods, services, inputs, etc. of which we have limited experience because only occasionally do we make decisions on them: buying a car, renovating the kitchen, booking a special vacation, following a course, buying a piece of land, etc. etc.

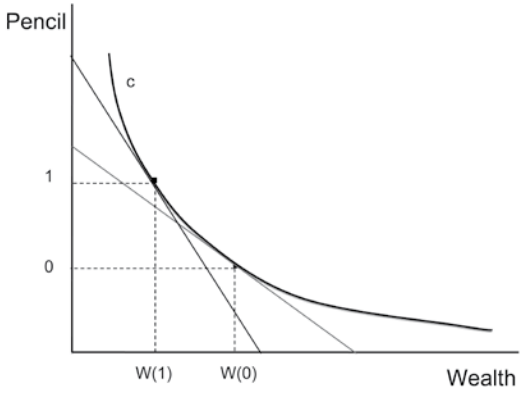

Fig. 1 Indifference curve related to 'standard' theory

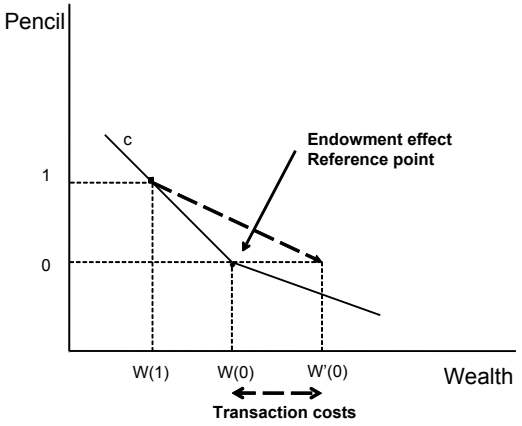

Fig. 2 Indifference curve behavioral theory

2. I consider policies which are organized by governments as being in the *same category* as the type of decisions that are *not taken regularly*. If a policy is introduced and it creates advantages for a person, then that policy is easily accepted by that person; but if you want to remove that policy, the perceived loss is larger than the gain obtained earlier. And if a government introduces a policy that generates a disadvantage to a person, then the opposite holds: the willingness to accept that

policy (how much you have to give as compensation to make that policy acceptable) is much larger than the willingness to pay for the scrapping of the policy. You can easily see this happening around you to different types of policies, and I will mention some examples later when I discuss policies. For the moment, it is sufficient to keep in mind that policies (such as goods, property, art, ideas, etc.) generate endowment effects; also called 'reference points' or 'status quo'. This implies that policy changes *generate high transaction costs*.

From this, we can conclude that for important decisions, the endowment effect is highly relevant for a large group of people. This implies that any change of position is costly. Now, if we accept that, then many basic assumptions and therefore standard theorems in microeconomic theory do not hold.

What does this imply for the 'standard economic theory' that we use?

Microeconomics

It would not be difficult to mention a bunch of theorems in microeconomics that do not fit with the existence of endowment effects and the related transaction costs. Let me start with an observation by Varian (2006, p. 584): 'The two theorems of welfare economics are among the most fundamental results in economics'. I will add to that the Coase theorem. But first I have to explain a key concept in economics: a situation is *Pareto-efficient/optimal* if no other situation can be obtained in which at least one person is better-off without at least one person being made less well-off. A marvellous concept, but in practice, of course, useless. Can you think of any policy change or major economic decision that fulfils Pareto efficiency? But using Pareto efficiency in a strict sense is also 'freezing' the present situation: if you do not allow yourself to make one person worse off, you had better not make a move.

Let me now consider the *First Theorem of Welfare Economics*, which states that the equilibrium in a set of competitive markets[4] is Pareto-optimal. This is one of the fundamental motivations for economists' striving for competitive markets: they want to be able to say that such a market gives a Pareto-optimal result. But now what are the objections to the basic assumptions used to derive the First Theorem of Welfare Economics? Let me follow Varian (2006, p. 585):

1. One major assumption is that agents only care about their own consumption of goods and services. If they care about others, then the theorem does not hold (I will return to this!).
2. Agents behave competitively (here, too, 'real' people could be different: many might behave competitively, but there is no reason that *all* will do so).
3. The third objection (not exactly in Varian, 2006) is that indifference curves should be 'smooth', and as we have seen earlier, that is greatly disputed. So, the existence of *kinked* indifference curves is the third reason that the First Theorem of Welfare Economics does not function.

Let us now turn to the Second Theorem of Welfare Economics

Every Pareto-optimal solution can be obtained by means of a competitive market equilibrium but with redistribution of income (Varian, 2006, p. 586, 587). This implies that the efficiency and distribution can be separated. Let the market do its work and redistribution of income will take care of the intended income distribution and the endowment of resources. The Second Theorem of Welfare Economics *assumes* costless redistribution of income. But, as we have just learned, that is an illusion. Of course, there are ways in which things become less clear, and people might not easily see that redistribution is taking place. But any action that charges someone at the expense of someone else can generate substantial transaction costs, and will therefore be observed sooner by the person paying than by the person who profits. Or, put another way: you need a lot of efficiency gain to make it worthwhile to adopt a redistribution scheme.

Another central theorem of microeconomics: the Coase theorem.

The Coase theorem runs as follows: if property rights are well defined and if there are no transaction costs, then any Pareto-optimal situation can be reached (Varian, 2006, p. 630, 631). But here too, it holds that the fundamental assumption is wrong: *there are transaction costs* and so it matters who has property rights. I

[4] We know from experience that not all markets are competitive; this is clear from the present and earlier economic crises (it is also well-known for several types of markets). Now, economists are quick to say: make those markets competitive (and for regular markets of 'regular goods' that might be a good idea); but I could give a list of situations where this does not hold. Moreover, in purely competitive markets: who takes the investment decisions? Who uses the advantage of scaling-up activities, which is nowadays a leading issue –particularly in relation to Information and Communication Technology (ICT)? Who organizes and/or pays for the research?

always interpret this theorem in another way: because transaction costs are non-zero, it is important how property rights are distributed. Moreover, it is hugely important whether we care about others or whether we are only self-interested. You think this is irrelevant? Think about the property rights on:

- Global gas emissions (now being discussed in Copenhagen);
- Land (plays a role throughout the world);
- Intellectual property (patents, seeds, etc.);
- Physical/human/social capital (all with their specific characteristics);
- The distribution of direct income support (an important issue in the Common Agricultural Policy).

Conclusion

Not one of the three theorems applies, because at least one of their basic assumptions does not hold. This implies that standard microeconomics theory is obsolete. Applying the basic falsification principle for testing theory: because their basic assumptions do not hold, these theorems are wrong, and we should scrap them from the list of theorems that help to explain reality.[5]

Of course, we could keep them to show ourselves and our students how the world *would work if the conditions did hold.* And I have to say, given the books and course material available, it might be a wise decision to train students to use theory critically. But teaching such standard micro theories comes with a big price tag: before you know it, the students are well-trained in false theories, but because of their training (and *their own* endowment effect!) they will not change their approach.

I could point out other instances where standard neoclassical theory is not functioning, but it is better to stop after these three key theorems. I will now turn the spotlight on two other branches of economics: political economy and institutional economics.

[5] Remarkably Varian (2006, p. 75) includes an indifference curve with an endowment effect under the name 'Kinky tastes' and gives the following qualification "this case doesn't have much economic significance - it is more of a nuisance than anything else". A clear signal that a scientific revolution is required (Kuhn, 1962).

Political economy

The profession is well aware that policy changes are difficult to obtain: this branch of economics is often called political economy or public choice. There is a lot of literature in this area which tries to explain why particular policy decisions are made (Mueller, 2003). Moreover, it is a field of literature which is also sometimes used to define the political profiles of parties and governments. The core literature can be split into two main approaches[6]:

1. The approaches based on collective action and particular interest groups (Olson, 1971). Here, the kernel is that persons or organizations with similar interests join forces and then start to influence the political arena';
2. The other branch is oriented more towards the behaviour of voters. Political parties (or governments in office) take voter behaviour into consideration when defining their profiles. This literature often refers to a two-party system, because that is easily manageable, but there are more sophisticated approaches too.

Neither approach explicitly takes into account the transaction costs of policy changes, although you could say that the first approach (collective action) gives a type of mechanism design that could be based on the existence of transaction costs. If transaction costs of policies are really acknowledged, then the first branch of political economy literature might be most promising for further investigating the mechanisms of influencing political decision-making.

Institutional economics

Institutional economics covers an area that is outside the typical focus of neoclassical economics, i.e. production, consumption, quantities, prices and resources. But the context in which economic processes are functioning is highly important and this receives attention in New Institutional Economics. According to North (1991, p. 97), institutions are "the humanly devised constraints that structure policy, economic and social interaction. They consist of both informal constraints (sanctions, taboos, customs, traditions and codes of conduct), and formal rules (constitutions, laws and property rights)". Over time, people have developed institutions in order to create order and regularity in these interactions.

[6] There is a third approach which is called the 'benevolent dictator' approach, where the assumption is that a 'dictator' takes those decisions that are best for society. This was often the assumption made by economists before the political economy literature started to explain that 'the real world is different'.

As with every new approach, there are some differences, but I think that nowadays the Williamson approach is standard. That approach *starts (= first layer)* with the *social embeddedness* of our institutions (Williamson, 2000). These institutions are accepted in society, as they are part of our culture and informal rules. Here the link between economics and sociology is clear. The *second layer* consists of the laws and formal rules of our society, often called the *institutional environment*. The institutional environment often starts from the national constitution (if available). The *third layer* consists of *institutional arrangements* (also called governance structures or coordination mechanisms), which are crucial for the way processes take place in society. An institutional arrangement or governance structure consists of the *coherent* set of the rules by which an exchange process is carried out and monitored. It can also be considered as a contractual format chosen to manage transactions, ranging from simple spot market transactions, to long-term relational contracts, or to transactions entirely within an organization or network. The three layers (social embeddedness, institutional environment and institutional arrangements) are highly important in order to be able to understand what is happening in the *fourth layer*: the production, consumption and exchange of goods and services and the use of resources – the processes analysed by neoclassical economics.

