

The Government Economic Agenda in a Society of Unequally Rational Individuals

Pavel Pelikán*

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Abstract: What economic roles, if any, should government play? This is still an incompletely analyzed issue that different individuals – depending on their ideologies, rent-seeking opportunities, and analytical abilities – may answer very differently. To advance its analysis, this paper takes into account that human rationality (as empirically testable cognitive abilities) is bounded unequally across individuals, and is therefore a special scarce resource that markets and government allocate in significantly different ways. The results conflict with the ideologies of both socialism and classical liberalism, but explain two puzzles of recent economic history, and provide theoretical support to ideological compromises in actual economic policies.

*Professor
Department of Institutional Economics
Prague University of Economics
nám. W. Churchilla 4
CZ-130 67 Praha 3
Czech Republic
e-mail addresses: pelikanp@vse.cz, pelikan.pavel@gmail.com

I INTRODUCTION

What roles in the economy should government be allowed or required to play? This is still an incompletely analyzed issue that different individuals – depending on their ideologies, rent-seeking opportunities, and analytical knowledge – may answer very differently. In political debates, it is indeed still possible to hear advocacy of different mixtures of many roles – including national planning, ownership of banks and other enterprises, industrial policies, macroeconomic tuning, demand for public goods, income redistribution, social policies, legislation of laws and regulations, and maintenance of law and order. The mixtures range from extensive uses of all these roles to their complete refusal, including the claim that even the making of laws and the maintaining of order should be left to private enterprise and voluntary market contracts.

This paper fully admits that economic analysis may never be able to specify the right answer in all relevant details – there may not even be a well-defined sense in which any answer could be declared "right." Its purpose is only to show that analysis can throw more light on this issue than it has done so far. Its key step is to drop the perfect-rationality assumption of standard analysis and recognize what is in social practice obvious, but in economic theory still rarely admitted fact: human rationality, in the sense of empirically testable cognitive abilities, is not only bounded, as today's economists increasingly often admit, but moreover unequally so across individuals.

This fact is shown to imply that rationality belongs to the scarce resources that pose the problem of their efficient allocation in society, but as a unique case of theirs, for which this problem is complicated by what Hofstadter (1979) termed "tangled hierarchies." While this problem appears difficult to analyze in its entirety, meaningful results relevant to the present issue will be possible to obtain from a relatively simple comparison of government with markets for their ways of coping with it – and more precisely, for their performance in two critical tasks: (1) selecting the relevantly most rational individuals for the top jobs of investors, entrepreneurs and managers in production; and (2) limiting the inefficiencies caused by little-rational individuals in final consumption. The results conflict with the ideologies of both socialism and classical liberalism, but explain two puzzles of recent economic history, and provide theoretical support to ideological compromises in actual economic policies.

The paper is organized as follows. Section II clarifies and justifies the present definition of "rationality," recognizes rationality to be bounded in individually unequal ways,

and includes it among scarce resources as a unique case of theirs. Section III brings to light the tangled hierarchies with which this uniqueness complicates the familiar resource-allocation problem. Section IV compares rationality-allocation by government with that by markets, separately for production and for final consumption. Section V considers the implications for government economic roles. Section VI concludes by relating these implications to empirical facts, ideologies, and actual economic policies.

II UNEQUALLY BOUNDED RATIONALITY AS A SCARCE RESOURCE

II.1 Defining "rationality" for problems involving more than one person

Nearly all economists are concerned with rationality. Most of the mainstream ones still build on the assumption that rationality is always perfect, or unbounded, meaning that each individual possesses the abilities optimally to solve all economic problems, however difficult. For their heterodox opponents, this assumption has been the principal target of criticism. Since the early attacks on it by Simon (1955, 1979), the debates about the existence of rationality bounds and the need of admitting them into economic theories have been growing and ramifying. Disagreements start with the very meaning of this notion: different definitions admit different rationality bounds, and some definitions succeed in formally excluding such bounds altogether.

To clarify and justify the present definition of "rationality," it is helpful to refer to Vanberg's (2004) distinction between two views of the perfect-rationality assumption – *as a non-refutable principle*, and *as an empirically refutable hypothesis*. The main difference between the two can perhaps best be seen in how they deal with the undeniably existing limits of human cognitive abilities. The latter view directly links such limits to rationality bounds: any empirical evidence that an individual is unable optimally to solve some economic problems is taken to demonstrate that his or her rationality is bounded (cf., e.g., Kahneman and Tversky, 2000). In contrast, the former view adds such limits to optimization constraints. Everyone can then be viewed as irrefutably optimizing under these constraints – that is, perfectly rationally doing *his* or *her* best – no matter how severely limited his or her cognitive abilities might be (cf., e.g., Boland, 1981).

At first sight, economists may appear free to choose which of these views to adopt. In fact, however, this freedom is restricted to analysis of one-person problems. Why this restriction has not always been properly realized is, perhaps, that most of the rationality debates have been about one typical individual. But it is easy to see why in problems

involving several individuals, to assume everyone irrefutably rational is no longer safe. While everyone may still be viewed as rationally doing his or her *personal* best, this misses the often crucial fact that for many economic problems, the "best" of some individuals may be much better, or much worse, than the "best" of others. As the issue of government economic roles, and indeed any policy issue, involves more than one individual, the former view is here obligatory.

To meet this obligation, "rationality" is here defined along the lines of Simon and Kahneman and Tversky as *the cognitive abilities, or competence, of human brains for solving economic problems* – meaning, as usual, problems of how to allocate and use given scarce resources to obtain the best outcomes in terms of given preferences. This definition makes it indeed possible empirically to refute the perfect rationality assumption, and thus demonstrate that rationality bounds do exist, simply by observing – as Kahneman and Tversky were among the first systematically to do – that people, when trying to solve even only modestly difficult economic problems, often commit significant errors.

II.2 The properties of rationality relevant to government economic roles

Rationality has several properties that analysis of government economic roles, to avoid misleading policy implications, must take into account. First, it is not only bounded, but moreover unequally so. When solving the same economic problem, different individuals – *even when they have the same access to relevant information* – may, and as any teacher of economics can testify often do, commit different errors. Hence – be it due to their inborn talents (“nature”) or to their education and experience (“nurture”) – their rationality must be recognized bounded in different ways and degrees.

