

In: Peter A.G. Van Bergeijk, A. Lans Bovenberg,
Eric E.C. Van Damme und Jarig Van Sinderen
(Hrsg.), Economic Science and Practice. The
Roles of Academic Economists and Policy-
makers. Edward Elgar Publishing Inc.,
Cheltenham Glos GL50 2HU, 1997, pp. 15-48.

2. Economists: First Semester, High Flyers and UFOs

Bruno S. Frey and Reiner Eichenberger

Economists are fond of calling economics the 'queen of the social sciences'. Though this is not all too kind to the neighbouring social sciences, this claim is not unfounded. There are three major reasons why economics may be considered 'queen':

- Economics is the only social science whose stars are crowned with the Nobel Prize;
- The economic approach is applied and is prominent in the other social sciences;¹ and
- Economics plays a large role in society, especially via economic policy.

However, a sceptic might retort the following. First, the Nobel Prize is not wholly due to economics being superior to any other social science but that it has an effective lobby in the form of the Swedish Central Bank which donated the funds at its centennial (see Lindbeck 1985). The prize for economists thus does not go back to Alfred Nobel.

Second, there are also large areas in the social sciences pursuing quite a different approach (for example, discursive theory, structural theory, or the many variants of systems theory), or worse still, are not even aware of the rational choice approach.

Third, the heydays of Keynesian business cycle policy are long over (and it has been debunked by economists themselves), and the specific proofs of the influence of present day economics on society are scarce. Not even economists are able to come up with much evidence (see Faulhaber and Baumol 1988). There are even scholars who jokingly claim that economists tend to worsen economic

conditions, or leave them unaffected. A recent example is Barro's (1993) newspaper essay on the relationship between the chairmen of the Council of Economic Advisors and the state of the economy which states:

The sad conclusion is that economic outcomes (measured by the contribution to the misery index) and the credentials of the chairman of the council (measured by the citation count) are essentially uncorrelated. Although some who are highly ranked on citations ... do well on performance, the highly ranked Mr. Schultze ends up with the worst economic outcomes. Moreover, some of the chairmen who are ranked low on citations ... emerge with good economic performance.

While Barro's essay is certainly meant to be a joke (not least for methodological reasons which are so obvious that they do not have to be pointed out), it may still indicate that economists' claim of how useful they are is not especially well founded today.

This chapter endeavours to analyse present-day economics by applying the tools of economics: we present an *economics of economics*.² Following the rules of our science, we want to *explain* how economists act, and to *predict* how the field is going to look like in the (near) future. Only at the end we add our evaluation which for some of the readers - especially economists - may appear too critical. The reader should, however, bear in mind that the authors are fully convinced that economics has been making excellent contributions to understanding reality and will continue to do so in the future. We are proud of being economists, which is exactly the reason why we also point out developments in economics that we consider to be negative, and even destructive.

We distinguish two quite different types of economics which we label the 'core' and the 'rays' (section 2.1). Based on this distinction, section 2.2 offers four propositions on the state of economics. Counterarguments are extensively discussed in section 2.3. The future development of economics which we consider to be likely is sketched in section 2.4 and we investigate the possibility of endogenous limits in section 2.5. Section 2.6 discusses new possibilities to change the evaluation of economists from PC (Publications and Citations) to a

more encompassing PEP (Professional Evaluation Procedure). The last section offers conclusions.

Perhaps the most controversial finding is that economics - in the sense of a science enlightening us on problems in our society - will prosper *outside* economics departments, that is, in law, history, sociology, political science and psychology. The remaining small departments of economics will mainly be staffed by scholars who look at this science as a branch of mathematics: they essentially deal with self-defined problems within formal structures.

2.1 Two Kinds of Economics

It is useful to differentiate two types of economics, labelled the 'core' and the 'rays'.

The Core

The core of economics is 'neoclassics'. Following Becker (1976, p. 5) it is defined by three characteristics:

- Individuals maximize (or at least relentlessly pursue) their own, essentially egoistic, preferences;
- Humans systematically respond to relative prices: a relative price rise *ceteris paribus* reduces the quantity demanded, and increases the quantity supplied; and
- There is a strong tendency towards equilibrium between demand and supply.

While Becker considers all these requirements to be essential, others (for example, Alchian, 1977, Chapter 7) only emphasize the first two. Other typical characteristics of the core of economics may be mentioned - such as the use of a common language - but the three points suffice to clearly differentiate economics from the other social sciences which lack such a common core. We do not claim, of course, that economists are completely homogenous and would all agree to this characterization of the core.³ Nevertheless it seems to us to be a fair picture.

The demand for the insights produced by the core is external to academic economics. It is sought by the public which wants to have

an interpretation of reality from the economic point of view, and specifically by institutions such as the government which wants economic policy advice and private firms which hire people trained in that approach. Students choose economics as their subject because they are aware of this outside demand.

We contend that this core of economics essentially covers what is contained in a simple textbook or what is taught at a good university in the first semester. The professional discourse therefore neglects it as trivial and takes it as a matter of course. To learn the core is not intellectually difficult. But its reasoned application to local, regional, national and international problems which has to take into account the prevailing institutional conditions and facts is demanding. The incentives of economists employed at a university to apply this core are the prestige, as well as the money gained from professional advice as well as a career as politician, top bureaucrat or in the Central Bank (Frey and Eichenberger 1992 and 1993).

The Rays

Academic economic research is composed of a great number of specialized sub-fields which emanate from the core. Such rays are characterized by three major aspects:

- output is self-defined;
- rays are highly specialized; and
- the strong influence of fashions.

Output

The output produced is self-defined by the international economics community and is measured in terms of scientific publications and citations in professional journals. Articles in scientific reviews do not mainly serve to propagate knowledge but act as a selection device for academic economists. Ray-economics is thus inward oriented.⁴ The topics and questions dealt with are theory-driven (Mayer 1993), and the task is to (marginally) improve on existing formal models which in turn are based on previous formal models. What matters is technical rigour and formal elegance. The presentation of the results is highly regulated (for example, Holub 1990 and 1992).⁵ Content is only relevant as far as it gives a reason to apply a certain technique

of analysis.⁶ The same holds for institutional knowledge.⁷ Content and institutions are disregarded because they are irrelevant for the self-defined quality standards. The quality of a professional contribution can only be evaluated with respect to internationally valid aspects. Formal rigour and elegance perfectly meet this requirement: the quality of the proof of a theorem can be judged by other scholars irrespective of whether they live in Bonn, Madison or Hongkong. In contrast, academic contributions based on an extensive knowledge of local conditions and institutions cannot be judged by an external scholar. To give an example: if a Dutch economist writes an economic study on Amsterdam's police department, it cannot be evaluated on its merits by a scholar not intimately familiar with the conditions prevailing in Amsterdam. This restricts the range of evaluators to a few academic economists, presumably scholars living in that city or at least in the Netherlands. The impersonal scientific 'objectivity', a major standard in this type of economics, is then at risk because the few evaluators almost certainly know each other well, resulting in judgements biased by non-scientific considerations. If they are friends, the evaluation is too positive, if they are foes, it may be too negative. As a result, scholars who endeavour to participate in the prestigious and career enhancing international market for economists refrain from doing that kind of work as it is not acceptable by the respective community of economists. Only those who do not aspire beyond the local market for economists can afford to work on topics with an emphasis on local data and institutions.