I think that institutional economics has much potential for researchers and students[7]. But what I really miss in institutional economics is dynamics. Each of the three layers has its own time frame (see Williamson, 2000; Slangen et al., 2008). We - as scientists - have gained some experience in ensuring that policies should be embedded in the social environment (we call that embeddedness). We know that the institutional environment is important (the formal laws and regulations). We increasingly understand what institutional arrangements are and how they function. But the dynamics of institutions (or in more standard language: the change of institutions) is still a very open issue, particularly how social embed-

[7] Sixteen years ago I became enthusiastic about institutional economics (Oskam, 1993), thanks to my colleague Louis Slangen, who helped me greatly to understand the basics (see e.g. Slangen et al., 2008) and to Kostas Karantininis who gave several PhD courses on New Institutional Economics in Wageningen. Nowadays, 'institutions' has become the buzzword of the Mansholt Graduate School of Social Sciences..

dedness and the formal rules of the society are changing and influencing the institutional arrangements. At present, I think that this is caused by the lack of insight into transaction costs – and then *not* only what I call the narrow concept of transaction costs (information costs, monitoring costs and enforcement costs), but more generally the difficulty of changing a situation because of the existence of the endowment effects. In institutional economics, property rights play an important role and these rights are the equivalent of endowments. If you own something, and somebody else or society wants to take that away that is difficult to accept by most people. Their reluctance is *fundamental*, and information, monitoring and enforcement costs are only part of the wider concept of transaction costs which prevents policy changes even if there are clear efficiency gains.

But there is more that bothers me highly: lack of theory on interdependent decision-making

One of the fundamental assumptions in microeconomic theory is that agents (whether individuals, families, firms or governments) take 'independent decisions'. They optimize their individual utility function (whatever that may be), their profit, their votes or their power.

There are three branches of the literature where you can see another type of approach (1) game theory; (2) external effects; (3) the economics of altruism. All three are in the typical style of standard microeconomic theory, with topics such as the non-cooperative game and the prisoner's dilemma (branch 1); carrying over costs and benefits to other agents in society (branch 2); incorporating the assumption that in our utility function, some of us attach high 'value' to 'giving away something for nothing' (branch 3). All three branches I consider to be typical examples of what Lakatos (1968) calls efforts to maintain the 'main paradigm' via a type of 'protective belt' that can better explain particular aspects in real life, but they have been developed in such a way that 'standard theory' or 'hard-core' remains.

But that is *not* what I want to focus on here. To me, it seems much more fundamental that persons, firms or governments influence each others' decisions not only consciously but also partly unconsciously (or I might say intuitively). Let me make this clearer by giving some examples.

Almost a three quarters of a century ago, Keynes (1936) suggested that what drives investments – regardless of whether they are in tulips, ships, building homes or offices, buying consumer goods, or shares at the stockmarket – is 'animal spirits'[8]. But the reverse also holds: think of the impact of the doom scenarios of the Club of Rome in the 1970s.

Many books and journal articles have been written about the social networks that are key to our society. Of course, one of the elements is that people in social networks influence each others' behaviour. But here, too, the underlying theory is lacking! In the last ten to fifteen years, society has changed drastically as a result of the mobile phone and rapid exchange of information. One would expect that this would at least have generated new theories about interdependent decision-making and also the position of social networks in that respect. But what I have seen up to now is not useful for empirical research (see e.g. Shapiro and Varian, 1999). Of course, I could mention fashion and hypes, which govern a substantial part of our activities, whether as consumers, in firms or in government. All these actors are governed by interdependent decision-making, but our main economics textbooks are silent on them.

Another example would be that economic theory does not take into account whether somebody is an autistic or a very sensitive person. Their way of decision-making is totally different, but we have no 'equipment' to take this into account (Iacoboni, 2009).

Conclusion

The conclusion is that individuals, firms and governments do not take independent decisions, but are influenced by each other; here, too, the basic microeconomics theory and even most of the often applied methods in behavioural and experimental economics[9] do not function very well. They still focus on individual behaviour.

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[8] The concept of 'animal spirits' has been discussed critically by Matthews (1984)
The overview article by Rabin on Economics and Psychology does not even mention interdependent decision- making:

[9] The topics covered will necessarily be only a small fraction of economically-relevant psychology" (Rabin, 1996).

How are we served as applied economists or as policy analysts?

I conclude that economists who study agricultural, food and rural policy are not well served by basic economic theory. This leads to four observations:

1. Standard microeconomic theory is not functioning for the key issues that are relevant for policy analysis, so needs to be adjusted before it will be useful in our scientific endeavours. It is high time that we deployed more of the rigour so well explained by Popper (1968).
2. Although political economy appears to better explain why certain policies are adopted or remain, I am still very reluctant to accept whether this piece of theory is also sound. But it is undeniable that agricultural economists have often used political economy (De Gorter and Swinnen, 2002). So, not only economists but also agricultural economists must bear responsibility for the popularity of this approach. I will return to this later. Here, I will merely say that given the long existence of this branch of economics, it is time for it to be tested more rigorously!
3. The third approach, institutional economics, has much potential for our research and teaching. But what I really miss in institutional economics is: what drives institutional change. Moreover, it seems to me to be crucial to incorporate the wider concept of transaction costs within institutional economics, in order to understand the difficulties of policy change.
4. Fourthly (and finally), we are not well served by the lack of insight into how the decisions of individuals, families, or firms influence each other. We are nearly always forced to operate with approaches which assume 'optimal' individual behaviour.

Here I will propose a solution, which has three strands:

- Incorporate behavioural economics in our standard approaches and also take this seriously when further developing microeconomic theory;
- Take into account interdependent decision-making, and encourage research that takes account of the advances made in psychology and neurobiology (Iacoboni, 2009);
- Encourage research that tries to trace the sequence of dynamic processes in society. In this context, I must mention the recent NWO programme 'Evolution and Behaviour'.

In short: we need a paradigm shift in our basic discipline of economics!

SECOND PART

But how are agricultural economists operating?

Are the contributions which agricultural economists make – as scientists – very useful for political decision-making? Let's start here with the observations of Michel Petit on short- and long-term political decision-making. In 1985 he came up with the idea that short-term political decision-making was mainly driven by the political process, while long-term political decision making was influenced much more by the economic realities (incomes, budgets, balance of payments, efficiency, etc). If that is true, then the point of the story is that politicians can 'fiddle around a bit' – also to prepare political compromises – but in the long-term, 'economic realities' will be much more influential. But, given our basic observation that transaction costs in relation to policy changes are highly important, 'fiddling around' is very costly to society. Every short-term measure that has to be replaced by another one results in high transaction costs. This implies two things. Firstly, in periods of crisis and high uncertainty it will be extremely important to come up with well-developed long-term solutions.[10] The second implication is that long-term solutions will be driven by the advice of economists, because they are the best policy advisors.

It is worth noting that the two categories Petit (1985) defined are typically related to governmental decision-making at the political level. If certain policies are developed in a governance structure in which different stakeholders (agents) are involved, then it might be more productive to introduce concepts like 'adaptive systems'. It would be interesting to investigate whether it is possible to simulate the behaviour in such a political process. This will not be developed here.

In this overview of a number of areas in policy decision making, I will use four 'lead items' to investigate how analysis of political decision-making functions:

1) Whether *falsification* plays a role in the particular research area and (alternatively) whether the research goes *'Against method'* to achieve

[10] As usual there is also a trade-off here. If future developments are quite different from the basic assumptions used for selecting the particular policy, then a policy switch with transaction costs can still be preferred above continuing on the path of the original decision.

renewal and new insights;
2) The relevance of *transaction costs*, based on the 'endowment effect';
3) Whether essential knowledge is required about *interaction* between agents in society to understand the policy process: the interdependent decision making;
4) Whether attention is paid to the *dynamics* of institutions, behaviour or systems.

I am forced to make a very rough – subjective – selection of the items that are relevant and that play an important role in research related to agricultural, food and rural policy. But I will start with two more personal items.

The example of EU dairy policy

At the beginning of my scientific career, I analysed – with colleagues - EU dairy policy. At that time dairy policy was in a situation of a growing crisis and a Study group came up with a large number of policy alternatives in 'Interim rapport EEG Zuivelbeleid' (Oskam, 1978; see also Oskam, 1981). Several alternatives were investigated (price decrease, curbing the production via a quota system, premium to reduce milk production, etc.) and policies were judged on the basis of eleven different policy objectives, four of which were the typical welfare economics related criteria: producer's income, consumer's income, budget expenditure and EU income. One could classify this as a typical Tinbergen approach, using objectives and instruments (Tinbergen, 1952).

Judging such alternatives is not easy, since it requires political weighting. And that is something that we are not expected to do as economists, unless we derive this weighting from similar types of decisions and take into account the political weight of different objectives. Still, it is remarkable that a dairy policy which first introduces milk quotas and then shifts to direct income support was 'judged' as the best policy objective under many 'reasonable' weighting schemes (Oskam & Van den Noort, 1978). But now consider the time path. The report was written in 1978, the milk quota system was introduced – after major difficulties in the dairy sector – in 1984 for a five-year period (up to 1988). Introduction of the quota system met with huge resistance from dairy farmers and related industries: they were still addicted to producing for intervention storage and subsidised export. For them, considering the market value of their products and limiting their production was not focal (Petit, et al., 1987)

But instead of 5 years, it took another 15 years before the important step to a more market oriented system was finally made (in 2003) and it will take another 12 years (to 2015) to get rid of the milk quotas. Why? Because we – as economists – do not take into account the *transaction costs* related to a policy switch. We would even have difficulties developing such an approach. Using the standard welfare economics approaches reveals only part of the reality (as we have seen earlier) and therefore creates the misleading impression of an easy policy switch.

The EU dairy model, however, was a long-term dynamic model and in that respect ahead of many other models for analysing policy questions (Oskam, 1989). Still, its dynamics were rather primitive and it was certainly not capable of generating endogenous dynamics.

Let me make a *side-step* to the political realities of today. After taking the long-term decision in 2003 to remove the milk quota system by 2015 – a decision reaffirmed in the Health Check – it has since also been decided to make a 'soft landing' from quotas to markets. The idea was that as a result of increasing the quotas, the milk price would decline and gradually milk quotas would lose their value (Mechemache, et al., 2008). This fits with the basic principles of long-term optimal decision-making: market participants are informed and governments follow a consistent path. Recent price fluctuations in the world dairy market – partly related to economic growth and supply-side fluctuations – boosted milk prices up to very high levels in 2007 and 2008, but now prices are back to 'normal'. High prices and possibly also direct income support encouraged a number of farmers to invest in dairy production. But what is the relevant milk price? As always in business, in boom periods decisions are made which are regretted in bust periods. The worst solution would be to revoke the decision by the EU to phase out the milk quota system and to go back to the situation in which farmers can 'farm the government' (the same holds for sudden requests in 2007 by dairy factories and dairy farmers to increase or immediately abolish milk quotas). This would return the EU to the type of decision-making practised up to the end of the 1980s, with all the corresponding negative consequences.