Importantly, as hinted by the italics, rationality is here sharply distinguished from information about the state of the world: it includes the abilities to find, understand and use such information, but is not the information itself. It is in how the same available information is exploited that some of the most important individual differences in rationality bounds often come to light. Although very generally, rationality can also be viewed as a kind of information, this is the kind described by Polanyi (1967) as "tacit knowledge": its owner can use it, but cannot directly observe it, nor communicate to others.

Second, as rationality is defined in relation to economic problems, it is possible to distinguish different sorts of it, relevant to different sorts of problems – for instance, involving different kinds or amounts of resources, or different degrees of risk or uncertainty. Rationality differences between individuals are therefore not limited to overall superiority or inferiority, but may also involve comparative advantages in different rationality sorts.

Third, as an economically valuable ability that is intimately and inseparably tied to each individual, rationality is a kind of human capital. Just like any kind of human capital, individuals can improve it only by their own learning from more or less costly experience and education, and cannot directly receive it from anyone else. But just like all learning, also this one is constrained by available learning abilities, or talents – which must include abilities for multilevel learning, or meta-learning, if any of this is also to take place. Talents thus imply a certain maximum of rationality that their owner would be able ultimately to learn in ideal learning environments, and may be referred to as *potential* rationality – as opposed to the so far learnt, and therefore typically more bounded, *actual* rationality. Although precise empirical evidence appears difficult to obtain, the fact that the results of any education are nearly always both limited and individually unequal makes it possible safely to infer that also potential rationality is bounded with different bounds for different individuals.

As a kind of human capital, rationality belongs among the scarce resources that raise the problem of their efficient allocation and uses in society. But it is a unique resource that differs from all the others by playing a double role in its allocation: as it is needed for deciding on the allocation of any scarce resource, it is also needed for deciding on the allocation of itself. This double role complicates rationality-allocation by what Hofstadter (1979) calls "tangled hierarchies," which standard theories are not prepared to handle. In them – and this is their easy, but sometimes misleading way out of this complication – rationality is unique as the only scarce resource that, however scarce it might be in reality, is always wishfully assumed abundant. Admittedly, as has often been pointed out, many economic questions can be given reasonably correct answers even under this assumption. But not all, and certainly not the question of government economic roles. For it, as will become clear below, to ignore the scarcity of rationality is definitely misleading.

III PROBLEMS OF RATIONALITY-ALLOCATION

III.1 Estimating the rationality of individuals

As all resource-allocation must begin by assessing the available stocks of the resources to be allocated, the first problem of rationality-allocation is, how to assess the rationality of different individuals, including oneself. The particularity of this problem is that its solution depends on the rationality used for solving it. Artificial experiments, intelligence tests, and problems in economic textbooks can only demonstrate that rationality bounds exist, but cannot reliably determine the rationality of different individuals relevant to real world

economic problems – especially the most complex ones, such as the organizing and managing of large firms, or picking future winners among large numbers of new firms and new technologies, of which many will turn out to be future losers.

The rationality relevant to many real-world economic problems can therefore only be subjectively estimated, with the risk of more or less large errors depending on the rationality of the estimating individual: the more bounded this rationality, the larger the errors are likely to be. Emphatically, this is also true when individuals estimate their own rationality: those suffering from severe rationality bounds are likely to commit large errors also in such estimations, as they are typically unaware of how severe these bounds really are.¹

For analysis to be fruitful, however, it is necessary to have a more specific assumption on how differently rational individuals estimate the rationality of different individuals. Here, it will suffice to consider relatively simple situations, in which individuals face a set of candidates, possibly including themselves, and strive to select (vote for) the most rational one(s). For it, the following assumption appears plausible.

Estimating Rationality by Rationality (ERR) Assumption: Each individual can safely recognize, and therefore avoid selecting, all those whose rationality is lower than his/hers, but is unable fully to appreciate the possibly subtle differences between this rationality and all the higher rationality, and may have irrelevant prejudices that make him/her underestimate the rationality of a random subset of the equally or more rational individuals. Therefore, when striving to select the most rational individual(s), he/she randomly chooses from the complementary (and therefore also random) subset of the equally or more rational candidates.

That an individual is not assumed safely to recognize all the equally or more rational individuals, but is expected to underestimate a more or less large subset of them, deserves emphasis. In addition to being realistic, as documented by the numerous examples of geniuses unrecognized and underestimated by mediocrities, this expectation is an important reason why the most rational individuals cannot be orderly found by successive eliminations of all the less rational ones. This expectation is also needed for admitting two other realistic possibilities: highly rational individuals may modestly underestimate themselves, and thus unjustly exclude themselves from their choice set, and little-rational ones may arrogantly underestimate all the others, and thus mistakenly choose only themselves.

¹ In addition to casual observations of (and frequent irritation with) such individuals during personal encounters, their existence is now solidly documented in experimental psychology by Kruger and Dunning (1999), in their wittily titled article "Unskilled and unaware of it: how difficulties in recognizing one's own incompetence lead to inflated self-assessment." This evidence devalues all the standard models of allocation of abilities that stand and fall with the assumption that all agents perfectly know the abilities of themselves.

III.2 The tangled hierarchies of rationality-allocation

A relatively simple tangled hierarchy appears in the one-agent problem of optimal investing in own human capital. Standard human capital theory builds on a straight two-level hierarchy of human abilities, topped by an assumingly perfect investment rationality, which makes it possible to optimize the investment in any other, admittedly imperfect and thus logically inferior kind of human capital. When also investment rationality is admitted to be imperfect, the top gets tangled with the bottom: imperfect investors, in order to invest optimally in improving their investment rationality, would need *already now* the improved rationality that they only consider to acquire, as a result of their present investment, *in the future*. Note that the investment rationality of some individuals may be so bounded that, even when possessing sufficient investment means, they are not very able to improve it.

A more intricate and for present purposes more important tangled hierarchy appears in the multipersonal problem of efficient resource-allocation in society. Standard theories build again on a straight hierarchy: the individuals deciding on the allocation are assumed to possess abundant rationality, which makes them logically superior to the scarce resources they allocate – somewhat like the players of a game of cards are superior to the cards. When it is recognized that also rationality is scarce and that different individuals possess it in different qualities and quantities, the top gets again tangled with the bottom: the individuals both decide on the allocation of scarce resources and are differently scarce resources themselves – as if in a game of cards the players themselves were also cards of different values, included among the cards with which they play.