In economics composed of rays, originality and innovation are also muted. Such thinking is acceptable only within the strict limits set by orthodox formal theory, and refers therefore at best to new types of techniques rather than to content. This is a consequence of the now common use of (at least) two independent referees in most good professional journals. It is almost impossible to find two scholars sympathetic to a new idea; at least one of them most likely clings to the well-established orthodoxy. The chances for young economists - from whom one may expect more new ideas - are even slimmer. It has been empirically established (Hamermesh 1994) that unknown contributors tend to get unknown referees while established scholars are provided with well-known referees. The unknown

referees are often graduate students and assistant professors in the editor's own university who for career reasons must demonstrate that they are well versed in advanced (ray) economics. They will therefore be reluctant to favour new ideas because these are, almost by necessity, less rigorous and formally elegant than small variations of an accepted model. Thus we agree with Arrow (1995, p. vii) who says:

I think the publication selection procedure at the major journals has become methodologically more conservative, more given to preferring small wrinkles in existing analyses to genuinely new ideas.

The same bias against novelty holds for research grants. According to Friedman (1994, p. 199), "Funding [by the National Science Foundation] has stifled innovation. "Peer reviews" favour established scientists and directions of research."

Specialization

Rays are highly specialized. An extreme form of division of labour is used to raise productivity and output. The rays are still connected to the core as the respective assumptions (for example, utility maximization) are followed but the abstract pursuit of a special topic takes prominence. The links to the core are the weaker the more highly developed a ray is. Connections to other rays rarely exist, and over time rays typically become more, and not less isolated.⁸ Indeed, an economist doing research in one ray does not need to know much, if anything, about other rays. Accordingly, cross fertilization is rare.

Fashion

Rays are much influenced by fashions. The development of a particular ray formally resembles the spread of a disease or - to put it more positively - a product innovation.⁹ There is one (or a few) economist propagating an idea. If lucky, further economists are early followers. The high point is often marked by an authoritative survey by one of the main proponents. Many economists then join the ray as late followers. Then the ray dies but is sometimes reanimated years later. This development may be illustrated by three examples: growth theory, social choice theory and capital theory.

Growth theory was 'founded' by Harrod's 1939 article, and was later followed by Domar (1946) and the neoclassical version by Solow (1956 and 1957). The culmination of this (now called 'old') theory was marked by Hahn and Mathew's (1964) survey. Provided an article is considered 'significant' (as done, for example, by Holub et al. 1991) if it has been cited at least 30 times, then the last 'significant' article was published already in 1970. But until then, that is from 1939 to 1970, only 52 per cent of all articles on economic growth were published, and almost half (48 per cent) were still to come. The share of followers, and the time in which they prospered, was thus extremely long, that is, economics fashions have a long unproductive life even according to the standards of ray-economics (citations). In the meantime, growth theory has been reanimated but it is noteworthy that it essentially links up to Solow (1956).

Social choice theory dealing with the formal problem of preference aggregation is another fashion. In its modern version, it goes back to Arrow (1951) and the much less noted work by Black (1948). The culmination is Sen's (1970) survey book, but since then there has been a huge stream of articles and books.

Capital theory was created by Robinson, Kaldor, Sraffa and other Cambridge (UK) economists as an attack on the Cambridge (Mass.) neoclassics championed by Samuelson and Solow. The high point of the intensive debate is marked by Harcourt's (1972) and by Blaug's (1975) evaluative surveys. Today this ray is almost forgotten, but at its culmination it was the leading economists' preferred ray.

Obviously, rays may be of unequal intensity, and have unequal success and longevity.

The demand for rays

The demand for rays is almost completely internally driven. It serves as a professional selection process for the academic career (the barriers are the various exams ranging from the diploma, doctorate, *habilitation*, to appointments as assistant professor), to the position of scholars in the prestige hierarchy, and rewards in terms of income and prizes. The standards imposed are designed to maintain self-defined quality, and are signalled by the number, timing and ranking of journal publications.

The American market for academic economists is by far the most developed with respect to standard setting.¹⁰ Its signalling system is such an efficient indicator of who is capable to function well in ray-economics that it is spreading quickly around the world. As these signals can best be learnt in the country of origin, there are practically no economists doing research in a ray who would not have spent an extended period in the United States. 'Many take from the US their professional standards, their views of what are the interesting problems, and their approach to them' as Portes (1987, p. 1330) revealingly writes. Scholars doing research in a ray - for the members of this type of economics this is the *only* kind of acceptable research - can be called *high-flyers*. Their aim is to push a particular ray as far as possible - Krugman (1995, p. 43) even speaks of a *Blitzkrieg* approach. The heights reached are defined according to the professional standards, that is, the extent of rigour and formal elegance, but it bears no relationship to the insights gained into the working of the economy and society. There are even those who completely lose contact with the ground and the core of economics, and who completely live in a self-constructed world of formal problems. We therefore call them *UFOs* (Unidentified Flying Objects) also because to an observer outside ray-economics they appear mysterious.

Relationship between Core and Rays

Figure 2.1 illustrates how the rays are attached to the core of economics. The figure reveals that there are many specializations (rays) at the same time. They originate from the core but some are more broadly, and others only thinly attached, that is, they are more self-reliant and self-referring. They are of different height, that is, in a different phase of development, or have proved incapable to match the rigours and formal elegance of other rays. Finally, the rays are only related through the common core, that is, a typical ray-economist knows next to nothing about another ray, and does so without much damage. Thus, a respected economist is able to write in 1995: '... laboratory experiments which are not possible in the social sciences' (Aoki 1995, p. 31) though 'experimental economics' is one of the most rapidly growing rays. Similarly, most ray-economists are

not even aware that there exists an 'economics of culture' (or they choose not to define it as a serious ray).

Figure 2.1 *The core-ray conception of economics*

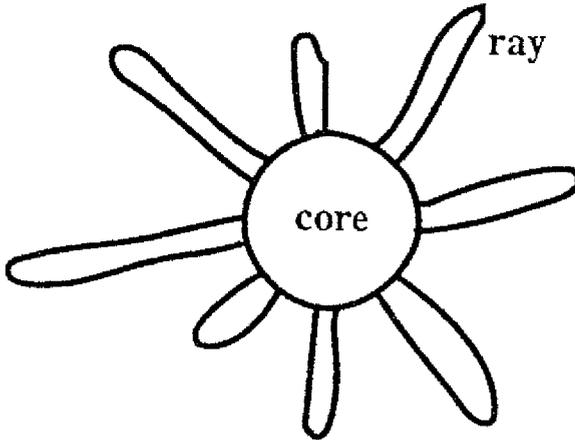
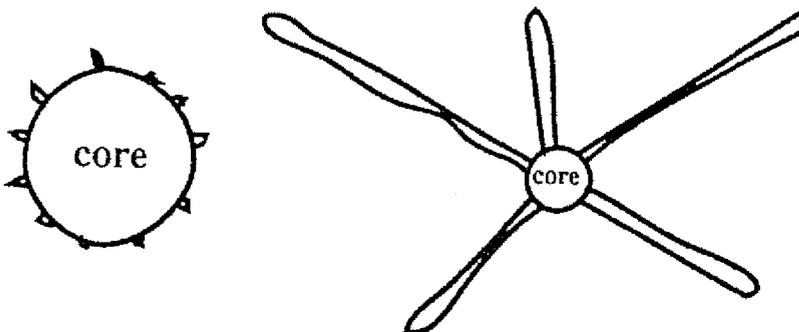


Figure 2.1 may look quite different according to the point of view chosen. Consider Figure 2.2. The left-hand side picture represents the perception of an outside observer. He or she sees the large core and pays little or no attention to the rays.