The level of protection of farmers via policies

Support for the agricultural sector in developed countries is high on the international policy agenda. It is generally accepted that farmers in many developed countries are protected by a number of measures. But what is the level of their protection and how do we measure that level?

For the last 35 years, the calculations of the protection level of farmers have been performed by the Organization for Economic Cooperation and Development (OECD) (see Legg, 2003 and OECD, 2009). OECD have defined an 'easy to calculate' measure that is currently called the Producer Support Estimate (PSE). Laymen and experts often use the PSE as an indicator of agricultural support. This is clearly implied by the name of the measurement and the reputation of the organization (the OECD) that adopted it. Of course, real insiders know that this is misleading (Doyon, *et al.*, 2002; Legg, 2003, p. 175). When I started (together with Gerrit Meester) to criticize this measure, the reaction of Alison Burrell was quite simple: 'Arie, why are you wasting your time and energy on the PSE? Everybody knows that the measure is wrong!'

Now you may not belong to Alison's group of 'everybody', in which case, you will now be wondering what this measure is and how the OECD calculates it.

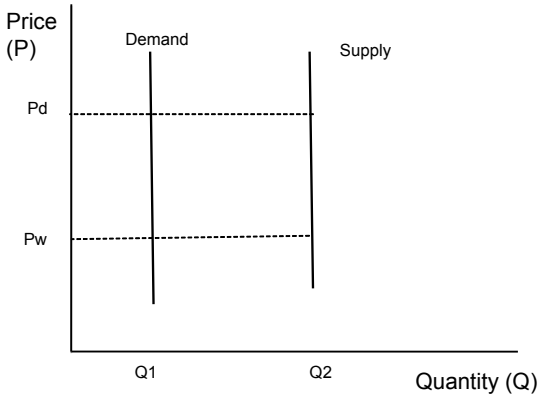

Fig. 3 Protection; OECD PSE measure

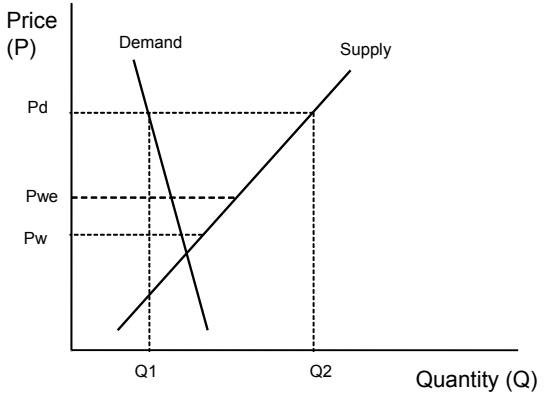

Fig. 4 Protection; standard economic theory

The method by which the PSE determines the support provided to producers – i.e. farmers – is at odds with standard economic theory. For simplicity the OECD works with a 'fixed' world market price (Pw) and does not take into account the consequences of price changes on quantities. This is illustrated by the vertical supply and demand curves in figure 3. Figure 4 gives the standard approach in economic theory in a partial equilibrium setting.[11] If protection is reduced then world market prices increase to e.g. Pwe. Moreover quantities of supply and demand adjust. The difference is important if trading partners have substantial market shares. Oskam and Meester (2006) provided a number of plausible examples where the calculation of protection levels give opposite results or results of a very different magnitude if the PSE method is used rather than standard economic theory. So, the fact that the PSE is used extensively by economists is very worrying.

Even more of an eye opener for me was the fact that the article published in Food Policy (Oskam & Meester, 2006) did not change things. The number of people using PSE numbers has not declined. The only thing that did change was that the OECD started to disaggregate its PSE measure. But that process was already going on at the time we were criticizing the PSE. It is disappointing to have

[11] This implies that consequences of changes in other markets are not incorporated. A general equilibrium setting complicates matters even more.

to admit that the whole concept of *falsification* ('even if everybody knows that a measure is wrong') does not seem to work. Many researchers seem to be more interested in getting their papers published and accepted by journals, or influencing advice to government.[12]

International trade and general equilibrium modelling

Applied general equilibrium models have been widely used to analyse policy questions such as the impact of changes in the Common Agricultural Policy, the consequences of trade liberalization, the effects of increased demand for biofuels (via government policy), etc. It would be too much of a digression to explain the set of principles used in applied general equilibrium modelling (see Shoven & Whalley, 1992). I will simply say that such models describe the production of all industries (assumed to be groups of similar firms), the consumption of all households (based on the rewarding of the employment of their resources), the exchange of goods and inputs (or resources) on markets, and the actions of governments, e.g. taxes, subsidies, the government's own production. Of course there has to be aggregation, to make the modelling manageable, but that does not change the principles. The nice characteristic of such models is that they include a complete structure of the economy. By so doing, they help us to understand some basic principles of how economies would work if the basic functional forms and parameters used in the model did reflect reality.

Within the set of applied general equilibrium models, the GTAP framework is currently the best known and seems to be monopolizing trade liberalization research. It is also used intensively in other types of policy-oriented research (Hertel, 1997; Burfisher et al., 2002). However, here too we see several disadvantages. The analysis is fully based on 'neoclassical welfare economics' and, as we have seen, this does not fit with reality, where endowment effects are important and

[12] Most economic researchers would agree that the work of the OECD in constructing the PSE will not bring us much further in analysing the consequences of changes in, for example, international trade conditions. That is implicitly acknowledged by the OECD, because their work on the Policy Evaluation Matrix (PEM) is a step in the right direction, but still has to be broadened in terms of the number of countries involved, the products incorporated and also the range of policy instruments in operation. The database used for generating the PSE proved to be useful in establishing the PEM (OECD, 2001, p. 10).

policy changes will give substantial *transaction costs*. As long as researchers ignore this in their models, only partial answers will be obtained, and the answers should always be qualified by the statement 'if there were no transaction costs'. But that is not a very helpful answer to the policy maker, because there are transaction costs.

Applied General Equilibrium Models have more drawbacks, some of which are well-known and have been circumvented partly in specific models, such as comparative static models with specific sets of parameters to answer dynamic long-term questions. The drawbacks are: (1) a structure of the economy which does not incorporate international chains, networks and joint decision making; (2) no attention paid to externalities and spill-over effects; (3) financial markets and currency exchange are incorporated not at all, or only very superficially; (4) more generally, no attention is paid to the institutional context in which functions the economic process.

It is clear that the applied general equilibrium framework, supported by an extensive database and used by a large group of researchers, will not be given up easily.[13] It is a typical example of an 'endowment effect' for researchers. The combination of expertise, data and a basic methodology that is still accepted because it produces coherent results within a particular theoretical framework makes it a typical 'research programme' as defined by Lakatos (1968). From a scientific perspective, however, there are challenging opportunities for a new research programme which preserves the structure of the economy but incorporates transaction costs and addresses some of the four shortcomings mentioned above. However, this would at least entail replacing the central architecture of applied general equilibrium models by non-smooth (kinked) transformation curves.

[13] See Hertel, et. al. (2009) for the extensive data base and parameter sets.

Income levels in agriculture

In the agricultural economics literature, several theories have been developed to explain income disparities in agriculture (see Tweeten, 1969 and Gardner 1992, for an overview). Nonetheless, within a bundle of theoretical approaches, the 'Terms of Trade Model' of McCrone (see Hill & Ingersent, 1977) remains a *valid starting point* for developed countries.[14] The basics are:

- A small and decreasing growth of demand for agricultural products. The reasons for this are the small population growth in most developed countries and the low elasticity of demand with respect to income. So, as income increases, the consumption of agricultural and food products increases only slightly;
- Fast technological change, enabling more to be produced from the same levels of inputs;
- Immobility of the production factors used in agriculture: labour, land and capital. This implies that low factor rewards in agriculture hardly lead to an outflow of these factors.

The consequences for agriculture in a closed economy are:

- A continuous tendency to increase agricultural production;
- An almost constant demand for agricultural products;
- Low and decreasing prices for agricultural products;
- A small reduction in the use of labour, land and capital;
- Low incomes in agriculture.

Several other theories have complemented this 'Terms of Trade Model' (each of them focussing on a particular part of this theory or changing part of the basic assumptions). One of the more recent theories is that of Haagsma and Koning (2005) who articulate the strong preferences of farmers to be farmers, driven by endogenous norms[15]: farmers accept a relatively low income because in turn they can remain farmers.

[14] This theory has recently been updated by Colman (2009), but then 'at world level'. Of course, at that level the population increase is still important. Part of his discussion, however, concerns the level of technological change (see Huffman, 2009) and the long-term availability of resources such as water and land.

[15] Endogenous norms and reference points (or endowment effects) are similar concepts, although based on different literature.

Given all this interest, both theoretically and in relation to policy, it is remarkable that the income levels of farmers are not better understood, whether at farm level or at sectoral level. De Veer (1978), Gardner (1992) and Hill (2008) have advanced different explanations for this lack of understanding. De Veer shows that several arbitrary assumptions have to be made in order to determine farm income. Gardner (1992) provides evidence that income data are very uncertain, but even with highly uncertain data, theories used by agricultural economist are quickly adjusted without much real empirical evidence: there does not seem to be much connection between theory and empirical research. Gardner states that given the lack of good and adequate data (based on a sound theoretical approach) it is difficult to see which theoretical approach is most useful. Looking at this area of research, I agree. Hill (2008) suggests that many groups may not be interested in compiling the data on actual farm family incomes, because these would show that in many countries farm families have higher incomes than families working outside farming. For example, Hill (1996) calculated that farm incomes (at least in the Netherlands) were much higher than outside agriculture.[16]

Looking at the first part of this Farewell Address, it seems to me that the *endowment effect* and the resulting *transaction costs* could be an important explanation for the existence of lower farm incomes compared to nonfarm incomes. Farmers do not easily give up their way of life, and that implies that the moment in time at which people drop out of farming – i.e. the decline in the farming population – is when their generation is succeeded by another. A *second* item in decision-making could be that farmers do not take 'independent' decisions; instead, their decisions depend on what their colleagues in their network are doing. This type of reference group approach has been elaborated by Kapteyn (1977) in a more formal sense, but also plays a role in the sociological literature (Burton, 2004; Van der

[16] As the responsible editor of the European Review of Agricultural Economics at that time, I accepted the article for publication – after review and revision – because I thought it would be a nice example for stimulating a discussion. But it is remarkable that nobody reacted to this article (or to an article in Rural Studies (Hill, 1999), which contains similar - more recent - results). Common sense suggests to me that there is something wrong with the finding that the income of farm households in the Netherlands is (on average) more than twice the income of other households, while the farming population is still declining by 1-4 % per year. But Berkeley Hill has undeniably put a lot of effort into obtaining more relevant farm household income data (Hill, 2008).