In consequence, the resource-allocation problem contains many more variables to be determined. In its standard form, all the resource-allocating individuals, their positions, and their (abundant) rationality are assumed constant, and only the flows and stocks of other resources are variable. Rationality-allocation adds to the variables the design of jobs, their assignment to individuals, and the individuals' rationality.

To be efficient (in the usual Pareto sense), resource-allocation must therefore meet more conditions, which include avoiding two types of rationality-allocation inefficiencies: (I) some highly rational individuals occupy too easy jobs, which wastes their scarce high rationality; and (II) some insufficiently rational individuals occupy too difficult jobs – thus causing what Heiner (1983) termed "competence-difficulty gaps" – which wastes resources because of the errors that such individuals cannot help committing.

However, as mainstream economists may (and I met several who did) believe that all these additional problems are competently handled by the standard theories of mechanism-

design, matching, and job-assignment, it should be made clear why this is not the case. Namely, each of these theories only deals with a selected subset of these problems, under the assumptions that all the other problems have already been solved. Thus, the job-assignment theories admit that the individuals to be assigned to different jobs are of different abilities, which might indeed include differently bounded rationality, but assume that all the jobs have already been optimally designed, and that there is at least one perfectly rational job-assigner. The mechanism-design theories assume perfect rationality of all the individuals involved, so that no constraint on how difficult jobs an optimal allocation mechanism could contain is taken into account, and all problems with the selection of individuals are thus ignored. A mechanism found optimal in theory could therefore grossly fail with people as they are in practice. The tangled hierarchy that makes it impossible to build a unified standard theory of both job-designing and job-assigning is that the very jobs of job-designing and job-assigning must be included among the jobs to be designed by, and assigned to, differently rational individuals, of whom no one is guaranteed to be sufficiently rational for any of the top jobs to which he or she might initially be assigned.²

III.3 Efficiency of rationality-allocation: production vs. final consumption

Rationality-allocation raises substantially different efficiency problems in production than in final consumption. The differences begin with the very notion of efficiency: the one of final consumption depends more on subjective preferences and values than the one of production. The latter can even be made entirely value-free by defining final demand to comprehend all that the consumers might individually and collectively want from production – including job creation, working conditions, and nature protection. The rationality-allocation in production then has the value-free task to use most efficiently (least wastefully) all the relevant rationality available in the population – that is, to minimize inefficiencies I and II – for meeting such a comprehensive final demand, whatever this might be.

To some extent, the efficiency of final consumption can also be disconnected from subjective preferences and values, but in a different way: by prolonging the period considered. In the short run, this efficiency is indeed impossible to define without referring

² Note that this implies a new contribution to the old controversy about the feasibility of efficient national planning. Compared to Hayek's (1945) classical argument that this is too difficult a task for any human mind to master, rationality-allocation analysis may generously concede that some exceptionally talented minds, perhaps with the help of modern computers, could master it, but brings to light the more fundamental and more difficult problem of how to recognize them and assign this task only to some of them, and not to anyone else, when, initially, they are not known. For theoretical reasons elaborated below and richly corroborated in reality, the scarce individuals of very high rationality for complex economic problems – which already include organization and management of large enterprises, and not only national planning – are unlikely to be found and selected, even when they exist, by any political process, democratic or revolutionary.

to the prevailing value of consumer sovereignty and the actual preferences of the consumers, including their sensitivity to the external effects, both physical and psychological, of others' consumption. In the long run, however, this dependence turns out to weaken. Although details are still difficult to predict, evidence keeps gathering that some types of final consumption are, in a certain evolutionary sense, more efficient than other types, some of which even appear increasingly likely to head for serious crises.

Another important difference between production and final consumption is in the ways in which rationality-allocation can proceed, starting from an initial mixture of inefficiencies I and II. In general, such ways can be divided into (A) redesigning jobs; (B) changing the rationality of the individuals assigned to jobs. The latter can further be divided into (B1) changing the individuals by firing, hiring, promotions or demotions; and (B2) keeping them while trying to make them acquire the needed rationality by learning.

Ways A may be used in both production and final consumption – for instance, the job of a manager may be redesigned by changing the size and/or the diversification of the firm, and the position of a consumer may be redesigned by changes in the quality controls and regulations concerning consumer goods. The difference is in ways B. Both B1 and B2 can be used in production – for instance, a manager of an insufficient actual rationality can either be fired or, if his/her potential rationality (talent) is judged promising, allowed to learn. But only B2, the learning alternative, can be used in final consumption. Namely, a civilized society can hardly admit that people be fired from their positions of final consumers, and thus starved to death, because of their low rationality. Inefficiencies caused by little-rational consumers can therefore only be decreased by combinations of A and B2 – that is, by limiting and simplifying their choices and/or helping them to learn to be more rational.

Last but not least, production and final consumption also differ in the sorts and the levels of rationality that raise the key allocation problems. That the rationality relevant to problems of production is not of the same sort as the one relevant to problems of final consumption can be seen by considering that even the greatest industrial champions may not be most efficient final consumers, not even in terms of their own preferences. But it may be less clear that the difference also concerns the levels of rationality. In production, the crucial rationality-allocation problems concern the highest level: how to find, recognize and select the most relevantly rational, and therefore scarcest, individuals for the top jobs of organizing, managing, and investing in, production enterprises, while preventing these jobs from growing more difficult than what even such top individuals are able to handle. In final consumption, in contrast, the most urgent problems are raised by low rationality levels: how to diminish the

inefficiencies caused by little-rational consumers, who may waste resources on harming themselves in terms of their own preferences, and/or harm others through the possibly extensive spillover effects of their little-rational consumption.

IV RATIONALITY-ALLOCATION BY MARKETS AND BY GOVERNMENT

IV.1 A simple comparative analysis of rationality-allocation

How to grasp and analyze rationality-allocation in its entirety is a difficult question for which I still lack a satisfactory answer. But for the present issue of government economic roles, meaningful results can be obtained by a simple comparative analysis, which only ranks the alternatives compared, without having to determine the outcomes of any of them in absolute terms. An additional bonus is the automatic immunity of comparative analysis to what Demsetz (1969) calls "nirvana fallacy": naively rejecting an alternative upon finding it imperfect, even if all of its feasible alternatives are even more imperfect.