Figure 2.2 *Outside and inside view of economics*



The right-hand side pictures the view of a (well-informed) member of the '*de facto* nomenclatura' (an expression used for ray-economists by Krugman, 1995, p. 33) or of the 'econ tribe' (an expression coined by Leijonhufvud, 1973): in academic research, the core is unimportant, and all that matters are the rays.

2.2 Basic Propositions

On the basis of the characteristics of the core and the rays we advance four propositions:

Proposition 1: Rays are the more important within economics, the more intensive international competition among economists is.

When the research output of economists has to be evaluated across nations, there are few members who are able to evaluate the facts and institutional background. Quality can only be judged by resorting to established, self-defined standards of rigour and formality, and hence the research performed in a ray.¹¹

Proposition 2: 'Good' economics departments are ray-focused.

The qualification 'good' refers to the standards reigning in the international market for economists. As a result, 'good' departments are populated by scholars who produce abstract, formal and theory-driven work. Such departments can be looked at as applied mathematics oriented towards solving self-set problems. 'The economics scholar works for the only coin worth having - our own applause' (Samuelson 1962, p. 18). They do not endeavour to contribute insights to those real life issues that citizens are concerned with, such as unemployment or the destruction of the environment, nor do they offer advice to policy makers.

Proposition 3: The economics core remains important where it is not subject to international competition, namely when (a) economics departments can muster protection against

international competition and (b) economics is located outside economics departments.

Economics departments can be protected from the international competition of economists for jobs for a variety of reasons:

- Language. It should, however, be taken into account that English has become the *lingua franca* in economics (as was Latin in the middle-ages), so that protection arguments only apply to teaching (and not to research), and only for a limited period (languages can be learned).
- Legal barriers, for example, that professors are public servants, and public servants must be nationals.
- Institutional barriers, for example, problems caused by the non-transferability of old age pension rights.
- Rent seeking barriers, where national or even local academic economists refuse to let other economists compete for 'their' jobs.

These barriers to international competition impose costs. Such departments have, on average, less able and less active scholars but only to the extent that they are extrinsically motivated. Intrinsically motivated scholarly productivity is less affected by protectionism. As it is known, scientific research depends to a considerable extent on inner motives. Moreover, a protected sphere may to some extent foster the development of intrinsic motivation.¹² It would thus be unwarranted to jump to the conclusion that protected departments function much worse than those open to competition. Of course, competition increases efficiency in academia *as defined* by the ray standards. However, locally protected economics departments do not need to resort to the signalling standards necessary in international competition, and hence do not produce ray-focused economics. Rather, economists are able to produce locally oriented studies taking into account the respective facts and institutions. Their career and prestige is furthered by enlightening the public on economic and social problems (for example, by writing articles in newspapers for the general public and appearing on radio and TV). They also benefit from offering policy advice and engaging in a political career.

Economists employed by departments outside economics can afford to stick to core economics and to apply it in a useful way to real world issues. As long as these scholars pursue their career, and seek attention and prestige within such departments, they have to attend to problems which other scholars also consider important. In a multi-disciplinary environment the problems are not unlike those that people outside the university system are concerned with.

As the skilful application of core economics yields novel and otherwise disregarded insights compared to other approaches, much of the most stimulating and useful economics is provided by economists in departments of political science, sociology, law or history, often publishing in the respective journals. Indeed, the economic or rational choice approach has proved most useful. An example is the School of Law at Chicago University where Coase (Nobel Prize winner in economics) has been employed, where jurists such as Posner or Easterbrook rely on Public Choice, and where the *Journal of Law and Economics* and *Legal Studies* have published their work. Another example again refers to the University of Chicago: Becker (Nobel Prize winner in economics) is (in addition to economics) a professor of sociology. The sociologist Coleman was the leader of rational choice sociology. Again, the Journal published in that context, *Rationality and Society*, is noteworthy for its stimulating applications of core economics to real world issues. Finally, one may mention Williamson who at Berkeley simultaneously holds a chair in economics and in law.

The situation is quite different if scholars employed in schools outside economics, endeavour to return to an economics faculty. She or he must then strictly adhere to the self-defined problems and standards of economics, that is, one has to contribute and excel in a ray. Schools of Public Policy and of Management in the United States which are designed to deal with real world issues, and who have hired such economists, or have established a department of economics within their school, have made this experience: the economists turn their attention to rigour and formal elegance, neglecting the goals these schools were established for. This seems to have happened to some business schools:

The primary measure of excellence became publication in discipline-based journals and acceptance by the community of discipline-based scholars, rather

than relevance to practice or contributions to professional education. (Rumelt et al. 1991, p. 17)

Proposition 4: Advice and policy proposal essentially require core economics taught in the first semester, but rarely ever the work produced in ray economics by high flyers and UFOs.

Examples for practical policy proposals essentially based on core economics are vouchers (for example, for schooling or cultural activities), road pricing, environmental incentive instruments (effluent taxes or tradeable licenses), and the negative income tax. They rely on the relative price effect and use it ingeniously to induce people to take external effects into account, to allocate opportunities to those people who value them most highly, and to make work more attractive instead of punishing it. These mechanisms can be applied by first semester students but the real challenge is to take the various institutional conditions into account and to overcome the political resistance of the persons and groups likely to lose by the introduction of these economic policy instruments. A successful application of core economics is thus no trivial task. It does not require advanced ray-economics in the form of rigorous and elegant theorizing.¹³ What is needed for that task is a good knowledge of existing conditions (including the legal options) and a considerable amount of common sense aided by experience.¹⁴ To induce young academics to enter ray-economics is thus not costless because such institutional knowledge and experience cannot be gained there. We thus argue that there is a serious trade-off between careers in core or in ray-economics. This trade-off is often refuted by claiming that a member of a ray may easily 'step down' to undertake policy advising. This may well be so, but the quality of the advice offered is accordingly unsatisfactory: it is hardly impossible to deduce any novel and useful policy advice on the basis of a highly sophisticated formal model designed to solve self-defined theoretical problems only.¹⁵ The point is not that the advice would be 'wrong' in any objective sense, but rather that it tends to be trivial for the policy problems at hand, and can as well be given simply on the basis of well-understood core economics.^{16,17} The reliance of policy advising on core economics, and the precarious usefulness of ray economics for that purpose, has been acknowledged by many insightful economists knowing both

'worlds'. Thus, Krugman (1995, p. 32) states 'What I learned from that experience [a policy task at the Central Bank of Portugal] was the power of very simple economic ideas...', and similarly Stein, the successful former chairman of the Council of Economic Advisors, remarked that, 'most of the economics that is usable for advising on public policy is at about the level of the introductory undergraduate course' (see Hamilton 1992, p. 62).