Ploeg, 1993). A *third* element consists of the dynamics in farmers' decision-making. Several of the current theories are comparative static, yet nowadays the data allow dynamic approaches.

Investment analysis

Investment analysis typically focuses on changes in capital goods which, in the case of agriculture, could include land. Investment theory follows various lines but often assumes that agents maximize the net present value of their investment and the resulting net revenues. This can be done in a dynamic framework in which the well-known Bellman equation is used (Bellman, 1957): this equation simply gives the conditions for a maximum discounted net revenue over a relevant period, given the particular conditions of the investor (firm, organization, or person). Of course, many relevant items are unknown, but the decision maker can try to form expectations about all those variables. That is typically how investment analysis is done (see e.g. Nilson & Schianterelli, 2003). Empirical research shows that actual investment decisions are very difficult to explain. The degree of explanation at the level of individual firm or farm is often very low[17] (Elhorst, 1993; Goncharova, 2007). Moreover, predictions about whether or not firms will make substantial investments have also proved very inaccurate (Goncharova, 2007). This implies that a large part of the variations in investments between firms remains unexplained.

In the typical neoclassical approach, the concept of adjustment costs has been introduced. It is clear that from a theoretical perspective this provides some rationale for why it might be difficult to invest 'immediately' if conditions are changing. Moreover, it is often assumed that expectations adjust gradually. Two elements, however, are always missing from investment analysis:

[17] Often this is difficult to observe, e.g. by using Euler equations authors concentrate on the significance of variables and not on the impact (see e.g. Gardebroek, 2004).

1. Transaction costs (although some may argue that adjustment costs are similar to transaction costs, but I believe that the transaction cost as defined in the first part of this Farewell Address is a much wider concept);
2. The interdependent decision-making of agents. This is often circumvented by including a variable that reflects 'business cycles', but that does not bring us much further in our research, because it is a general variable influencing all economic agents in a similar way. The real advance that can be made by incorporating of interdependent decision-making would be to make such decision-making explicit and to investigate which personal characteristics and which circumstances encourage it. Here, a combination of psychology and economics could be highly productive (DellaVigna, 2009).

Revising the CAP and enlargement of the European Union

The objectives of CAP were formulated in the Treaty of Rome and have always been carried over to new treaties. Briefly, they are:

- to increase agricultural productivity by stimulating optimal use of production factors, in particular of labour;
- thus to ensure a fair standard of living for the farming population;
- to stabilize markets;
- to assure the availability of food supplies;
- to ensure that supplies reach consumers at reasonable prices.

In practice, however, the budget expenditure of the EU has played an important role in developing and judging different parts of the CAP.

Table 1 Budget expenditure CAP in billion euro

	1992	2000	2007
Number of member states	12	15	27
Market and price policy (Pillar I)	28.4	10.7	5.4
Direct income support (Pillar I)	3.9	25.5	37.0
Rural policy (Pillar II)	2.9	5.6	9.5
Total	35.2	41.8	51.6

Source: European Commission

Therefore it is interesting to start with an overview of EU budget expenditure (see table 1). Before starting the reforms of the European Union in circa 1991, the annual budget expenditure was 34 billion euro (circa 0.6% of Gross Domestic Product (GDP)) of the then 12 member states of the EU. In the most recent year for which data are available (2007), the figure was 52 billion euro, less than 0.4% of GDP of the (by then) 27 member states of the EU. In between these two years, three major steps were taken.

First, a reform of the CAP (Pillar I), which shifted the policy from a market and price policy in which consumers bear the burden of the higher prices, to a policy in which producers are compensated for price decreases via the EU budget. Standard economic approaches would have indicated that such a change would require a much higher budget expenditure. The *second* reason for higher budget expenditure is the enlargement of the EU from 12 to 27 member states. Many economists calculated that production of agricultural products would grow strongly under the – on average – higher prices. Most of the new member states (and in particular the 10 Central and Eastern European Countries (CEECs)) have a stronger agricultural orientation, which implies that the share of budget expenditure in GDP would increase. The *third* reason for a much larger budget expenditure is given by the budget for rural policy, which increased from 2.5 to 9.5 billion euro. These changes resulted directly from political decision-making. Economists were less involved unless one considers this as the logical consequence of the Buckwell report (Buckwell *et al.,* 1997). Therefore I will concentrate on the first two budget items of Table 1 (also called Pillar I).

No studies tried to predict in advance the different steps taken in the three main CAP reforms of the European Union[18]:

1) *Mac Sharry Reform in 1992*: Price decreases for cereals, beef and sheep. Limitation of oil seed production. Obligatory set-aside for larger farmers. Compensation payments per hectare or per animal. Introduction of agri-environmental measures.

2) *Agenda 2000 in 1999*: Preparation for the enlargement of the European Union with Central and Eastern European countries. No direct income payments for producers in the new member states. Relatively small steps in price decline and income compensation for cereals, beef, and some other products.

[18] The last reform (the Health Check; see Regulation 73/2009) still has to be implemented.

3)*Midterm Review in 2003*: Establishing the principle of fully decoupled payments (but with a number of exceptions) under cross-compliance conditions. Dairy reform, with price decrease and compensating payments. After the Midterm Review a number of additional steps were taken to reform agricultural policies for Southern products (Olive oil, Cotton and Tobacco), Fruit and Vegetables and Sugar: the aftermath of the Midterm review.

The Mac Sharry reform was not preceded by much preparation in the form of impact studies (Cunha, 2007), but Agenda 2000 was extensively prepared for by means of several impact studies (European Commission, 2000) and analyses per product (European Commision, 1997; Oskam, 2000). The Midterm Review was prepared internally within a select group of the European Commission (Swinnen, 2008). Extensive preparation seems to be no guarantee that the Council will follow the proposal of the Commission - indeed, the opposite is more likely.

But going through a number of reports in relation to the three different policy reforms and taking a view from this distance in time, it is quite clear that the budget costs of the different policy reforms and of the enlargements were often overestimated or did not play an important role.[19] To provide one example: in 1994 four reports were prepared by leading agricultural economists, and in one of them it was indicated that the budget consequences of the enlargement with 10 CEECs would be between 22 and 37 billion ECU/euro (Buckwell, 1994). This was a huge overestimate (2-3 times higher than actually transpired), although later estimates came closer to the actual changes in budget expenditures (Oskam, 2009). The estimates around the time of the actual enlargement of the EU in 2004 diverged less[20], but at this stage of decision-making it was still too difficult for several economic researchers to incorporate the more dynamic effects of policy switches.

[19] In the preparation of Agenda 2000, only the CAP MAT model predicted budget consequences (and did that also adequately!), but the results of the study were published after the decision at the Berlin Summit of March 1999 (European Commission, 2000).

[20] Of course, calculating the direct income support on the basis of areas, crops and animals in the base period is only a matter of having good statistical data and applying simple arithmetic. Estimates closer to the actual enlargement of the EU all started to converge with respect to this budget component. Here the study by Silvis et al. (2001) played a leading role. The difficulty in determining future budget costs was limited to making good estimates of the budget costs of market and price policy after the switch to lower prices and direct income support.

According to Swinnen (2008: 137) "There is a general consensus that the decision to decouple farm support from production was a very radical change in the CAP." So, the most important change came in 2003, more than ten years after the Mac Sharry reform of 1992. The Berlin Summit of March 1999, which concluded Agenda 2000, and which was intended to smooth the way for the accession of Central and Eastern European Countries, got only halfway through the proposals developed by the European Commission (European Commission, 2000; Cunha, 2007). The Mid-Term Review, which included both decoupling of income support and the reform of the dairy sector, has been called the 'Perfect Storm' by Swinnen (2008). It was only because of very special conditions, combined with strong leadership and vision from Franz Fischler and the small group of people around him, that a policy reform to much more efficient policies was achieved. Still, it was a narrow escape and several 'tricks' had to be used to achieve the result (Swinnen, 2008).

Three elements are lacking in the economic analysis of CAP reforms and enlargement of the EU:

1. No attention to the transaction costs of policy changes;
2. Insufficient attention to the dynamic effects of policy changes;
3. No attention to checking of results of earlier research.

It is difficult to check the results of earlier research because many researchers use very sophisticated models for their impact analysis.

The political economy of agricultural policies

Two related branches of political economy that have been developed widely in relation to agricultural policies: (1) trade policies and (2) domestic policies. Trade policies cover the area of trade policy instruments (tariffs, quantity restrictions, export subsidies) and often use free trade as a reference point. The domestic policies show much more variation, but income redistribution is often a central element.

As indicated in the first part of this Farewell Address, in the political economy literature there are two main models to explain policy decision-making: interest group models and voting models. The interest group models are the most relevant: indeed, farmers and related industries are often the standard example in well-orga-

nized lobby groups in developed countries (Van der Zee, 1997). Moreover, the voting models nearly always specialize in single issues and certainly do not cover the multilevel decision-making that is relevant in agricultural policies.[21]

It is difficult to achieve a good overview of all these studies. The review papers by Van der Zee and Swinnen (1993); De Gorter & Swinnen (2002) and Cunha (2007) yield a total of circa 500 references (with some overlap), only a few of which focus on determining the *quantitative effects* of political economy decisions. The basic theory of pressure groups states that these groups spend as much budget and effort (at the margin!) on the lobbying activity as pays off in terms of increased income or other remuneration. Of course, this equality at the margin will not be easy to determine. Moreover, pressure group activities may pay off over a long period. But still, I very much miss insight into the effectiveness of pressure group activities. Given the enormous amount of literature available, it might be time for a meta-analysis, which is a quantitative method of obtaining insight into the results obtained within a particular area of research.[22]

Three lines of research within the area of political economy of agricultural policies seem to me highly relevant:

1. Distinguishing policy changes explicitly, because these policy changes will cause transaction costs because of endowment effects.
2. Incorporating – more explicitly – the interactions in decision-making by agents in society. Such interactions might even be tested first by means of experimental economic methods. This is already often done in role plays, but the essential element is here to include such experience in quantitative modelling.
3. Investigating the dynamics of interest group formation and the development of pressure group activities.