However, as opposed to the usual comparative analysis of entire economic systems, or mechanisms, which include specified individuals in specified jobs, comparative analysis of rationality-allocation can only concern general rules, in the sense of rules-constraints, or "rules of the game" – that I choose to label, following North (1990), as "institutions."³ Both the selection of individuals for jobs and the design of most of these jobs are there endogenous variables, to be determined under given institutions, and cannot therefore be specified at the outset. Only the economic jobs (roles) of government are exogenous, specified by political rather than economic processes. It is these jobs that are here in question: how should they be designed, taking into account how government can possibly assign them, to allow government to help, but not harm, the economy?

The comparison must involve time, starting with an inefficient rationality-allocation, where no one is guaranteed to have the right job and no one's rationality is generally known. Different individuals, depending on their more or less bounded rationality, have different beliefs about both, but again, it is not generally known how correct or incorrect their beliefs

³ This analysis thus joins the cases of economics repeating itself pointed out by Frey (1990), in which a difficult, by standard analysis unsolvable problem ("paradox") turns out to require a solution in terms of social rules that may be understood as "rules-of-the-game." Frey notes several such repetitions, finding the original in Buchanan (1954), who called such rules "constitution" and found them to solve the paradox of aggregation and the paradox of individual behavior. Other important repetitions include Hayek (1973), who labeled such rules "negative" and found them to be the basis of social order, and North (1990), who termed them "institutions" and studied their effects on incentives, with the focus on transaction costs. While this term is also adopted here, the present focus is different.

are. Government and markets are represented by institutions, specified below, by which the individuals' contributions to rationality-allocation are shaped. The question is: how do the two institutional alternatives compare for the abilities to diminish, through this shaping, the initial inefficiencies?

An initial situation that is both easy to handle and fully neutral can be defined as follows. Assume a population in which all sorts of rationality are distributed in a similar way as most of other human abilities – that is, roughly normally. Assume moreover that for each top job there is a set of candidates over whom the relevant rationality is also distributed close to normally – in other words, that the candidates are either the entire population, or a random sample of it. To recall, none of these distributions is commonly known: different individuals estimate the rationality of each other and of themselves differently, in function of their own rationality, as considered in Section III.1.

Assume further that, in order best to organize and coordinate their production activities, and thus benefit most from their division of labor, the individuals have a common interest in having their economy contain certain highly complex top jobs – such as those of large-scale entrepreneurs, investors, and policymakers – assigned to correspondingly highly rational individuals. They thus have a common rationality-allocation problem that can be put as follows: *How to design such top jobs, and how to recognize and select such highly rational individuals, while also making sure that none of these jobs will lastingly grow more complex than what the individual who can feasibly be selected for it can handle?*

Not to overestimate the importance of rationality-allocation, however, it must be kept in mind that for a good economic performance, to make this allocation reasonably efficient is necessary, but not sufficient. As considered in more detail in Section V.4 below, the more usually studied incentives remain important. Unless they are reasonably correct, adapted to the actual motivations and ethical standards of the population, assigning top jobs to highly rational individuals could have strong perverse effects: the more rational they would be the more ingenious ways they could find to enrich themselves to the detriment of others. But – and this is the main point here – correct incentives are also only necessary, but not sufficient: assigning top jobs to well-motivated, but insufficiently rational individuals might be even more detrimental to everyone.

IV.2 Markets and government as alternative institutions for rationality-allocation

Feasible procedures for rationality-allocation can be divided into two basic types: *ex ante*, run by personal decisions, and thus depending on various idiosyncratic criteria, including individual estimates of own and others' rationality; and *ex post*, run impersonally

by the economic outputs actually obtained. It is in how these procedures are used and combined that the institutional alternatives for rationality-allocation most significantly differ. To concentrate on the main differences between markets and government, the two alternatives can be characterized as follows.

Market institutions. Their rationality-allocation is ultimately based on ex post procedures, but can be, and in modern market economies extensively is, complemented by uses of ex ante procedures. Ex post procedures are most directly used by product markets. If let alone, these markets indeed promote or demote producers ex post, in function of the profits or losses these have realized from efforts to meet some individual and/or collective demand – and therefore in function of the producers' relevant rationality. But note that the demand itself need not be very rational: sometimes, it may even be rational for producers to try to decrease its rationality by clever advertising.

Chance may also matter, but its relative importance weakens over time. The reason is that its influences are strongly asymmetrical: bad luck may lastingly demote many highly rational individuals, so that only a subset of them may actually succeed, but good luck is unlikely to promote little-rational individuals more than temporarily.

Concerning the uses of ex ante procedures on markets, they can best be seen on financial markets, viewed as places where entrepreneurs seek investors for supporting their projects and investors seek entrepreneurs for placing their capital. Ex ante procedures are there used by the investors whose interest is to entrust their capital to some of the relevantly most rational entrepreneurs, and avoid all the insufficiently rational ones. As some of the entrepreneurs may themselves be in the business of investment – for instance, heading investment banks or mutual funds – ex ante procedures may be there used on several levels.

The hallmark of market institutions is, however, that they keep all the possible levels of ex ante procedures firmly embraced by some ex post procedures to which they reserve the last word. Under them, if government does not interfere, there will ultimately always be some well-defined profits or losses to be divided among the individuals involved, on which the subsequent rationality-allocation will depend.

Note that market institutions exist in variants that differ in how the ultimate outcomes are divided – for instance, depending on the forms of corporate and bankruptcy laws – and therefore also in how rationality will consequently be allocated. Some variants may thus promote the efficiency of rationality-allocation better than others, and some may even be quite poor at it. That such differences exist is important to keep in mind: they are what rationality-allocation analysis must address in detail if it is to help to solve specific law-and-

economics problems. But the present comparison between markets and government leaves such differences aside: each alternative is here represented by what can be seen as its best institutional variant.

Government institutions. Their ways of rationality-allocation nearly exclusively consist of ex ante procedures used on several levels – such as the voters electing politicians, the politicians appointing government executives, and the executives hiring government bureaucrats and experts.

There are at least two reasons why government cannot make much use of ex post procedures. One consists of the well-known difficulties with measuring its economic outputs, and the other is that the impact of these outputs, even if they can be measured, need not be strong. There are many other criteria on which political votes and appointments may, and usually do, depend. Government may indeed keep this impact quite weak, as economic outputs can never be as hardly constraining for it as they are for market participants.