2.3 Counterarguments

The position here taken about core and ray-economics, or about first-year economics *versus* high flyers and UFOs is certainly debatable, and unlikely to be very popular in the community of ray-economists in which we normally act, and to which most readers of this chapter belong. We therefore wish to explicitly deal with the four major counterarguments against our position, namely

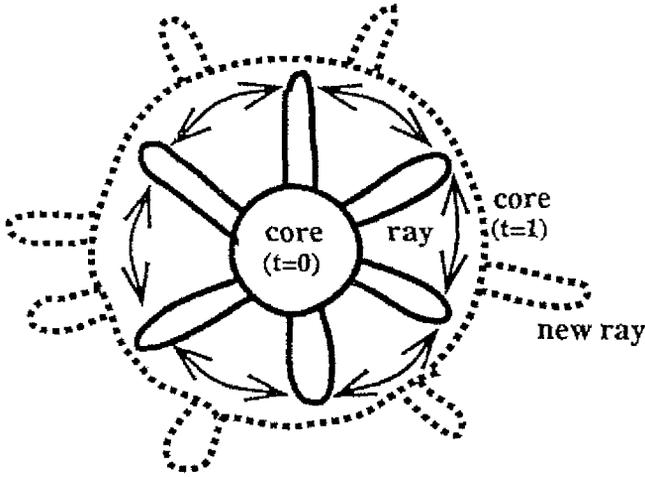
- core and rays will be integrated over time (somewhere in the future);
- the international market for economists is a competitive one, and therefore the allocation of economists' effort is also efficient;
- ray-economics are not devoted to rigour and formal elegance as we claim but have increasingly become empirical; and
- surveys have been commissioned to bridge the gaps between rays.

Core and rays will be integrated

The development of the science of economics may be seen in a completely different light. Allowing sufficient time, the various rays will be joined with each other so that the core of economics is continually moved outwards and is better and better equipped to understand the real world. Accordingly, the Figures 2.1. and 2.2 shown should be extended as in Figure 2.3.

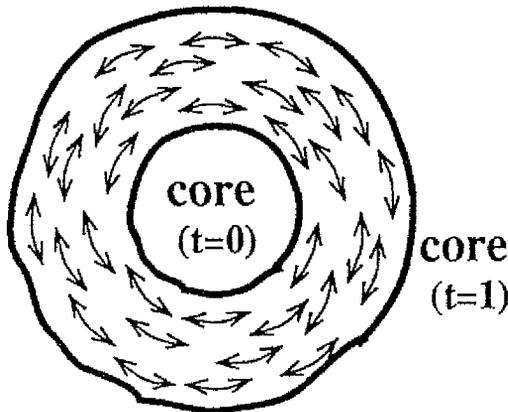
The old core (at $t = 0$) is extended to the much larger new one (at $t = 1$) which embodies all the insights included in the various rays. The new core forms the basis for new rays which after some time produce a yet larger core.

Figure 2.3 Optimistic, ray-integrative conception of economics



Some might even argue that Figures 2.1 and 2.2 were wrong and that economics is better seen as a tyre filled with (useful!) air and rolling quickly (Figure 2.4). The rays are intimately connected with each other, interchanging their insights quickly.

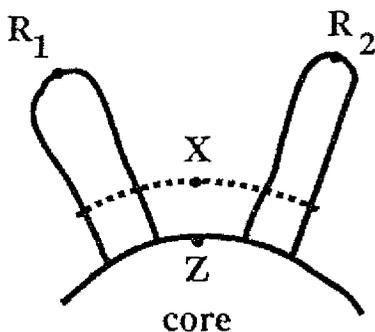
Figure 2.4 The highly optimistic tyre conception of economics



The suggestion of a continually increasing core on the basis of the rays must be taken seriously: does not a graduate of economics know much more today than a generation ago, and did not that generation know more than the preceding one? This is an almost philosophical question. What is certainly true is that they know more and better techniques - but at the same time it must be conceded that they know less history and institutional facts. Whether they are better equipped to understand and integrate reality, and to make sensible policy proposals, is not *a priori* clear.

We are sceptical whether the extension of the core as illustrated by Figures 2.3 and 2.4 is really happening in such a harmonious way. It could be asked whether we have sufficient time to overcome the pressing problems of our generation (for example, unemployment or old age pensions) by integrating rays. Would it not be preferable to have contributions based on the existing core, rather than to perhaps vainly hope that a much superior solution will be possible on the basis of a future core? Even more fundamentally, it can be questioned whether the various rays will really be connected with each other in the future. Here, normative appeals and wishful thinking should be distinguished carefully.¹⁸

Figure 2.5 *Extending the core is risky*



Consider Figure 2.5. To try to bridge the gap between two rays (R_1 and R_2) is extremely risky. Consider a young scholar who manages to

provide work that positions her at point X. The knowledge generated is clearly superior to the one attainable solely on the basis of core economics (point Z). The crucial point is that the evaluation of the quality of that research is undertaken by 'good' scholars (according to the standards in economics). This means that the referees of journals or other scientific achievements (for example, referring to decisions about grants) are located somewhere on or near the tip of a ray (see Hamermesh 1994). Being highly specialized, they typically state that they value the integrative efforts of the scholar concerned, but that the contribution at X is, of course, by far not as good as some in their respective ray. They *generally* favour the work but confess that they are unable to judge it from a general perspective, and further add that from their own scientific point of view it is not up to the standards.

To try to bridge the gap between rays thus is a risky strategy where a failure, and therewith the end of the academic career, is very likely. Success depends on two rare conditions. One is that one tries to establish a new ray but this requires the right time and extraordinary capacities. Indeed, it is successfully achieved by the most able scholars only few of whom (a long time afterwards) are rewarded by a Nobel Prize. Pertinent examples are North and Fogel (new economic history), Arrow and Buchanan (public choice), or Becker (non-market economics). A second possibility for achieving success is to first accumulate a reputation by working in one particular ray, and then to try to bridge rays only later. Examples would be Akerlof who worked in growth theory and then switched to psychological economics, or Baumol and Peacock who started cultural economics. However, even scholars of that calibre find it exceedingly difficult to be successful with that strategy as the history of rejected articles shows (Gans and Shepard 1994). Both strategies, even if they were successful in the long run, require considerable time - and time is a costly resource in an environment of ray-economics where quick publication and citation results are required.

