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A model of the rational economist

As researcher and policy advisor

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Abstract: Econ is a rational economist so his behavior in well-defined situations can be predicted by economic theory. The paper looks at two cases taken to be independent: (C1) Econ is in the academic career writing a paper with a new estimate of the parameter, β. (C2) Econ is advising the Minister, who is responsible for a policy using β. It is assumed that economic theory gives a qualitative prediction about β, and that a literature of M papers exists about β. Regarding (C1) it is shown that given the usual assumptions about rational choice Econ will choose an exaggerated estimate. Regarding (C2) it is shown that the advisor is so constrained that he come to give the same advice as any other advisor in his position, and it is likely to be an exaggerated estimate as well.

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1. Introducing Econ

Economists are compared to others in a small literature that concludes that we behave more rationally than others.[2] Economics is a theory about rational behavior, which helps us to predict the behavior of the representative person, so it should help us even more to predict the behavior of the representative economist, *Econ*. Below we model Econ's behavior in two well-defined cases that are taken to be independent:[3] Both cases deals with a parameter β that is important for some policy.

(C1) He is in the *academic career* at a university or a research institute, and works on a paper giving a new estimate of β. The paper is written for the 'scientific market'.

(C2) He is *adviser* to the Minister responsible for the field using β, who wants a one page memo on the size of β.[4] The paper is written for the 'political market', and will be available to the media.

Both cases make the same assumptions about β*:* (i) It has a true value, under *the ceteris paribus* assumptions, i.e., provided the data is generated under typical circumstance. (ii) The economic theory about β is abstract and qualitative – it only predicts that the sign on β is plus, so that negative estimates has the *wrong* sign. (iii) A literature of M empirical papers has been published about β – the β-literature reports $N > M$ estimates of β.

Estimates of β are always presented as (b, t) which is a *size*, $b \approx \beta$, and a *fit*, t. Thus, the result has two dimensions precisely as the well-known diagrams illustrating our basis theory in the textbooks. This theory tells a story that is, of course, a heroic simplification. However, the story is known to all economists, and we know very much about its strengths and weaknesses, so they do not need to be discussed at present. I think that most of us believe that it is a useful story about the representative agent. Thus, it must be a more useful story about the representative economist.

The *ceteris paribus* assumption should work in the reverse in the two cases: (C1) The researcher has to control his estimate of β for the special conditions that affect the data used to reach the *ceteris paribu*s estimate. (C2) The adviser has to assess β given the special conditions that will prevail, when the policy is on.

2. It is done by polls and experiments comparing students of economics and other students. See Marwell and Ames (1981), Carter and Iron (1991), and Kirchgässner (2005), who gives a fine survey of the literature.
3. It is easy to make other cases, and several readers have made proposals for such cases.
4. It is possible that the advisor also gives more discrete advice, but this is not covered at present.

Section 2 considers the β-knowledge that is: (K1) the β-literature, (K2) the β-theory, and (K3) casual observations. In both roles Econ has to acquire (most of) that knowledge. For (C1) research the most important knowledge is (K1), while for (C2) policy advice recent experience of the country (K3) often counts a great deal. Section 2 discusses the 'markets' for scientific papers and policy papers, and the utility functions in the two cases.

Section 3 looks at case (C1) Econ in research. He has to solve two problems of research strategy that both have a solution that is evident from economic theory: (P1) He has to optimize his effort. It is found where his marginal benefits of making estimates equal the marginal costs. (P2) He has to choose the 'best' one for publication. It is the one where Econ's utmost indifference curve touches his production possibility frontier. It is shown that this choice is too good; i.e., Econ will make *publication bias*, defined as a systematic difference between the published estimates and the true value.

Section 4 looks at case (C2) Econ in policy advice. He is appointed to give credibility to the policies of the Minister. The key point is that the advisor has to give academically 'respectable' advice as well as useful advice that take the 'politically possible' into consideration. It will be argued that this is heavy constraints on the advice. Thus, we shall argue that an able advisor will reach the *same advice* as any other able advisor. Finally section 5 concludes by comparing the two cases.