IV.3 Three easy-to-obtain results relevant to government economic roles

The task of the present comparison is now stated clearly enough to allow attempts at mathematical modeling. But devising a meaningful and manageable mathematical model of rationality-allocation is difficult and for present purposes unnecessary.⁴ Three results with significant implications for government economic roles can be obtained and justified rather easily by means of simple verbal logic.

Result 1. In the long run, both product and financial markets – provided that their institutions keep them reasonably competitive, or at least reasonably contestable – will come close to selecting for all their top jobs some of the relevantly most rational individuals, while preventing these jobs from lastingly becoming more complex than what the individuals selected for them can successfully handle. This result is easy to justify from the plausible assumption that long-term market success is positively correlated with relevant rationality.

This result is not very new. It can be seen to express the main points of what Alchian (1950), Friedman (1953) and Winter (1971) argued in different words longtime ago. Some novelty may only be seen in its extension to financial markets, disclosed as instruments of double selection: the one of entrepreneurs by investors, and the one of the investors according to the rationality with which they select the entrepreneurs. This also means that financial markets are found to play more socially useful roles than usually seen: in addition to being mechanisms for allocating investment, they are also, and more fundamentally, instruments for

⁴ My attempt at such a model is elaborated in Pelikan (1997) and recapitulated in Pelikan (2007b).

selecting entrepreneurs and investors. As will become clear below, it is in this additional role that financial markets are most irreplaceable.

But this additional role also increases the importance of institutions. Because of the intangible nature of the traded financial instruments, to select entrepreneurs and investors for high relevant rationality and not low ethics, financial markets have higher demands on their institutional framework than product markets. Only if these demands are reasonably met can Result 1 be extended to them.

Result 2. In the short run, markets may perform very poorly. If they start, as emerging markets often appear to do, with a grossly inefficient rationality-allocation, in which much capital is in the hands of overconfident, but little-rational entrepreneurs and investors, they may at first even cause the economy to shrink, rather than grow.

The reason is that the gains realized by the possibly small initial minority of highly rational entrepreneurs and investors may not suffice to compensate the losses caused by the majority of their insufficiently rational competitors. Although the dynamics of market rationality-allocation will make the gains grow and the losses diminish – the little-rational entrepreneurs and investors will in average have less and less to lose – it may take long before the gains exceed the losses, and even longer before Result 1 can be considered reasonably approximated.

Result 3. In democracies, government rationality-allocation for any given job can relatively fast select individuals whose relevant rationality is far from the lowest – for instance, they may be required to have a certain minimum formal education – but also far from the highest, as there appears to be only a weak correlation between university diplomas and true talents for entrepreneurship and investment.

In the presently assumed case, in which all sorts of rationality are distributed over both the voters and the candidates roughly normally, the average rationality of the elected candidates will modestly exceed the average rationality of the voters. The reason follows from the ERR-Assumption in Section III.1: only the least rational voters will vote, in average, for candidates of average rationality, whereas all the other voters, by avoiding all candidates less rational than themselves, will bias the result of the election towards candidates of above-the-average rationality. This beneficial effect of voting can be generalized as follows.

Rationality-Boosting-by-Voting (RBV) Principle. If, in average, the candidates are not less rational than the voters, then the average rationality of the elected candidates will be

somewhat higher than the average rationality of both all the candidates and the voters.⁵

The good news for democratic government is that it can benefit from this principle in several rounds – for instance, as noted, in the election of politicians, in the appointment of executives, and in the hiring of experts – and can thus assign its jobs to individuals whose relevant rationality is several notches above the average rationality of the population.

But there also are two pieces of bad news. One is that in average, with only a few occasional exceptions, the relevant rationality of these individuals will remain far from the best. The second piece of bad news is that this only modestly favorable outcome will not significantly improve over time. The reason is that in democracies, government rationality-allocation ultimately stems from the votes of the entire population, where each voter keeps the same amount of votes, regardless of how rationally or irrationally he/she votes.

In contrast, the voting of investors on financial markets, while also benefiting from the RBV-Principle, has the extra advantage of raising the average rationality of the voters. Those who vote well, by placing their capital with future winners, will increase their voting power, while those who vote poorly will lose their votes. Although in the short run, as noted, the vote redistribution may also depend on chance, its correlation with the relevant rationality of the investors-voters grows stronger with time.

These three results have two important corollaries: (A) In the short run, rationality-allocation by government can outperform the one by markets, and thus initially lead to a better economic performance and a higher economic growth. (B) After a limited initial period, markets will catch up with government, and then outclass it by allocating the rationality for the organization and management of production in vastly superior ways.

To see why (A), recall from Result 2 that emerging market economies are often scourged by large numbers of little-rational beginners in investing and enterprising, and from Result 3 that governments can rapidly mobilize well-educated experts who, even if far from be the best, can nevertheless do better than most of such beginners. To see why (B), recall from Result 3 that government will remain stuck with such neither the worst nor the best experts, and from Result 2 that markets will slowly but systematically work towards selecting as top entrepreneurs and investors some of the scarcest industrial champions.

Two qualifications are in order. First, all these advantages of markets are only comparative, far from implying any absolute perfection. It is not excluded that also markets may be scourged by enormous losses and deep crises: they are only found to be faster and

⁵ This principle is more thoroughly discussed and justified in Pelikan (2007b), where it is also briefly compared with the Condorcet Jury Theorem.

more rigorous in discovering such failures and triggering corrective actions than government. Second, none of this implies that government could and should do nothing. As will become clear below, there *are* roles in which government can help, but they must be chosen with care, not to allow it to do more harm than good.

V IMPLICATIONS FOR GOVERNMENT ECONOMIC ROLES

V.1 Applying rationality-allocation analysis to policy issues

The differences between production and final consumption noted in Section III.3 make it necessary to divide the search for policy implications into two separate branches. The main reason is that the greatest merit of market rationality-allocation is limited to production. The working of markets as selection devices, an important desideratum when they eliminate inadequately rational investors and producers, would indeed turn into odium if they also eliminated little-rational final consumers.

It is also necessary to keep in mind that rationality-allocation analysis neither rejects nor replaces, but only complements, standard incentive analysis. This makes it necessary to admit that the two analyses may significantly qualify each other, and raises the question of how they actually do so.