To undertake an integrative strategy is even more risky when a bridge to another discipline is to be established. To exploit economic orthodoxy to the fullest is good advice given to young economists embarking on an academic career. This strategy is beneficial to economics in so far as inconsistencies between methodologies (for

example, between economics based on methodological individualism and systems theory based on a holistic approach) are prevented. It has, however, negative consequences when the orthodox economic approach is used until its marginal productivity is close to, or at zero. In that case more insights would be created by equalizing marginal productivity of each approach which means not over-extending the use of a particular discipline. Young scholars are, of course, not interested in these 'social' benefits (that is, the fate of economics as a whole) but pursue their private benefits that indicate clearly that the expected benefits of risk neutral or risk averse young academics is to embark on a ray.¹⁹ Only uninformed and naive, or highly risk loving, or rather incompetent or lazy ones (who are unlikely to be successful in any ray) find it privately advantageous to undertake interdisciplinary or interray research.

Competitive markets are optimal

The international market for economists is competitive, and competition produces Pareto-optimal (efficient) results, provided the necessary conditions are met. Even if the conditions do not fully apply, competition is considered to be healthy by economists, and certainly preferable to alternative allocation mechanisms. Hence - so it is argued - the market for economists produces the socially most desired output, and the reservations raised in this chapter are unfounded.

We agree with the observation that the international market for economists has become more competitive (and we predict that this development will intensify; see section 2.4 below). But we point out that there is a basic asymmetry of information on the international market for economists which produces a systematic distortion of outcomes and drives the competitive process in a non-optimal direction. The basic informational asymmetry is due to the great uncertainty existing in a largely anonymous international market. It is difficult or impossible to judge the content of research as the knowledge about the underlying facts and institutions is seriously incomplete or missing among the evaluators based in another country or continent. Hence technical aspects - rigour and formal elegance - are judged. Young academics are induced to produce research in which they excel on this regard. The result is an aggregate research

output which is systematically distorted in favour of abstract work, and against research dealing with real-life issues.

Another reason why the competitive international market for economists does not produce an optimal outcome is due to the fact that demand and supply for research output are not independent as the suppliers (the economists producing research) at the same time largely determine demand (they define what research is by defining it within their own community). The requirement that demanders and suppliers are independent actors reacting to a price is violated so that no optimal output can be expected. The situation is similar to the market for medical care where the doctors as suppliers to a large extent determine the demand by the patients.

Modern economics is empirical

Recent studies have come to the conclusion that the share of 'empirical' papers has increased over the last 30 years, but that this trend came to an end in the 1980s (T. Morgan 1988, Figlio 1994). The question is, of course, what 'empirical' means in this context. Our contention is that due to the evaluation standards in international economics and the refereeing system going with it, articles published in major mainstream journals tend to be abstract and formal, dealing with well-defined theoretical issues. This also applies to 'empirical' studies in the form of econometric estimates of theoretical models whose major emphasis lies on estimation technique.²⁰ 'Empirical' research is just another way to exhibit one's technical competence, and thus to meet the profession's self-defined standards.²¹ The typical author does not even claim to present a balanced picture of empirical reality, including the institutional background, but is interested in showing the intricacies of a particular econometric technique. This interpretation is shared by Solow who states that 'many empirical papers seem more like virtuoso finger exercise than anything else' (quoted by Lazonick 1991, p. 348).

The need to evaluate the research of economists in the international market also systematically distorts the kind of data used. The safest way to proceed is to use the data established scholars have used before for the same kind of technical (econometric) exercise.²² Another acceptable way to proceed is to simply use official statistics. In both cases the international referees can concentrate on the

theoretical and empirical techniques employed. This means, however, that economic analysis is undertaken on the basis of a consensual statistical 'reality' which is rarely challenged.

Data generated on the basis of official statistics, for example, by constructing indices, is already tricky in the international market because the referees find it costly to evaluate such rather nitty-gritty transformations.²³ To collect data oneself does not only cost much time and effort (and is therefore not a good choice for young scholars who have to publish quickly) but it is also extremely difficult to evaluate by a referee not intimately connected with the respective economy and period. This is a clear disadvantage in the international market. Moreover, the collector of data has possibilities to 'massage' the data by, for example, leaving out outliers (without explicitly saying so) or even to falsify data. Because of such uncertainties, international referees much prefer to evaluate the analytical and econometric techniques used to deal with well-established data because he or she feels competent to do so, and does not require specific institutional and historical knowledge. Hence, there are few incentives especially for young researchers to collect new data, and the data that have been newly collected are not subjected to a similar degree of critical analysis as are the formal aspects of economics. As a result, rather bad data may survive for a considerable time, and the econometric techniques are used to explain a chimera.

It might be argued that the rise of experimental economics (see, for example, Kagel and Roth 1995) presents clear contrary evidence against our proposition. After all, experiments are undertaken exactly to produce new data under controlled conditions. Here is indeed a weak spot in this movement which so far has mainly been discussed in the natural sciences, but very little in experimental economics. In principle, the results of an experiment can be made up, or at least massaged by, for example, excluding experimental runs with awkward results. Our contention is not that this happens to any large degree or even that it has ever happened in experimental economics, but only that a referee has hardly the possibility to really check. In view of this difficulty, the international economics community has responded in various ways:

- the set-up of the experiments must be exactly described in publications in order to facilitate replication;
- the experimenters have established a rather closely-knit network of personal contacts in order to informally monitor each other and to establish reputations; and
- standard experiments have received great prominence (the Prisoner's Dilemma Game, and more recently the Ultimatum Game) which eases the burden of evaluation. It is easier to compare a new experiment to an already existing set of standard experiments.

In particular the last two responses are the prerequisites for a ray, which indeed experimental economics is today. The scholars in this ray mainly or even exclusively relate to and quote each other, they engage in marginal adjustments within the cannon of experiments deemed acceptable by them, and they deal to a large degree with self-defined technical and theoretical problems while the content increasingly loses importance.²⁴

Surveys bridge the gap

Could it not be argued that the economics community has responded to the gaps existing between rays by commissioning evaluative surveys of existing knowledge?

This argument is not without merit as there are *some* surveys that try to link the developments of various, or at least two rays. However, most surveys have exactly the opposite function, namely to highlight, establish and advertise a given ray in the general economics community.²⁵ Not rarely, such surveys seek to pull together the various threads *within* a ray, and do not endeavour to transgress the ray they survey. Almost never do they seriously integrate knowledge from the other social sciences.²⁶ But what about *surveys* that are commissioned to deal with a policy issue such as unemployment? One would think that the authors are *forced* to go beyond the abstract and technically-oriented model building and must seriously deal with the question of what economics as a social science is able to contribute. We contend that this is not normally the case because the writers of surveys are subject to the need for evaluation by referees who look at rigour and formal elegance but are not really

interested in improving economic policy. Consider, by way of example, the recent survey published in the *Journal of Economic Literature* on 'European Unemployment'. The author (Bean 1994) is a well-respected scholar who behaves as predicted, namely by essentially staying within the discourse among economists who have defined what they consider to be 'interesting' issues. Bean does refer to some policy consequences: after about 40 pages of treating theories he deals on half a page (p. 615) with policy consequences. However, these are not at all up to the quality standard of the previous theory-oriented part. He states that flexibility on the labour market would be helpful, as well as an active labour market policy as in Sweden (p. 615). While the first suggestion is rather trivial and known to everyone, the second has proved to be most doubtful (Sweden has currently an unemployment rate of 8.8 per cent). While the discussion of the theories was precise and rigorous, the policy conclusions are unspecific, short, not backed by empirical analysis, and moreover rather unconnected to the wealth of theories previously expounded at length. This is, of course, not because Bean is incompetent but rather because he is competent according to economists' self-defined standard. It should be added that Bean makes another policy proposal, namely to employ vouchers in the labour market (p. 615). Though not exactly new (it is a rather stereotype proposal economists are fond of making), only five lines are devoted to it so that it is not discussed in any serious way. While vouchers are interesting, the major problem is how to apply them precisely, and how to get them accepted in the political process.