[21] This brings researchers to putting all types of policies on a single scale. A good example of this method gives Henning (2008).

[22] Meta-analysis has been further developed and used by the research group around Peter Nijkamp, Raymond Florax and others in regional and environmental economics. Using meta-analysis, it will quickly become clear whether the insights provided by the literature yield sufficient information for quantitative assessments.

Of course, given the relatively long history of political economy research in relation to agriculture, it could also be time for a more rigorous testing.

Economic research in relation to genetically modified organisms

Genetically modified organisms (GMOs) also called 'transgenic crops' have attracted much attention during the past decade. According to Wesseler, (2010) "Never before has a new technology in the field of agriculture been so emotionally debated among different stakeholders. Groups of consumers, politicians and non-government organizations (NGOs), in both developed and developing countries, oppose the introduction of GMOs, which they see as a threat to biodiversity, human health and the economy of rural communities, ultimately endangering sustainable development. At the same time, scientists in many developing countries fear being bypassed by the new technology." The policy community oriented on developing countries is split into two different camps: (1) those believing that there will be a lack of adequate food in the future if there is insufficient investment in transgenic crops; and (2) those who fear a decline in biodiversity and similar consequences if transgenic crops are further developed and used.

At the political level of the European Union, the situation is very unclear. Under the basic rules of the EU, the European Commission should propose the decisions in relation to transgenic crops (European Commission, 2009). But for a number of years now there has been a strong difference of opinion in the EU and between its member states, which has meant that some formal decisions have not even been taken or implemented.

The typical contribution of agricultural economists to this area of research is in calculating the costs saving due to this new technology and/or the costs of keeping two different production lines: one of GMO-free products and one of possible or actual GMO products.

This is an area of research in which *endowment effects* (or 'status quo' positions) play a huge role. Endowment effects apply to many technological developments, but the difference here is that this development comes near to the consumer in food consumption and near to the citizen because of the environmental effects. It seems to me

that as long as economists do not incorporate these aspects in their analyses, it will be difficult to produce balanced overviews of such new technological developments. But there is more at stake. Given the strongly held views and vigorous debate on transgenic crops, it is clear that different persons influence each other's stance. So, here I expect a typical example of *interdependent decision-making*. The research, however, even the experimental economics research, is totally focused on personal and independent decision-making (see e.g. Huffman, *et al.*, 2003). Moreover, the *dynamics* of introducing transgenic crops has not been studied very well and requires attention. Given the recent developments in this research area, it seems to me to be too early to ask for rigorous falsification. The research area first has to be developed, possibly even 'Against Method'.

Harmonization of food regulations and food standards

Food regulations and food standards are assumed to protect consumers' interest and to facilitate the exchange of food products between companies and between countries. This is done by means of the Codex Alimentarius (which can best be seen as an enormous database), which functions as the global reference point for food. Nowadays, European Union public food standards are laid down in the General Food Law: Regulation (EC)178/2002.

In addition to international and EU public regulations, many larger food companies have been engaged in establishing private food standards – which are often stricter than public requirements – and have adopted food quality and safety standards in certification protocols (see e.g. Fulponi, 2006; Swinnen et al., 2010; Velthuis et al., 2010). This yields at least four different sets of standards:

1. The Codex (health, safety), which is updated by FAO and WHO
2. In international trade (SPS; TBT, etc.), the SPS agreement on Sanitary and Phytosanitary measures gives every WTO member the right to set up necessary import requirements, but in practice the WTO strives to keep the Codex as standard. Technical Barriers to Trade (TBTs) are notified by member states of the WTO
3. Private labels and brands (consumer-oriented)
4. Standards within chains and networks.

Two elements are crucial with respect to international trade:

1. Whether the SPS and TBT measures reflect the Codex standards kept by the particular member states or whether those standards are stricter than those for domestic producers. If the latter is true, then there might be unequal competition between domestic and foreign producers. But imported products should meet the EU's food safety standards, to prevent unequal competition in the other direction by making it easier for foreign producers. This also holds for the attributes of processes, such as animal welfare or global environmental impact.
2. Strict rules, particularly in the case of the SPS agreement, may increase international trade, because by reducing the number of disease outbreaks it is more attractive to source products internationally.

The analysis by De Frahan & Vancauteren (2006) demonstrated that reducing the TBTs greatly increased the trade in food products within the European Union. The same might hold for trade between the European Union and its trading partners (Disdier et al., 2008), but here it is not clear whether the TBT and SPS measures are stricter than the standards applied in the European Union in relation to domestic production. It is conceivable that removing TBTs would increase exports to the EU (as has been indicated clearly by Disdier et al., 2008), but that would put domestic producers at a disadvantage. Moreover, more strict rules may also encourage producers in developing countries (Maertens & Swinnen, 2009).

From a social science perspective, several areas of research will be challenging in relation to food standards:

1. The reasons why (and up to what level) private firms and chains define more strict food standards than governments;
2. The conversion of food standards to standards for families or individuals. Whether particular standards are necessary to protect consumers (standards for food products) and also to influence the consumption pattern of individuals and their perception of risks.
3. How account should be taken of the often totally different consumption patterns of individuals, based not only on age, gender, type of activity, but also on elements such as personal characteristics (life style, allergies, obesity/BMI, illnesses).

Such a research programme places both consumers and producers much at the centre of the research.

Studies evaluating Rural Policy

Let me touch on another area currently being debated: the impact of Rural Policy in the European Union. Since rural policy often has a strong agricultural focus, two main questions could be:

1) How effective and efficient are rural policies in the EU?
2) How do rural policy measures perform relative to structural or cohesion policy?

First of all, it is good to observe that all the evaluation studies I have seen are focused on totally different criteria. Most studies look at items like programme organization and the expenditure of the budget. The evaluation assesses whether this has been done according to the rules of the policy programme that has been submitted to the EU. Often experts or stakeholders are asked for their evaluation of the particular policy measures (see e.g. Agra CAES Consulting, 2005; Ecorys, 2003). The purpose is a formal check on expenditure (and also on the timing of expenditure) and the evaluation studies look at a number of targets specified when the programme was submitted. These are compared with the actual implementation.

Up to now, I have not seen any detailed *analytical* impact study of rural policy. But what is an analytical impact study? The central question of such a study is: what would have happened without the particular policy (including the targeting and the provision of budget, etc.)? Moreover, the impact study should also include the co-financing (national, regional, local, by firms) that takes place in the particular areas of interest. A second element that may play a role is the spill-over effects of policies: the programme is focused on a particular area, but the consequences may also influence nearby areas. A third element is the timing of policy effects. If a particular programme is implemented, it may take time before it starts to work. Although this is not the same as research programmes (see e.g. Huffman, 2009) it can still take a certain time before policies show up in such variables as (1) population; (2) employment and (3) income per capita. It is even more difficult to determine the length of time that policies are influential.

In the scientific literature, one can observe two lines of research:

1. Modelling the effect of policies by means of the typical models used by economists (see e.g. Barro & Sala-I-Martin, 1991; Beugelsdijk & Eijffinger, 2005; Esposti & Bussoletti, 2008) and estimating such a model on the available data for a set of rural areas. A specific application to EU rural policy is still lacking, however[23]
2. Using standard policy evaluation methods (without explicitly modelling the mechanism of policy evaluation) by means of determining 'counterfactuals'. This is research in the tradition of Jim Heckman and his followers (see Heckman & Smith, 1995; Heckman, 2005; Wagstaff, et al., 2009).

Counterfactuals – in relation to EU rural policy – are similar rural areas which did not apply the particular policy or which differed substantially in the level at which the policies were applied. Crucial in this research is the selection of these counterfactuals. If a sufficient number of different rural areas can be observed over a number of years, then opportunities are available for (1) modelling or (2) determining the effects of policies (also called 'treatments') via the construction of counterfactuals. The second line of research has the advantage that explicit modelling of rural policies (not an easy task!) can be circumvented. Of course, this also has a disadvantage, because the methodology of defining counterfactuals on the basis of treatment effects is more of a 'black box', i.e. does not contribute much to understanding how rural policy works.

Given the state of the art, it is beginning to be time for policy evaluation studies to apply the type of methodology that has been developed in recent decades in scientific journals (see the references above) and has been applied in other areas of research (e.g. impact studies of microcredit; see e.g. Berhane, 2009; Viet Cuong, 2009). In this respect, the dynamic variant of impact studies, which entails observing programme implementation and its results over a period of consecutive years, could be particularly helpful in this respect.

The main challenges in this area of research will be:

1. To develop an impact analysis focused on rural policy and compare that with the results of structural policy;

[23] Esposti (2007) & Bussoletti (2008) apply the particular methodology to the structural and cohesion policy of the EU (Objective I regions). Espositi (2007) focuses on total CAP support.

2. To investigate the importance of endowment effects – and the implied transaction costs - in relation to rural policies. It could be also interesting to analyse whether transaction costs differ systematically between top–down policy measures compared to more bottom–up processes such as LEADER.
3. To investigate the dynamic effects of rural policy measures and to compare these with the dynamics of direct decoupled income support.

Agri-Environmental Schemes and farmer behaviour

In 2005, Rob Hart and Uwe Latacz-Lomann published an interesting article in the European Review of Agricultural Economics about the behaviour of farmers in relation to Agri-Environmental Schemes (Hart & Latacz-Lomann, 2005). Several of these schemes are being implemented under the Rural Development Regulation of the European Union (e.g. 'Agrarisch Natuurbeheer' in the Netherlands, the Countryside Stewardship Scheme in the UK, the 'Marktentlastungs- und Kulturlandschaftsausgleichsprogramm' in Germany and 'Prime à l'herbe' in France). Such policies create artificial or quasi markets in these goods and services (also called 'green services'). Farmers enter voluntarily into agri-environmental contracts containing specifications of their obligations and performance in return for payment.