To deal with all this in good order, what the present analysis implies for the roles of government in production and in final consumption is considered in Sections V.2 and V.3, respectively, and how it qualifies, and is qualified by, incentive analysis, in Section V.4.

V.2 How government can, and how it cannot, help production

For government roles in production, two implications matter most. One is that for organizing and running of production units, including investment banks, the relevant rationality of government-selected individuals will be, in average and with the exception of a limited initial period, significantly lower than the relevant rationality of the individuals selected by markets. The second implication is that the rationality-allocation function of markets, especially financial markets, strongly depends on their institutional framework, in particular on the capability of this framework to keep them sufficiently competitive, or at least sufficiently contestable, and make them promote participants for high relevant rationality, and not low ethical standards.

The first implication brings in an additional theoretical argument for privatization policies and, more generally, for the policies of keeping government away from the ownership, organization and management of production enterprises – including commercial

and investment banks, and the producers of public and merit goods that in many countries have traditionally been government-owned.⁶ What makes this argument useful is that such policies, although increasingly adopted in practice, are still being opposed as only ideological, without solid theoretical underpinning. Mainstream economics has not only failed to provide such an underpinning, but neoclassical modeling with its perfect rationality assumption has even produced formal proofs that government-owned firms can be as efficient as private ones.⁷

Not to misinterpret this implication, however, its probabilistic nature must be kept in mind. Far from claiming that a government-owned firm is always inferior to a comparable private firm, it fully admits that excellent government-owned firms may exist. It only claims that such firms are and will remain exceptions: less likely to attain excellence and more likely to lose it without having to redress themselves or close down than private firms.

But government may appear to have two opportunities to help. During the initial period, when new markets are still scourged will large numbers of little-rational private entrepreneurs and investors, it may appear promising to ask government-selected experts to guide the creation of, or least the investment in, new enterprises, to be privatized suitably later. But this could hardly work for two reasons: (i) the experts would likely be unwilling to give up their privileged positions in time, while their influences might still be beneficial; (ii) without a long and costly history of market competition and selection, no highly rational private owners, to whom the enterprises might safely be entrusted, could be known.

The second apparent opportunity concerns the long run. Why not let markets work for the time needed to select excellent firms with excellent investors and managers, and then nationalize the firms and recruit the investors and managers for taking care of them under government ownership? But it is precisely in the long run that this would fail, even if all the usually considered incentive and motivation problems could be solved. Namely, market selection is a continuing process during which, much like in sports, champions come and go. Government might thus at best recruit some champions of the past, who could then misuse their government tenure for making it difficult, if not impossible, for new, superior champions to emerge.⁸

⁶ That merit goods can be produced by competing private producers while their consumption can be fully subsidized is now understood by all reasonably educated economists, but may still be worth spelling out in political debates, where some opponents to privatization still appear unable or unwilling to understand it.

⁷ One of the most influential theoretical defenses of government ownership of firms is due to Professor Stiglitz, most extensively explained in Stiglitz (1994).

⁸ That efficient capitalist enterprises, the winners of past market competition, could be socialized and then kept forever efficient by government-selected officials was famously argued by Schumpeter (1976/1942).

Real opportunities for government to help production mostly follow from the second implication. Although most of the market institutions must be informal, based on trust and other cultural norms that are created, spread and sanctioned spontaneously by market participants themselves, such institutions rarely suffice. To prevent important inefficiencies, they must often be complemented by formal institutions, legislated and enforced by government. The question only is, by which ones?

In general, market-regulating legislation, defining formal institutions at the national and supranational levels, falls into two main types: constraining the transactions *between* market participants, and constraining the forms of corporate governance (internal institutions) *within* those participants that are complex organizations with management separated from ownership.

In the frequent controversies between advocates and opponents of different forms of such legislation, rationality-allocation analysis can often help the advocates. By pointing out that the tasks of markets are not limited to determining efficient prices and minimizing transaction costs, but also include selecting the relevantly most rational producers and investors, it increases the importance of continuing market competition with as open entry and exit as possible, which can often help the advocates of antitrust legislation. By pointing out that market selection may take a long time to eliminate inefficient organizations, it helps the advocates of corporate laws that prohibit obviously inefficient corporate governance – such as those permitting the managers to disregard the interests of the owners – and thus reduces the task of the selection and allows it to work faster. But this analysis also warns against too detailed prohibitions and prescriptions. As it implies that legislators cannot be expected to have the best relevant rationality for designing the corporate governance of specific firms, its support is limited to prohibitions of *blatantly* wrong designs, with the warning that freedom must be preserved for efficiency-promoting institutional innovations within organizations, which the legislators may be far from understanding.

The survey of government roles in production would not be complete without mentioning the traditionally considered demand for producer public goods – such as infrastructure, general education, and basic research. In full agreement with the standard view that government must to a large extent formulate and finance this demand to prevent it from being inefficiently low, rationality-allocation analysis only has two simple points to add. One is to emphasize that government should only formulate and finance this demand, without trying to organize and manage the corresponding supply. The second point is to make it clear that even the demand is unlikely to be most rational – yet, given the fact that markets alone

cannot formulate and finance enough of it, this will often be the least inefficient solution.

V.3 How government can decrease inefficiencies in final consumption

The main implications for government roles in final consumption are also two. First, the relevant rationality of government, although far from the best, is nevertheless superior to the rationality of many, possibly a majority of, consumers. Second, the precious best talents for top economic jobs are distributed among the consumers in an a priori unknown way.

The first implication means that government has a certain potential for paternalistic policies: conceivably, it might help all the less rational consumers to improve the efficiency of their consumption, in terms of their own preferences and/or in terms of the preferences of their fellow consumers who feel affected by their consumption. But it is an open question to what extent, if any, this potential should actually be exploited.

The answer depends on the perceived costs and benefits of different paternalistic policies, which in turn depend on a number of socio-culturally evolved factors – such as the value of consumer sovereignty, individual preferences concerning others' consumption, and the prevailing ethical standards.

An important cost is the value ascribed to the loss of consumer sovereignty, which also depends on the form of paternalism. Perhaps the lowest loss is caused by what Thaler and Sunstein (2003) term “libertarian paternalism” that only helps consumers to obtain relevant information – for instance, about the contents and health effects of different kinds of food, or the costs and benefits of different insurance policies – but leaves them free to use it as their rationality allows them to see fit. Other important costs are the agency ones caused by the possible rent-seeking of paternalistic policymakers, on which more below.