2.4 Prospects for the Future

Increasing competition

The market for economists is almost certainly going to be more competitive in the future than it was in the past. As a by-product of the European unification, economists have organized themselves at the European level (the European Economic Association), and have established joint graduate programs (as, for example, between the Universities of Bonn, Louvain and LSE). At the same time the interaction between Europe and North America has further increased. Many American scholars now teach full-time or part-time in Europe,

as well as European scholars in America. The same applies for students. At the research level, the interaction is even more intensive; it is hardly possible to see any differences between the two continents.

All this is in marked contrast to the situation in the past where economists' jobs, education and research markets were defined according to nations and when it was rare that a scholar of another country was accepted as a professor.²⁷

Following our proposition, we expect that the formation of an all-European market for economists (in particular among the EU-member states) and its increased integration with the North American market leads to three major consequences:

- rays will become more important;
- economics departments will increasingly be a part of applied mathematics; and
- economics will flourish in other faculties.

Rays will become more important

The intensified competition among economists induces them to adjust to the conditions in the market. To be successful they have to produce rigorous and formally elegant work on self-defined theoretical problems. There will be more rays, that is, specialization is expected to go even further, and these rays will play an even larger role compared to the core.²⁸ This development will be reflected in the foundation of increasingly differentiated journals and associations.²⁹ At the same time this means that economics increasingly takes place outside the core, and that the compactness which characterized economics compared to the other social sciences is impaired.

Economics departments will increasingly be a part of applied mathematics

As a reaction to the more intensive competition economics departments will have to follow the internationally established standards. Only scholars excelling in rigour and formalism will be appointed as professors while those mainly interested in content and explaining real life issues have little chance in future economics

departments. As students are well aware that an education in ray economics is far from useful to get a job outside economics departments, only few will rationally decide to go beyond core economics and to enter graduate school. In the United States (at the leading universities and even at lower ranked schools) the economists' market has been competitive for a long time, and economics departments thus are strongly ray focused. As a consequence, very few Americans choose to take up graduate studies in economics. At many universities, graduate economics schools can only survive because they are populated by Asian and European students.³⁰ For them an education in ray economics may be profitable because a competitive market among economists is only gradually emerging, and the positions are increasingly occupied by economists meeting the international standards of rigour and formal elegance. Once the market among economists is established, graduate education will almost exclusively be to cater for the reinvestment demand of economics departments. If these arguments are correct, economics departments will *survive*, but will be *small*.

In economics departments dominated by ray economics policy advising will play a small role. It is not considered part of scientific activities as its output is not reflected in publications in accepted (refereed) journals and in citations. This trend is already visible; there is circumstantial evidence that advice pertaining to practical economic policy making is increasingly not sought from members of economics departments but from outside. The only members of such departments who can afford to 'waste' time on advising are those who made it and are outside the rat race. However, as we pointed out above, the advice on economic policy will either be of a technical nature and/or on the level of first semester economics.³¹

Economics will flourish in other faculties

Traditional economics departments where the professors cater for local demands, for general economic erudition and policy advice will largely vanish because the opening up of all markets makes it impossible to establish artificial barriers to entry. The natural barriers of language are due to evaporate because English will become the *lingua franca* of an increasingly large part of the world.

Economists interested in real life issues and policy problems will be found in faculties of law, business, political science, sociology, psychology, history and policy science. They apply rational choice analysis of core economics and will be well-known outside academia if they do so successfully. (They may even produce bestsellers.) However, this position is lost if the disciplines in which such economists are hosted follow the same development as economics departments. If they do so on the basis of ray economics they will similarly lose outside importance and will merge with economics departments as a further small part of applied mathematics. If they embark on rays based on different methodologies (such as systems theory), the economists will be forced out. Whether the disciplines mentioned above will increasingly value technique over content depends on the extent of international competition of the respective markets for scholars.

2.5 Are there Endogenous Limits?

The present and future development of economics as here portrayed, if indeed correct and shared by others, might be expected to lead to corrective reactions by those most negatively affected. One group is 'the public' which no longer derives any visible benefits from the economics departments. As far as the general population is concerned, it can at best be considered to be a latent group about whose component members they have little or no interest in complaining as the outcome is a public good. The government and organized groups do not really depend on economics departments as they can turn to economists in other faculties as well as to other social sciences. Hence, no reaction from the public is likely to be forthcoming.

A group which is potentially much more strongly affected are the (future) students of economics who, when educated in ray economics even at the undergraduate level, will find it difficult to find a job. But this group is also unlikely to change the course. First, potential future economics students do not have an incentive, nor the insights or influence (they are youngsters in schools), to become active. Second, the job situation is not hopeless because - at least outside North America - the existing stock of professors is still to be filled up with

economists trained in rays. It is a well-known psychological bias already extensively commented on by Adam Smith, and empirically well supported (Weinstein 1980) that prospective entrants into an occupation or job systematically overrate the probability of being successful. So even if there are relatively few professional jobs to be filled in the future, any particular potential economics graduate believes to be among the chosen few, and therefore sees little reason to redress economics teaching to the study of real world issues.

This leaves a third group which might be concerned about the sketched future development of economics, the scholars having a job in an economics department. As everywhere, change will be resisted, which is strengthened by the fact that most professors have tenure so that they are to a large extent isolated from market developments (see Alchian 1977). Those educated in the tradition that rigour and formal elegance mainly matter, have little reason to redress the balance because they would be robbed of a significant share of the human capital they accumulated with much effort. In addition to those obvious material interests they may also be subject to the drive to reduce cognitive dissonance by overvaluing the training received in the past. Only professors who have either had a broader education or who are so superior that they have acquired a broader knowledge of economics and the social sciences (good examples are Solow and Arrow, but there are many others) will want to seriously put into question the course of their own departments. They are joined by university administrators who are forced to compare the future development of various departments. Both these unorthodox professors and university administrators cannot fail to see some signs speaking against ray-economics. One is the falling number of economics students compared, for example, to management (business) and law, as well as the difficulty in finding satisfactory and well paid jobs outside academia.³² Whether these two groups are able to change the course of events depends strongly on institutional conditions. Private universities which depend on satisfying students' preferences are more likely to redress the balance in favour of core economics which means that the ray oriented departments of economics will shrink. State universities, especially of the European type, depend less directly on future job opportunities of students, and have a stronger tenure security for professors, so that less rapid

change is likely to occur. As a larger share of American universities are private (especially the top ones) this would mean that the departments of economics will shrink more quickly in North America than in Europe.