Being good economic researchers, Hart & Latacz-Lomann ask themselves how the government should select those farmers and later assess their performance. Here the basic economic theory is the principal agent theory, in which concepts like *adverse selection* and *moral hazard* play an important role.[24] Adverse selection refers to situations where it is not observable by a principal (e.g. the government) whether the farmer is a high-cost or low-cost producer of green services. If farmers are high-cost producers it is better not to contract them, because they are inefficient and might be more likely to cheat. Moral hazard occurs when the farmer cheats the rules of the contract. To prevent cheating, the government has to monitor the farmer's performance, and that is costly. Hart & Latacz-Lomann assume an easy solution for the adverse selection problem and concentrate on moral hazard: "Our focus in this paper

[24] We teach that theory to our students (at least I do, as does Louis Slangen and nowadays Liesbeth Dries). But the surprising thing is that (according to the information given by Hart & Latacz-Lomann in the article) farmers behave differently.

is on the moral hazard problem, the basis of which is imperfect information about farmers' actual compliance. Due to this asymmetry, farmers may feel tempted not to honour their conservation contracts" (Hart & Latacz-Lomann, 2005, p. 76).

Starting from basic principal agent theory, Hart & Latacz-Lomann come up with different models, none of which complies with the actual observations of relatively low levels of monitoring, and low levels of cheating. Then they introduce what I call a typical 'ad hoc solution'. They assume that a large part of the farmers are honest and that these farmers will comply with the rules and will never cheat, while another group of farmers behaves according to the 'rules of the game' defined in principal agent theory. They call them 'dishonest'. But what is the value of a theory if you need such an ad-hoc solution? Moreover, a dichotomy between honest and dishonest farmers might be very simplistic. Some farmers might be honest if this is not too costly for them. This has also been observed (but not solved) by Hart & Latacz-Lomann.

Here, I think there is a very good reason for supporting the analysis by means of a behavioural economics approach.[25] The crucial questions are: (1) what personal characteristics of farmers allow them to be put in one of the different categories (honest, 'nearly honest', dishonest, etc.); (2) it is also interesting to investigate whether farmers influence each other in their behaviour and whether cultural factors influence their behaviour; (3) the dynamic side is also relevant, because contracts often extend over a number of years, which makes things more interesting.

[25] I also have an anecdote relating to the article by Hart & Lotacz-Lohman (2005). I tried to convince one of the PhD students (Yuki Yano) at Penn State University to develop a model that would incorporate a behavioural parameter in the principal agent models he was using to analyse agri-environmental schemes. He had been well-trained in principal agent theory on the basis of Mas-Colell, et al. (1995), yet I could not convince him to take this step (see Yano & Blandford, 2008), for three reasons, I think: (1) if a student has learned to operate within a particular theory, it is very difficult to step outside; (2) thesis research supervisors are often not in favour of 'risky steps'; (3) in a crowded area of research, authors fear the reviewers because most of these have worked along the lines of basic theory.

Personally, I see this as a very interesting research area, with potential for many new advances if researchers are willing to come up with innovative ideas based on actual behaviour and to be less addicted to standard theories. Nowadays, data is available, not only in relation to the production of green services, but also arising from cross compliance record-keeping.

Table 2 Overview of research areas

	Name of the research area	Falsification/ 'Against method'	Transaction costs	Interaction between agents (relevant)	Dynamics (applied / relevant)	Useful?
1	EU dairy policy	Yes / No	R	-	A / R	Partly
2	Producer Support Estimate	No / No	-	-	-	No
3	Applied General Equilibrium Modelling	No / No	R	-	- / R	Partly
4	Income in agriculture	No / Partly	R	R	- / R	Limited
5	Investment analysis	No / No	R	R	A / R	Limited
6	Revising CAP and Enlargement EU	No / No	R	-	- / R	Partly
7	Political Economy of Agricultural Policies	No / Partly	R	R	- / R	Limited
8	GMOs	No / Partly	R	R	- /R	Limited
9	Harmonizing food regulations	No / Yes	R	R	- / R	Partly
10	Evaluation of Rural Policies	No / Limited	R	-	- /R	Limited
11	Agri-Environmental Schemes	No / Yes	R	R	- /R	Partly

R=Relevant; A=Applied; - = Not relevant / Not applied

Overviewing the results of the eleven different areas of policy analysis (see table 2), the general judgment of the usefulness of scientific research is not very positive. Of course, others may come up with a milder evaluation, but to make it more useful for policy analysis, the present state of the art would have to be improved a lot. How? By (a) testing our approaches more rigorously; (b) more often developing new approaches that at least prevent failures of existing methods (going 'Against Method'); (c) by systematically incorporating the existence of endowment effects and transaction costs in policy analysis; (d) in several cases, taking into account differences between individuals' interdependent decision-making; (e) developing dynamic approaches that provide an opportunity for much more rigorous testing of our approaches in a long-term perspective.

How to develop new approaches?

1. By including behavioural and experimental economics in the type of economics we teach ourselves and then relay to our students. But we need to take a wider view than we do at the moment.
2. By taking the interaction between individuals into account and paying much more attention to how 'people' operate. Here, the link between economics and other social sciences (including humanities) is essential.
3. By focusing attention on the dynamics of economic and social systems.

As indicated below, the research methodology provides scope for more relevant work to be done by applying new methods more systematically. The area of transaction costs based on endowment effects (or reference points) is waiting for a more systematic theoretical approach which also incorporates (a) the type of persons involved and (b) the type of decision-making; (c) the interdependence in decision- making; (d) in some applications, the dynamics that are involved.

New insights in neuroscience[26] and psychology may be used to throw light on interaction between persons in society. These are all challenging areas of research,

[26] Neuroeconomics has so far been focused almost entirely on explaining microeconomic phenomena in neural terms. There are several reasons for this. Much of neuroeconomics' rapid growth has to do with the adoption of ideas from behavioural economics. Still the step to joint decision-making has to be made. One of the most interesting discoveries in the neural basis of social behaviour is the existence of 'mirror neurons' (Iacoboni, 2008).

which – at least according to my perception – will start to influence the fundamentals of economics. Linking-up via the methods used in behavioural and experimental economics (but then oriented on interdependent decision making) widens the area of research and will focus our research on the functioning of humans within the society.

Evolutionary biology and long-term dynamics is another area of research that deserves attention. Here the link with institutional dynamics and cultural change is clear. I have insufficient time and space even to develop this area of research, that has gained attention in the Netherlands via the NWO program 'Evolution and behaviour'. The book of Hofstede & Hofstede (2005) and even more its successor that has still to appear (Hofstede et al., 2010) will provide new ideas to pay much more attention to the dynamics in human behaviour and cultural processes in society. Economics can profit from such a widening approach and that holds even more of agricultural and food economics, where the connection to evolutionary processes is already clear from the beginning.

A general remark on methodology

As I have always been greatly interested in methodology, I must make a few remarks about this, too. The central element is the Bayesian approach.[27]

As I see it, at the moment, the methodology most researchers use is not focused on incorporating what we actually know from earlier scientific research or other

[27] Throughout my entire scientific career I have considered myself a Bayesian econometrician, as at Erasmus University I was educated by the likes of Kloek, Harkema and Lempers (with Arnold Zellner's very complex book in the background). Unfortunately, developing my own computer programs with the help of Kees Bol and Jaap Bijkerk took a lot of effort and by the time I had them running, my interest in Bayesian econometrics had been sidelined (although I did publish some papers using Bayesian analysis). Later (via Alfons Oude Lansink) I came in contact with Maximum Entropy Econometrics, with Amos Golan as the leading expert for economists. This again provided an influx of methodological improvements in research. Here I will not elaborate on Maximum Entropy, even though I see 'cross entropy' as an important method for including structure in economic models. Nowadays Geerte Cotteleer is 'our' Bayesian expert, but she has gone in a different direction.

information sources. Let me elaborate this a little. Researchers with an empirical focus often start with a particular (preferably rather small and manageable) question. They gather or use data, apply their research methodology and come up with conclusions, which they try to get published. If we see science as building on what has been achieved and testing whether that still holds, then several steps are missing in this process. For example:

1. Making a good and relevant inventory of what has been researched up till now, what has been achieved, and also doing this quantitatively. Which variables influence the process and how important are they? This is known in the literature as meta-analysis (Hedges & Olgin, 1985; Stanley, 2001; Nijkamp & Poot, 2004; Abreu *et al.*, 2005). Though time-consuming, *meta-analysis* contributes greatly because it entails reading widely and using the knowledge available.
2. The next step is to include the results of the meta-analysis as prior information in a Bayesian approach. The prior information is what is already known before you start to do your research. This prior information is then combined with the results of your own research[28]. This has several important positive side-effects, because you can also derive the probability inherent in the model, given your prior information and your own research results.
3. The outcome of the research is not only 'the present state of the art', but also a greater probability that your particular contribution confirms or rejects an extension of what was known already. Or, to put it in another way, and going back to Popper and falsification, the probability that your own results reject the available set of knowledge is part of a Bayesian approach. Of course that still requires qualifications of the researcher about the quality of his or her own research compared with the available knowledge.

And what about philosophy?

I now return to where I started: with Popper versus Feyerabend. I think that we need more of both, but in different phases. Feyerabend comes closest to how

[28] If we researchers could see good opportunities for experimental economics (as a type of laboratory for economists) we could combine the prior information with the results of laboratory experiments. Here, too, it would be possible to test whether laboratory experiments give information that reinforces or challenges existing paradigms.

scientists who really develop new ideas operate. Such scientists are not interested in the falsification of their theories. They are looking for confirmation and they do everything to get their ideas accepted (convincing journal referees, editors, administrators, financers). We can say that this is wrong, but it is how the 'real world works' and it stimulates scientific developments in new directions. This being so, we also need scientists who reflect on what has been achieved and see whether what has been achieved can be falsified. And this is where Popper comes in. We should sometimes subject our theories and methods to rigorous testing, to see whether they still hold. If we wish to have scientific impact, we should do so by means of theories and methods that were not falsified decades ago. I also think that our students deserve better than they get at the moment. Still, I have my doubts about whether they are aware of this: how can we make them aware that some of the theories we teach do not comply with actual scientific developments and/or the realities of behaviour and societies? It is often much easier to opt for the safe, well-developed course which gives you the illusion that we understand something, rather than to challenge students with uncertainties and unfinished ideas. But I might be wrong.

In this small 'tour d'horizon', I have not encountered much rigorous testing of theories. And if they are tested, then this is more what I call 'significance hunting': the strong tendency to stop scientific research once statistically significant results have been obtained. Researchers should also pay attention to the importance of their results. To me, rigorous testing of theories in order to falsify them contributes to scientific developments if alternatives are available or under development.

Does science matter?