The perceived benefits depend on the preferences of individuals over others' consumption, and on the effects on this consumption of different paternalistic policies. Two cases are interesting to distinguish: (a) little-rational consumers only hurt themselves in terms of their own preferences; (b) their little-rational consumption has negative external effects on others. While in case (a), the benefits only depend on the prevailing feelings of compassion, in case (b) they also depend on the dislike of the external effects by these others. If this dislike is high, then the benefits of the paternalism that changes the consumption into one without such effects are also high. Such paternalism may then gain strong democratic support, even if it is quite authoritarian and its costs in terms of losses of consumer sovereignty are felt as nearly as high.

Examples of authoritarian paternalism that is democratically demanded in many otherwise liberal economies are compulsory primary education, car insurance, health

insurance, and pension plans. Since many of the values involved differ between cultures and countries – even between otherwise so close Europe and the USA – the extent of democratically demanded paternalism differs accordingly. In countries where this extent is large, classical liberals face the difficult dilemma between defending political democracy and defending consumer sovereignty. The difficulty is that liberal values cannot forbid individuals to have preferences that make them enjoy, or suffer from, others' consumption.

The second implication concerns redistribution policies. Rationality-allocation analysis supports them up to a certain limit, objects against them beyond that limit, and helps to indicate how that limit can be maximized. It supports reducing poverty by pointing out that, in addition to the usually valued increase of equity, this also increases the efficiency of rationality-allocation by saving some of the best, but unknown talents for top economic jobs from being wasted because of poor nutrition or insufficient education. This analysis also suggests that taxing the rich may be less harmful to incentives and efficiency than usually believed: since success in competition is a well-known human incentive by itself, individuals often strive to make a maximum use of their rationality, especially if this is a way to show it to be high, to some extent independently of the expected economic rewards.⁹

That there is a limit beyond which redistribution stops promoting efficiency and starts to harm it follows from the fact that rationality-allocation makes particularly clear: the incomes and wealth gained from successful entrepreneurship and investment are not only ex ante incentives, but also ex post means of the allocation of capital from less rational to more rational entrepreneurs and investors, that is important to keep going. To harm this allocation the least, and thus allow the limit to be the highest, best appears to tax net final consumption, calculated as "income minus investments plus disinvestments." Such taxes may even be progressive, provided that working capital, investment and profits are left tax-free.

All this brings to light the important, but often forgotten difference between redistributing means for final consumption and redistributing the control over capital in production. While the former may to a large extent be politically demanded and analytically justified, the latter is always harmful. To see it clearly, recall the old egalitarian argument by Roemer (1987) that the unfortunate persons who were endowed with too little talents by nature should be economically compensated by society. Regardless of how much compassion for them one might feel, and for how high compensation one might consequently vote, rationality-allocation analysis makes it clear that this compensation should be limited to

⁹ To see this, most theoretical economists need little more than sincere introspection.

means for final consumption. To let untalented persons gain control over capital in production would ruin the economy, leaving there little to be redistributed.¹⁰

V.4 How rationality-allocation analysis and incentive analysis relate to each other

Government economic roles have also been in the focus of the original public choice analysis, as summarized in Buchanan (2003). The main constraints on these roles are there ascribed to incentive problems: assuming government agents to be perfectly rational rent-seekers, this analysis finds it difficult to provide them with the right incentives that would induce them to work for the society at large. This difficulty can be interpreted as causing agency losses, to be compared, for each government role, with the benefits that government in this role might be able to generate. The obvious implication is that government should be banned from all those roles for which the losses exceed the benefits.

In comparison, the present analysis finds government roles to cause higher losses within production, but have the potential to generate positive benefits within final consumption. For organizing, managing and investing in production, to recall, it finds government agents definitely unsuitable, even if they had the very best incentives and intentions: the more severe binding constraint is their far from the best relevant rationality. But, as their rationality is also far from the worst, superior to the one of many consumers, they may effectively help these consumers even if their incentives are not the very best: it suffices that the incentives are not too bad, as appears possible to achieve in modern administrations under democratic control.¹¹

For the issue of paternalism, admitting rationality inequalities is indeed crucial. Without it, no paternalistic policy can credibly be defended. For individual consumer choices, government agents can never have as strong and as correctly targeted incentives as the consumers themselves. Then, if they did not have at least some rationality advantages, there would be no reason why to let them intervene in such choices at all. All paternalism would then entail only more or less large agency losses with zero benefits. Importantly, this is the case both when everyone's rationality is assumed equally perfect, as in the public choice analysis, and when it is assumed equally bounded, as in the defense of libertarian paternalism by Thaler and Sunstein (2003). That this defense makes no use of rationality

¹⁰ Western social scientists are often preoccupied with redistribution of given goods, taking for granted that the goods are always there. This one-sided view may be due to their happy life in the abundance produced by relatively efficient capitalist firms, where low relevant rationality cannot last long, while lacking experience with chronic shortages caused by inefficient socialist production, where low relevant rationality could lastingly pervade all decision levels.

¹¹ The relationship between public choice analysis and rationality-allocation analysis is more directly addressed in Pelikan (2007a).

inequalities is also why Glaeser (2005) could so strongly object to it.

To see it clearly that for matters of final consumption, government is likely to have some rationality advantages, consider three facts: (a) many important consumer goods – such as pension plans, life insurance contracts, and bank loan conditions – are complex, with properties that are difficult to understand and correctly assess; (b) even in the most developed economies, many consumers have difficulties with only mildly advanced calculus and some even with basic reading; (c) government agents can be guaranteed to have a relatively high minimum of education, and thus better understand properties of complex goods with the consequences of their consumption, than many less educated consumers.

Emphatically, however, no rationality advantages of government agents make paternalism automatically acceptable; they only imply that its potential benefits are greater than zero, and that its agency losses are therefore no longer a universal reason for its rejection. It is only that helpful paternalistic policies, for which the losses matter less than the benefits, must be admitted, at least in principle, to exist.