2.6 Changing the Evaluation: From PC to PEP

Our analysis and our predictions are based on the notion that the increased internationalization of the market for economists requires an efficient and reasonably objective standard for evaluating the performance of individual economists. For the reasons outlined, the quality evaluation hinges on rigour and formal elegance aspects which are reflected in journal publications refereed by other economists, and their impact on the professional discussion, i.e. citations. But it is exactly due to this mechanism that economic research is strongly distorted away from analysing real world issues, and towards the abstract analysis of self-defined problems.

Why should this evaluation not be broadened by going beyond 'Publications and Citations' (PC) to a more general 'Professional Evaluation Procedure' (PEP)? Economists' quality might be judged along three major dimensions (Table 2.1).

Table 2.1 Dimensions of economist quality (PEP-index)

| | |
|----------------------------|---|
| <i>Research</i> | publications and citations, this is the PC-yardstick now employed. |
| <i>Social activities</i> | (a) in the public sector, either as a member of government or as a public official; (b) in the various parliaments, be they central, provincial or local (and possible the functions such as president of the finance committee); (c) as advisers in the various economic councils such as the 'sachverständigenrat'. |
| <i>Academic management</i> | University rector, faculty dean, or department chairperson. |

The information contained in these three dimensions can be condensed in the *PEP-Index*. The construction and use of the *PEP-Index* is, however, faced with serious problems. First, the aspects included are only partial, and it is easy to think of activities which should also be included. Why should, for instance, advising firms or interest groups not be one of the qualities of an economist (and not only of a business economist) worth taking into account? And why should we stop with advising? Should not actual business activities also be included? And if so, why not volunteer work? From this it is only a minor step to also incorporate artistic and sports activities. The point is clear: It is difficult or even impossible to find a set of activities which would command wide consensus. This is in marked contrast to publications and citations where corresponding conventions have emerged. Moreover, does it make sense to define a successful business person (or sportsperson) to be a good academic simply because the distinction between advising and academia is blurred? Second, the *PEP-Index* is most difficult to compare over different periods and countries. In one country, for instance, the president of the parliamentary finance committee or the university rector may have enormous power, and in another country it may just be a nice, but meaningless title. Moreover, occupying a position does not mean that one does it well.

The first two difficulties are serious (and more serious than in the case of the currently used - P or C - indices) but could, at least in principle, be overcome by a standardization system. The third difficulty, however, is fundamental. The *PEP-Index* is made up of three different dimensions, and there is no objective way to aggregate them. There exists no readily available market system which determines the relative prices, or weights, of the three dimensions. Depending on the weights used, many different outcomes can be produced. If the PC part is given large weight, the American economists are without any doubt on top (and that is exactly what Portes 1987, p. 1220 states when he asks 'whether there is now any economics outside and independent of the United States?'). But if sufficient weight is given to jobs in government, it is the Dutch and the Spanish economists who are top (as we have argued in Frey and Eichenberger 1993). Depending on one's purpose and interests, the convenient weight will be chosen, and - as scientific research on

preference aggregation has made abundantly clear (reaching back to Black 1948 and Arrow 1951, see Sen 1970) - there is *no* logically consistent way of performing such an aggregation in a world of heterogeneous preferences. It is, of course, possible to resort to a dictatorial solution by *imposing* a system of weights, for example, via an international standardization agreement. However, such a PEP-Index would have little use.

As the construction of a meaningful single PEP-Index seems to be impossible, one could rely on several PEP-indicators mirroring the various dimensions of performance. This, however, does not solve the aggregation problem; it only makes the subjectivity of aggregation more explicit. The situation is not quite unlike the efforts with national accounting. As long as the convention was to essentially use market weights to aggregate the individual goods and services to national income, there were little problems. (The fact that government activity is measured by input rather than by output is conveniently overlooked.) But the extension to include environmental damages as well as the exhaustion of natural resources has been much more difficult (even if undertaken by the World Bank), and is used only under very special circumstances. The situation with the PEP-Index is more serious, not least because individual scholars are personally and strongly affected.

We are forced to conclude that while extending the basis of evaluation of economists would be desirable and important, a PEP-Index certainly does not provide a rough and ready solution. It is rather the other way around. If the institutional conditions have changed such that scholars are not mainly evaluated on the basis of rigour and formal elegance, then it is more likely that a consensus on a standardized PEP-Index may emerge.

2.7 Conclusions

The analysis of the *status quo* and of future developments here presented are certainly evaluated quite differently according to the person and her or his interests:

- Persons interested in economics as an institution will find our analysis frightening as we predict that the departments of economics will shrink to a small size.
- Persons only interested in an economics conforming to the rigour and formal elegance of the natural sciences (especially mathematics) will welcome this development toward a 'real' science with a few chosen students.
- Persons interested in the subject and content of economics as a social science and hence in core economics will deplore the disappearance of economics departments as a relevant social unit but will be consoled by economics flourishing in other disciplines.

Our analysis and predictions are therefore neither pessimistic nor optimistic. We have not tried to hide our own preferences. We consider ourselves members of the third group. We consider core economics to be an invaluable contribution to the social sciences, and we firmly believe that it is both strict and flexible enough to be further developed and amended by insights from other disciplines. Economics so understood is great.

Notes

We thank Felix Oberholzer-Gee and Richard Portes for helpful comments.

1. In political science the economic approach is known as 'Public Choice', in sociology as 'Rational Choice', in Law as 'Law and Economics', in international relations as 'International Political Economy', in criminology as the 'Economic Approach to Crime', in history as 'New Economic History' and 'Cliometrics' (see, for examples Becker 1976, McKenzie and Tullock 1975, Frey 1992).
2. For related work on economics and the economic profession, see, for example, Colander and Klamer (1987), Colander (1989), Klamer and Colander (1990), Baumol (1995), Buchanan (1995), Eggertsson (1995), and Frech (1995).
3. Indeed, one of the present authors has been engaged in rather extensive empirical studies dealing with the issue. They replicate and extend a study for the US (Kearl et al. 1979) to Europe: Frey et al. (1982) to Switzerland, Schneider et al. (1983) to Germany, Pommerehne et al. (1983) to Austria, Bobe and Etchegoyen (1981) to France. The results were compared in Frey et al. (1984) and Pommerehne et al. (1984). Further replications have thereafter been undertaken, for example, for the United Kingdom by Ricketts and Shoesmith (1990) and for the US by Alston et al. (1992).

4. Many articles are never read by anybody beyond the journal editor (perhaps) and his referees. Even more are never ever quoted.
5. 'It is a fact of life that trained economists find it very difficult to see the obvious unless it has been encapsulated in a clear formal model' (Krugman 1995, p.43). It is tempting to compare ray-economics to scholastic as well as to some modern parts of philosophy of which Feyerabend (1995, p. 197) says: 'Ihr seid wie die Gelehrten im Mittelalter ... Die verstanden auch nur, was sie zuvor ins Lateinische übersetzt hatten' (You are like the medieval scientists who could only understand what they had just translated into Latin).
6. It is well possible to write a whole book on 'The Economics of the Family' (Cigno 1991) without integrating any empirical facts about the family and without consulting the (huge) literature on the family offered by the other social sciences. This sad fact can be generalized. As a consequence, only 3 per cent of young American economists perceive 'having a thorough knowledge of the economy' to be 'very important' for professional success, while 65 per cent think 'being smart in the sense of being good at problem solving' and 57 per cent believe that 'excellence in mathematics' is very important (see Colander and Klamer 1987, p. 100, or Klamer and Colander 1990, p. 18). Thus, Bergman (1989) rightly asks the questions 'Why Do Economists Know so Little about the Economy?' and Fisher (1989, p. 123) bluntly writes:

There is a strong tendency for even the best practitioners to concentrate on the analytically interesting questions rather than on the ones that really matter. The result is often a perfectly fascinating piece of analysis. But so long as that tendency continues, those analyses will remain merely games economists play.