Yes it does[29], but it could be done much better by:

1) Focusing on much more challenging and also really new insights; instead of taking well-trodden paths and doing incremental research. If we want to go for

[29] Observe that decision makers often assume that research provides answers; sometimes they are more positive than scientists, but decision makers also use scientific research as a method to postpone decision-making. In a recent discussion at the IAAE in Beijing (organized by Lars Brink) it was confirmed by experienced persons that 'good' scientific advice works best in crises periods; but then with a coherent and long-term-advise.

'science for impact', then it should impact what *we* do!

2) Acknowledging the failures of the past by reflecting on earlier research and predictions and trying to check earlier work. Here I still advise the Popperian approach of rigorous testing wherever possible. But even more, I would advise (at least for a while) to go 'Against method'! It will be refreshing to do so, and at the end of the day it could make the scientific community much more productive!
3) Being aware of the synthetic/synergy approach in science if you are developing policy advice. Here you should work on the basis of what is 'known up to now'. The opportunities to follow such an approach have increased enormously, but we should take care not to go data mining!

Looking back on my own functioning and on the way I tried to inspire other researchers around me, I am not sure whether I have rigorously followed these three precepts. I was always aware that good researchers should develop by themselves and although I sometimes criticized several of you, allowing you the personal freedom to follow your own passions was very important for me.

Finally, the fourth opportunity to improve scientific research is the new generation of well-trained researchers who are ready to take over the baton. I trust that they will do this! My reflections are mainly caused by my conviction that it is sometimes necessary to take one or two steps back and to think about what we are doing.

Personal remarks

What mainly drove my work here at Wageningen was the freedom to do different things, to follow my own interests. I have to say that I was not one of those persons who suffered under a heavy workload of a highly administrative environment. Because I did not spend much time on commuting and I liked to work a bit longer than office hours that gave me a lot of freedom in my work.

Our students, PhD researchers, PhD graduates and postdocs, and also our colleagues and others around the world always had my attention. I hope the

Agricultural Economics and Rural Policy Group feels strong enough to survive this 'period in between'; either as a group, but – even better – in a wider organization of more chairs, researchers and teachers. I have never been very good in management and sometimes I lacked the patience to explain my ideas in detail to you. I have nevertheless very much enjoyed the open atmosphere we experienced in the AEP Group; in earlier times with study groups and seminars within the AEP-Group (never organise a meeting without a preliminary scientific presentation!). Later, the time available did not allow that, but the seminar programme of the Economics Cluster was an excellent replacement.

I am very glad to have my family, friends and neighbours around me today; I hope this feeling is mutual. Mirjam, you saved my life on 26th November 2004, by being there – next to me – and taking the necessary steps. Up to now I see that as positive and I hope that both of us will still feel the same for a long time to come. It is also encouraging to see our children and their partners from Chile and India here. That gives Mirjam and me the feeling that we are 'part of the world'. A world which is challenging but should also fulfil the warm social life all of us seek.

Mr Rector, you know that in the past I have sometimes been rather critical of the organization. In particular of two things: (1) stating that we in Wageningen should go for the best, but doing the opposite; (2) paying insufficient attention to the social sciences, which are so important to understand what is really going on in life. I would urge you to try to put more emphasis on human behaviour, as this university is seeking to be a university of life sciences. Now I am less involved I can take more of an outsider's view. The new teams of people on the Executive Board of the University and in the Directorate of the Social Sciences Group made me more positive. I acknowledge that much has been achieved over the recent period. I thank the Rector and via him all the others in the organization for the trust I have received. If you read the full text of my Farewell Address, you may even think you trusted me too much!

For all of you who are here in the Aula, I have very much enjoyed giving a Farewell Speech. I was hesitant about whether I should to that in Dutch or in English, but I have chosen to do that in English because of all the non-Dutch

speaking persons who are here. And if you have missed 80% of this speech (which is quite normal according to Jan Steen, my brother-in-law, who always kept me aware of the possible failures of our teaching methods), then it gives some good reasons to ask for clarification at future parties or to read my written Farewell Address. For those who only know Dutch and who are interested, I could explain things in the future.

I hope you feel at least challenged by somebody who is fading away in the profession. I have thought about this a lot: I will do some additional teaching in China and possibly in Ethiopia. The main idea is to implement courses and to finish a book. But I am very much interested in doing 'other things in life' (even if I don't quite know which things they are, because there are so many alternatives!). It could be that my choice will be guided by affection and intuition and by what crosses my path and that of my family.

I thank you all for your attention.

Referenties List

Abreu, M., H.L.F. de Groot and R.J.G.M. Florax (2005) A Meta-Analysis of β-Convergence: the Legendary 2%. *Journal of Economic Surveys* 19(3): 389–420.

Agra CAES Consulting (2005) Synthesis of Rural Development Midterm Evaluations. http://ec.europa.eu/agriculture/eval/reports/rdmidterm/index_en.htm

Barro R.J. and X. Sala-I-Martin (1991) Convergence across states and regions. *Brookings Papers on Economic Activity* 1: 107–182.

Berhane, Guush (2009) Econometric Analyses of Microfinance Credit Group Formation, Contractural Risks and Welfare Impacts in Northern Ethiopia. Thesis Wageningen University. http://library.wur.nl/WebQuery/wurpubs/lang/382969

Bellman, R. (1957). *Dynamic programming*. Princeton University Press.

Beugelsdijk M. and S. Eijffinger (2005) The effectiveness of structural policy in the European Union: an empirical analysis for the EU-15 in 1995–2001. *Journal of Common Market Studies* 43: 37–51.

Buckwell, A., et al. (1994) Feasibility of an agricultural strategy to prepare the countries of Central and East European Europe for EU accession. Europese Commissie DG-1. Wye, Kent: EC.

Buckwell, A., et al. (1997) Towards a Common Agricultural and Rural Policy for Europe. European Economy No. 5, Brussels.

Burfisher M.E., S. Robinson and K. Thierfelder (2002) The Global Impacts of Farm Policy Reforms in OECD Countries. *American Journal of Agricultural Economics* 84: 774–781.

Burton, R.F. (2004) Reconceptualising the 'behavioural approach' in agricultural studies: a socio-psychological perspective. *Journal of Rural Studies* 20 (2004) 359–371.

Colman, D. (2009) Agriculture's Terms of Trade: Reflection on some issues. Keynote papers IAAE Conference. Beijing.

Cunha, A.M. (2007) A political economy analysis of the 1992, 1999 and 2003 CAP reforms. Thesis University of Reading.

De Frahan B.H. and M. Vancauteren (2006) Harmonisation of food regulations and trade in the Single Market. *European Review of Agricultural Economics* 33(3): 337–360.

De Gorter, H. and J. Swinnen (2002) Political economy of agricultural policy. In: B. L. Gardner and G. C. Rausser (eds) *Handbook of Agricultural Economics*. Amsterdam: Elsevier. Edition 1, volume 2, chapter 36, p. 1893–1943.

DellaVigna S. (2009) Psychology and Economics: Evidence from the Field. *Journal of Economic Literature* 47(2): 315–372.

De Veer, J. (1978) Bedrijfsuitkomsten, inkomen en continuiteit in de landbouw. In LEI, Jaarverslag, 1977, Den Haag.

Disdier, A-C., L. Fontagné and M. Mimouni (2008) The Impact of Regulations on Agricultural Trade: Evidence from the SPS and TBT Agreements. *American Journal of Agricultural Economics* 90(2): 336–350.

Doyon, M., N. Paillat and D.M. Gouin (2002) Analyse critique du concept d'équivalent subvention à la production (ESP) dans le secteur laitier. *Économie Rurale*, no 272, p. 74–87.

Ecorys (2003) Mid-term evaluatie van het Plattelandsontwikkelingsprogramma Nederland 2000-2006, Rotterdam.

Elhorst, J.P. (1993) The estimation of investment equations at the farm level. *European Review of Agricultural Economics* 20: 167–182.

Esposti, R. (2007) Regional growth and policies in the European Union: does the Common Agricultural Policy have a countertreatment effect? *American Journal of Agricultural Economics* 89: 116–134.

Esposti, R. and S. Bussoletti (2008) Impact of Objective 1 Funds on Regional Growth Convergence in the European Union: A Panel-data Approach. *Regional Studies* 42(2): 159–173.

European Commission (1997) Agenda 2000. Volume I, DOC/97/6. Brussel.

European Commission (2000) Agenda 2000 CAP Reform Decisions: Impact analyses. DG AGRI, Brussels.

European Commission (2009) EU and Canada settle WTO case on Genetically Modified Organisms. IP/09/1142, Brussels. http://www.eumonitor.net/modules.php?op=modload&name=News&file=article&sid=132414

Feyerabend, P. (1975) *Against Method.* London: New Left Books.

Fulponi, L. (2006) Private Voluntary Standards in the Food System: The Perspective of Major Food Retailers in OECD Countries. *Food Policy* 31: 1-13.

Gardebroek, C. (2004) Capital Adjustment Patterns on Dutch Pig Farms.

European Review of Agricultural Economics 31: 39-59.
Gardner, B.L. (1992) Changing economic perspectives on the farm problem. *Journal of Economic Literature* 30: 62–101.
Goncharova, N.V. (2007) Investment Patterns in Dutch glasshouse horticulture. Thesis, Wageningen University. http://library.wur.nl/wda/dissertations/dis4209.pdf
Haagsma, R. and N. Koning (2005) Endogenous norms and preferences and the farm income problem. *European Review of Agricultural Economics* 32: 35–49.
Hart, R. and U. Latacz-Lohmann (2005) Combating moral hazard in agri-environmental schemes: A multiple-agent approach. *European Review of Agricultural Economics* 32(1): 75–91.
Heckman, J. (2005) The Scientific Model of Causality. *Sociological Methodology* 35: 1–97.
Heckman, J.J. and J.A. Smith (1995) Assessing the Case for Social Experiments. *Journal of Economic Perspectives* 9(2): 85–110.
Hedges, L.V. and I. Olkin (1985) *Statistical methods for meta-analysis*. Orlando: Academic Press.
Henning, C. (2008) EU enlargement: Driver of or obstacle to future CAP reforms? In: J. Swinnen (ed) *The Perfect Storm*. Centre for European Policy Studies (CEPS), Brussels, p. 41–56.
Hertel, T.W. (eds.) (1996) *Global trade analysis: Modelling and applications*. Cambridge University Press, Cambridge.
Hertel, T.W. et al. (2009) GTAP Resource. https://www.gtap.agecon.purdue.edu/resources/res_display.asp?RecordID=2937
Hill, B. (1996) Monitoring incomes of agricultural households within the EU's information system - new needs and new methods. *European Review of Agricultural Economics* 23: 27–48.
Hill, B. (1999) Farm household incomes: perceptions and statistics. *Journal of Rural Studies* 15(3): 345–358.
Hill, B. (2008) Some Economics of Public Statistics. *Journal of Agricultural Economics* 59(3): 387–420.
Hill, B.E. and K.A. Ingersent (1977) *An economic analysis of agriculture*. London: Heineman.