Much then depends on the prevailing ethical standards. Where they are low, the propensity for rent-seeking is high, and the agency losses of public policies are therefore also high. However, as these standards and this propensity are rarely limited to government, but pervade the entire society, they typically also affect the private sector. Then, if there are many little-rational consumers, the potential benefits of paternalism are also high: without it, such consumers are prone to suffer from the rent-seeking of private entrepreneurs, who may fool many of them by misleading advertising into buying little effective or even harmful products. The sad upshot is that in countries with low ethical standards, little-rational consumers, unless helped from abroad, are doomed to suffer from the rent-seeking of some more rational individuals, who may be ruthless policymakers, or ruthless private entrepreneurs, or mixtures of both.

VI CONCLUDING NOTES ON EMPIRICAL EVIDENCE, IDEOLOGIES AND ACTUAL POLICIES

VI.1 Rationality as a hidden parameter explaining two puzzles of recent economic history

Rationality-allocation analysis has an inherent difficulty with empirical evidence: rationality is a hidden parameter that cannot be objectively measured, but, as explained in Section III.1, its stocks can only be subjectively estimated with errors that depend on the rationality of the estimating individual – with no exception for economists and statisticians.

But there is a subtle way to get around this difficulty, at least partially. This is to observe economies with different institutions defining different roles for government, deduce the course of rationality-allocation under these institutions together with its impact on economic performance, and confront these deductions with the economic performance actually observed. A good fit between the deductions and the observations can then be taken for an indirect empirical support of the analysis, especially if other analyses find the observations difficult to explain.

Recent economic history offers two sets of observations that appear suitable for this purpose. One set is about Japanese economy during the last decades of the 20th century. Until the beginning of the 90s, government played there many important roles in production, including extensive uses of selective industrial policies and highly constraining regulation of investment flows and banking in general. For many years this appeared to work admirably well: Japanese economy was growing faster than economies where entrepreneurship and investment was largely left to markets. But to a widespread surprise, this economy suddenly fell into a deep crisis that proved to be structural rather than cyclical: it turned out to suffer from many for a long time hidden and therefore uncorrected entrepreneurial and investment errors that had distorted its industrial structure and accumulated into an enormous amount of bad debts. Eventually, the relatively transparent US financial markets proved superior – not for preventing enormous errors, but for bringing the errors committed to light and triggering counteracting measures much faster.¹²

The second set is about the new capitalist economies that started to be built at the beginning of the 90s from the grossly inefficient socialist economies of both planned and market varieties in Central and Eastern Europe. As is well known, the growth of all of them followed a J-curve: first dipping down, making their bad situation even worse, and only with a more or less long delay gradually turning upwards. Today, they all perform relatively well, often growing faster than old capitalist economies.

All these observations that surprised and puzzled standard economic theories appear

¹² As today, the US financial markets appear discredited by the subprime crisis, it should be emphasized that the present analysis appreciates them not for preventing investment errors, but for the relative speed of discovering and acting upon the errors committed, and the relative sharpness of the sanctions for the individuals involved in committing them. The appreciation is therefore only comparative, in view of feasible alternatives. Concerning the actual crisis, the comparison is between the two to three years it took these markets to bring to light the errors of the US investors and the two to three decades during which the Japanese government succeeded to hide the comparably serious investment errors committed under its guidance. Note that a similar speed difference can be found when comparing the two to three years it took the US markets to bring to light to the losses of WordCom and Enron with the two to three decades during which the French government could hide the comparably enormous losses of the then fully state-owned bank Crédit Lyonnais.

plausibly explained by the two corollaries of Section IV.3: the initial success of Japan and the initial poor performance of the new capitalist economies, by Corollary (A), and the subsequent taking off of the latter and the falling down of the former, by Corollary (B).

VI.2 Relations to ideologies

Rationality-allocation analysis does not fully agree with any existing ideology. The disagreement is sharpest with the ideology of socialism. This analysis strengthens the case against all forms of socialist ownership of capital by pointing to the gross inefficiencies in rationality-allocation that any of them would cause – as the history of all the actually tried variants of socialism also clearly indicates. And it makes it possible to justify large inequalities in those parts of wealth and income that are used for the control of capital in production by showing them necessary for avoiding inefficiencies in rationality-allocation, and thus preventing wastes in the allocation of all other scarce resources.

The disagreement with classical liberalism is more limited and is softened by a broad agreement with, and strong additional support to, the liberal pro-market and pro-free-enterprise stance about the ways of organizing and running production. About that, rationality-allocation analysis only disagrees with those extreme liberals who want to keep these ways free even from all forms of legislation. The overall disagreement is only about redistribution and paternalism in final consumption.

VI.3 Relations to actual economic policies

In these conflicts with ideologies, rationality-allocation analysis finds strong support in, and provides strong support to, a growing trend of today's political praxis, observable both in the policies actually conducted and in the political programs declared. As is particularly clearly illustrated by New Labour and Compassionate Conservatism, the political left is increasingly admitting that market competition and private enterprise are needed to deliver the goods, while the political right is increasingly recognizing that some redistribution and paternalism are needed to avoid costly social crises and political rejection.

But are governments really obliged to respect any rationality-based constraints? The importance of rationality-allocation analysis with its constraints on government economic roles may indeed appear possible to put in doubt by pointing to the numerous examples of governments, both past and present, by which all these constraints have been blatantly violated, sometimes even with a broad democratic support. This raises the question of how hard these constraints really are. To defend the importance of the present analysis, it is necessary to show that the constraints can be hard, at least under certain realistic conditions.

In general, the constraints are the softer, the more waste of resources the economy can

afford without falling into a disruptive crisis. This appears most strongly to depend on time, the generosity of nature, the terms of trade with other economies, and the exigency of the population. The dependence on time requires particular attention: in the short run, the constraints are difficult to feel and governments may believe to be free to do what they want – whether this follows from their rent-seeking, ideology, or demands of the electorate. It is only after a more or less long time that the constraints start to be felt, and the consequences of violating them – be it by meddling with specificities of production or by neglecting inefficiencies in final consumption – start to hurt. This time may even be quite long if nature is sufficiently generous, the terms of trade (if there is trade) are relatively easy, and the population is, or can be kept, relatively modest – as appears to be the case of all the long-lived empires in the past.

Today, however, due to globalization with its increasing international competition, such favorable conditions are increasingly difficult to find. Therefore, the constraints must be recognized as rapidly hardening and rationality-allocation as sufficiently important to be analyzed with care.

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