See with similar statements Kolm (1988), Colander (1991) and Mayer (1993).

7. In the words of three well known business scholars: 'Less and less concerned with empiricism, economics became increasingly concerned with working out the internal logic of its theoretical structure and less concerned with discussing real institutions' (Rumelt et al. 1991, p. 17).
8. An example (according to Drèze 1995, p. 119-20) are the theories of incentive compatibility.
9. Or in Phelps' (1995, p. 103) words: 'a science develops momentum in a certain line of analysis, ... something like an industry develops with its accumulated conventions and standards'.
10. The dominant position of Americans in the world market of economists is documented in Frey and Pommerehne (1988a) by counting citations. See also Kirman and Dahl (1994, pp. 514-17).
11. One may even speak of a fundamental 'Unentscheidbarkeits-Theorem' (Holub 1989). The issue is also extensively discussed in Frey and Eichenberger (1992 and 1993).
12. The (often destructive) influence of extrinsic incentives on intrinsic motivations is extensively analysed in Frey (1997a and 1997b).

13. In Osterloh, Grand and Tiemann's (1994) terminology one needs not only *modelling* (that is, the isolation of a few key variables whose interactions are examined in depth; they focus on strong links, see Mayer 1993) but also *mapping* (that is, the use of different models from different disciplinary views, thus trying to map the diversity inherent in concrete situations).
14. 'once you've seen the primitive nature of real policy discussion, you start to wonder whether third-order conditions and likelihood-tests can really matter' (Krugman 1995, p. 35).
15. An extensive account on the gap between academic (ray) economics taught at universities and the economic concepts that are useful in policy advising is given by Harberger (1993). He openly declares on p. 12: 'I feel quite safe in stating that we do not have, in the United States, either the amount or the kind of training that is needed for our profession to make its appropriate contribution to our society's decision-making processes'.
16. An example is sealed bid second price auctions. Many academic economists believe them to be a genuine economic invention and their application to privatization schemes and public tenders to be a major success of ray economics. However, this alleged economic invention has been the standard mechanism (for written offers) in art and collectibles auctions for centuries (see, for example, *The New Palgrave*, 1987, vol. 1, 139f.), and its favourable properties are known to (almost) all art sellers and buyers.
17. Defenders of the real-life relevance of ray economics might argue that core economics can only be well understood if the respective person has done more advanced economics. This argument is not without merit. However, it should be weighted against the additional insights gained by learning about the relevant institutional conditions, and gaining knowledge about how to make economic ideas acceptable in the economic policy process.
18. An example is the official speeches by the presidents of the American Economic Association at the yearly meetings. These chosen scholars use to urge their co-economists to do more reality oriented and integrative work. The majority of younger economists listen politely, but with their career in mind return home not changing one bit their effort to excel in ray economics.
19. Phelps (1995, p. 103) offers this advice: 'a researcher can normally expect to maximize citations by correcting or building upon an established or ongoing research programme ... not by centering into an area where there are few or no citations to begin with'.
20. An example is the use of cointegration analysis which can be applied to a large number of issues. The first author as editor of a professional journal (*Kyklos*) has received virtually dozens of papers where this new estimation technique has been applied, and where the respective authors obviously had little, or no interest, in the subject the technique has been applied to. This can be generalized: 'formal empirical work ... has had almost no influence on serious thinking about substantive as opposed to methodological questions' (Summers 1991, p. 129).

21. The following abstract announcing a contribution on 'Applied Economics' to the European Economic Association Conference in Prague in 1995 is quite typical: 'Using a translog cost functional form a formal operational model with an adjustment process according to a first-order autoregressive scheme is presented that allows the simultaneous determination of factor demands and of technological change in an input-output system' (Saturday, Sept. 2, Section C9). The authors do not bother to even hint at any substantive problem.
22. The Summers and Heston (1991) data on real national income for more than 130 nations are a good example. They are generally considered the 'correct' ones and are used as a matter of course by the scholars participating in cross-country growth research (for example, Levine and Renelt 1992) but few would seriously argue that they are really good and could not be improved upon.
23. For instance the Scully (1992) index on political and economic liberties, or Gastil's (1989) freedom index.
24. This does not say that experimental economics is not able to produce new insights which help us to understand better the world we live in. On the contrary, we believe that the approach which we have ourselves used, is most helpful. See for example, Bohnet and Frey (1995), Frey and Bohnet (1995), Eichenberger and Oberholzer (1995).
25. We have already mentioned Hahn and Mathew's (1964) growth survey; Harcourt's (1972) and Blaug's (1975) surveys on the Cambridge Capital Controversy. Another more recent example is Throsby's (1994) survey on cultural economics.
26. If other disciplines are considered this is normally done on the methodological level, stating, for example, that the other social sciences dealing with the same issues are not based on methodological individualism. But normally the surveys leave it at that.
27. An exception has been Germany, Austria and Switzerland where an open market for German speaking professors has always existed.
28. To illustrate with an example: already today, research on field experiments and on laboratory experiments in economics is almost totally separated, that is, there are hardly any cross references, not even in surveys (for evidence see Frey and Bohnet, 1996). We expect that within laboratory economics there will be rays on labour, on values and fairness, on markets, and on decision making (dilemmata) experiments. These divisions are already visible today. In this context Solow (1967, p. 101) warns 'little-thinking can easily degenerate into mini-thinking or even into hardly any thinking at all'.
29. Even in a field which most professional economists have never even heard about, such as the economics of art, there are several specialized journals: *The Journal of Cultural Economics*, *Empirical Studies in the Arts*, and *Economia della Cultura*. In a better known field such as public choice there are even more specialized journals, for example, *Public Choice*, *Constitutional Political Economy*, *Economia delle Scelte Pubbliche*, *Politics and Economics*, *European Journal of Political Economy*, *Social Choice and Welfare*, and so on.

30. For the huge share of foreign students in Doctoral programmes in the US see, for example, Hansen (1991).
31. Examples are Arrow and Solow who co-chaired a panel evaluating the contingent valuation approach (Arrow, Solow et al. 1993). In that case, the advice was rather basic (how to undertake a useful survey), certainly not going beyond core economics.
32. See Krueger et al. (1991) and Towse and Blaug (1990). If these findings hold, we expect a declining relative wage of economics graduates compared to, for example, lawyers and MBAs. However, as far as we know there exists no serious empirical evidence concerning this prediction.