Hofstede, G. and G. J. Hofstede (2005) *Cultures and Organizations*. New York: McGraw-Hill (second edition).
Hofstede, G., G. J. Hofstede and M. Minkov (2010) *Cultures and Organizations*. New York: McGraw-Hill (third edition; forthcoming).
Huffman, W.E. (2009) Technology and Innovation in World Agriculture: Prospects for 2010–2019. http://econpapers.repec.org/paper/isugenres/13060.htm
Huffman, W. E., J.F. Shogren, M. Rousu, and A Tegene (2003) Consumer Willingness to Pay for Genetically Modified Food Labels in a Market with Diverse Information: Evidence from Experimental Auctions. *Journal of Agricultural and Resource* Economics 28: 481–502.
Iacoboni, M. (2008) *Mirroring People – The new science of how we connect with others*. New York: Farrar, Straus and Giroux.
Iacoboni, M. (2009) Imitation, Empathy, and Mirror Neurons. *Annual Review of Psychology* 60: 653–670.
Kahneman, D. and A. Tversky (1979) Prospect theory: An analysis of decision under risk. *Econometrica* 47(2): 263–91.
Kahneman, D., J.L. Knetsch and R.H. Thaler (1990) Experimental Tests of the Endowment Effect and the Coase Theorem. *Journal of Political Economy*, 98:1325–1348.
Kahneman, D., J.L. Knetsch, and R.H. Thaler (1991) The Endowment Effect, Loss Aversion, and Status Quo Bias. *Journal of Economic Perspectives* 5:193–206.
Kapteyn, A. (1977) A theory of preference formation. Proefschrift, Universiteit van Leiden.
Keynes, J.M. (1936) *The General Theory of Employment, Interest and Money*. London: Macmillan (Papermac 12 of 1967).
Knetsch, J.L. (1989) The Endowment Effect and Evidence of Nonreversible Indifference Curves. *The American Economic Review* 79:1277–1284.
Knetsch, J.L. (1992) Preferences and Nonreversibility of Indifference Curves. *Journal of Economic Behaviour and Organization* 17:131–139.
Knetsch, J.L. (2002) Behavioural Economics and Current Environmental Valuations: Findings, Lessons, and An Alternative. Mansholt Lecture, Wageningen University.
Kuhn, T.S. (1962) *The Structure of Scientific Revolutions*. Chicago: University of

Chicago Press.
Lakatos, I. (1978) *The Methodology of Scientific Research Programmes: Philosophical Papers*. Volume 1. Cambridge: Cambridge University Press.
Legg, W. (2003) Agricultural subsidies: Measurement and Use in Policy Evaluation. Presidential Address. *Journal of Agricultural Economics* 54 (2): 175–200.
List, J.A. (2004) Neoclassical Theory versus Prospect Theory: Evidence from the Marketplace. *Econometrica* 72(2): 615–625.
Maertens, M., and J.F.M. Swinnen (2009) Trade, Standards and Poverty: Evidence from Senegal. *World Development* 37(1): 161–178.
Mas-Colell, A., M.D. Whinston and J. Green (1995) *Microeconomic Theory*. Oxford University Press.
Matthews, R.C.O. (1984) Animal spirits. *Proceedings of the British Academy* 70: 209–229.
Mechemache, Z. B. , R. Jongeneel and V. Réquillart (2008) Impact of a Gradual Increase in Milk Quotas on the EU Dairy Sector. *European Review of Agricultural Economics* 35(4): 461–491.
Mueller, D. C. (2003) *Public Choice III*. Cambridge: Cambridge University Press.
Nijkamp, P. and J. Poot (2004) Meta-analysis of the effect of fiscal policies on long-run growth. *European Journal of Political Economy* 20(1): 91–124.
Nilsen, O. and F. Schiantarelli (2003) Zeros and Lumps in Investment: Empirical Evidence on Irreversibilities and Nonconvexities. *The Review of Economics and Statistics* 85(4): 1021–1037.
North, D.C. (1991) Institutions. *Journal of Economic Perspectives* 5 (1): 97–112.
OECD (2001) Market Effects of Crop Support Measures. OECD, Paris.
OECD (2009) Agricultural Policies in OECD Countries: Monitoring and Evaluation 2009, Paris.
Olsen, M. (1971) *The Logic of Collective Action*. Cambridge: Cambridge University Press, Second Edition.
Oskam, A.J. (Rapporteur) (1978) Interim rapport EEG Zuivelbeleid, Den Haag/ Wageningen.
Oskam, A.J. (1981) *Policy models for the dairy sector of the European Community and the Netherlands*. Wageningen: Pudoc.
Oskam, A.J. (1989) Principles of the EC dairy model. *European Review of Agricultural Economics* 16(4): 463–497.

Oskam, A.J. (1993) Nieuwe bakens voor de landbouwpolitiek. Inaugurale rede, 14 oktober 1993, Wageningen.
Oskam, A. (2000) Current Market and Price Policies of the CAP. In: A. Burrell and A. Oskam (red.), *Agricultural policy and enlargement of the European Union*. Wageningen: Wageningen Pers, p. 53–68.
Oskam, A. (2009) Uitbreiding van de Europese Unie en landbouw. ESB 94(4570S): 78–83.
Oskam, A.J. and G. Meester (2006) How useful is the PSE in determining agricultural support? *Food Policy* 31: 123–141.
Oskam, A.J. and P.C. van den Noort (1978) Het bepalen van doelstellingsfuncties: het landbouwbeleid als voorbeeld. *Beleid en Maatschappij* V(9): 248–257.
Petit, M. (1985) Determinants of agricultural policies in the United States and the European Community. IFPRI-Research Report 51, Washington.
Petit, M., M. de Benedictis, D. Britton, M. de Groot, W. Henrichsmeyer and F. Lechi (1987) *Agricultural Policy Formation in the European Community: The Birth of Milk Quotas and CAP Reform*. Amsterdam: Elsevier.
Popper, K. R. (1934/1968) *The Logic of Scientific Discovery*. London: Hutchinson & Co.
Rabin, M. (1998) Psychology and Economics. *Journal of Economic Literature* 36:11–46.
Shapiro, C. and H. Varian (1999) *Information Rule: A Strategic Guide to the Network Economy*. Cambridge, MA: Harvard Business School Press.
Shoven, J.B. and J. Whalley (1992) *Applied general equilibrium modelling*. Cambridge University Press.
Silvis, H., C. van Rijswick and A. de Kleijn (2001) EU agricultural expenditure for various accession scenarios. LEI Raport nr 6.01.04, Den Haag.
Slangen, L.H.G., L. Loucks and A. Slangen (2008) *Institutional Economics and Economic Organisation Theory*. Wageningen: Wageningen Academic Publishers.
Stanley, T.D. (2001) Wheat from chaff: Meta-analysis as quantitative literature review. *Journal of Economic Perspectives* 19-5: 131–150.
Swinnen, J. (eds) (2008) The Perfect Storm. The Political Economy of the Fischler Reforms of the Common Agricultural Policy. Centre for European Policy Studies (CEPS), Brussels.
http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1333090

Swinnen, J. and F. van der Zee (1993) The Political Economy of Agricultural Policies: A Survey. *European Review of Agricultural Economics* 20: 261–290.
Swinnen, J.F.M., L. Dries, M. Negash and Th. Vandemoortele (2010) Consumers and EU Agricultural and Food Policies. In: A.J. Oskam, G. Meester and H.J. Silvis (eds) *EU Policy for Agriculture, Food and Rural Areas.* Wageningen Academic Publishers (forthcoming).
Tinbergen, J. (1952) *On the Theory of Economic Policy*. Amsterdam: North-Holland P.C.
Tweeten, L.G. (1969) Theories explaining the persistance of low resource returns in a growing farm economy. *American Journal of Agricultural Economics* 51: 798–817.
Van der Ploeg, J.D. (1993) Rural sociology and the new agrarian question. *Sociologia Ruralis* 33: 240–260.
Van der Zee, F.A. (1997) Political economy models and agricultural policy information: Empirical applicability and relevance for the CAP. Mansholt Studies 8, Wageningen.
Varian, H.R. (2006) *Intermediate Microeconomics: A Modern Approach*. New York: Norton & Company (Seventh Edition).
Velthuis, A., W. Verbeke and S. Marette (2009) Food Quality, Food Safety and Certification. In: A.J. Oskam, G. Meester and H.J. Silvis (eds) *EU Policy for Agriculture, Food and Rural Areas*. Wageningen Academic Publishers (forthcoming).
Viet Cuong, N. (2009) Essays on Impact Evaluation: New Empirical Evidence from Vietnam, Thesis Wageningen University.
Wagstaff, A., M. Lindelow, G. Jun, X. Ling, Q. Juncheng (2009) Extending Health Insurance to the Rural Population: An Impact Evaluation of China's New Cooperative Medical Scheme. *Journal of Health Economics* 28: 1–19.
Wesseler, J. (2010) Genetically modified organisms and the agriculture and food policy. In: A.J. Oskam, G. Meester and H.J. Silvis (eds) *EU Policy for Agriculture, Food and Rural Areas*. Wageningen Academic Publishers (forthcoming).
Williamson, O.E. (2000) The New Institutional Economics: Taking stock and looking ahead. *Journal of Economic Literature* 38: 595–613.
Yano, Y. and D. Blandford (2008) Use of Compliance Rewards in Agri-environmental Schemes. Journal of Agricultural Economics 60(3): 530–545.

Existing policies are difficult to change or abolish, while new ones are difficult to introduce. Any such changes cause societies transaction costs, which, up to now, have not been incorporated adequately in theory, methodology and policy advice. Most economic researchers still rely narrowly on neoclassical economics, political-economy or institutional economics. Recent scientific developments make clear that basic approaches are not functioning. I illustrate this by examples, and sketch a way out via paradigm shifts. But how to introduce these shifts? Generational shift?

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ISBN 987-90-8585-281-0