2. The β-knowledge and Econ's preferences

The β-knowledge is: (K1) the β-literature, (K2) the β-theory about the right sign; and (K3) some casual observations that is known to his audience. When Econ do research he tries to contribute to the knowledge and hopefully change it a little. When Econ is advisor he draws upon the knowledge, but here recent policy experience in his country (K3) is important.

2.1 The typical β-literature, surveys and meta-studies

We assume that $\beta = \partial y/\partial x$, and that the actual conditions, when β is estimated affect its size. Most economic papers claim that they try to find the true value so presumable they do control for the relevant conditions to reach the *ceteris paribus* estimate. This is one important reason, why papers should differ, and it suggests the most common type of estimating equation. It is, of course, derived from a much more elaborate theory.

(1) $y = bx + [a_0 + a_1z_1 + \ldots + a_nz_n]$, where $b \approx \beta$ and [] contains the controls

Equation (1) calls for regression analysis, and it is surely the dominating empirical technique in economics. (1) May include interaction terms, a_0 may be broken up into fixed effects, different estimators may be used, e.g., to control for simultaneity in the relation, etc.

The M papers contain $i = 1, \ldots, N$ estimates of b, where N is substantially larger then M. The number of estimates per paper seems to be rising, and p.t. it seems to be around 10, so $N \approx 10M$. Most of the M papers contain a brief survey of the literature concentrating on the papers judged to be the most important by the author of the survey. The author then explains why his version of the model and his estimates are better. The β-literature may also be covered by a full-paper survey that covers more papers and dig deeper into the way the results have been reached.

In the last couple of decades the technique of meta-analysis has been developed for use in economics.[5] It is used to analyze literatures claiming to estimate the *same* parameter, precisely as the β-literature. It is based on an effort to find *all* the papers in the literature and code the estimates of b_i, its fit, t_i, and precision $p_i = t_i/b_i$, and as many characteristics of the way the estimate is reached as the analyst manages.

A key instrument in a meta-study is the funnel that displays the distribution of the

5. An introduction to meta-analysis in economics is found in Paldam (2015a). Readers, who want to dig deeper should consult the textbook Stanley and Doucouliagos (2012).

results, as a (b_i, p_i)-scatter. The funnel should be symmetric, so asymmetries indicate a problem. Also, most published estimates have t-ratios above 2 showing significance of the estimate, therefore we expect the funnel to be lean, i.e., that the standard deviation of the b_is should be small.

The study of funnels gives two notable results (F1) they are typically amazingly wide, and (F2) they are often asymmetrical. In many cases the asymmetry can be interpreted as a publication bias. Economics has seen a wave of meta-studies since Stanley (2008) proposed a remarkably simple and robust tool that detects the asymmetry and corrects for it to give a *meta-average*.[6] The biases are quite variable, but a crude assessment is that the typical bias found is two. That is, the (arithmetic) mean of the published result is twice as big as the estimated meta-average.

Meta studies often code the impact factor of the journal in which the paper has appeared. It has proved difficult to obtain significant results to this variable, so it gives the result (M3) the results of scientific papers do not depend upon the quality of the study. This is surely an intriguing result, but we shall not, at present, discuss its implications. However, it matters for Econ as it means that he does not need to look at the whole of the literature, but only at a representative sample.

2.2 The scientific pseudo market

The publication competition in economics (and other sciences) has generated certain market-like properties: Journals have impact factors and individual authors and papers score citations. Both researchers and advisors 'buy' knowledge on the market. The researcher also 'sells' his papers on this market, while advisors 'sell' on another market: the political market.

The researcher (C1) knows that the market has three types of agents that have to be taken into consideration: (i) editors and referees that act as gatekeepers to journals; (ii) sponsors that finance research, and have interests in the results; and (iii) research administrator that look at researchers publication record and at the taxable research grants they obtain from outside sources. Administrators have a clear interest in making their researchers accommodating to sponsors.

Most western countries have national research policies of 'research integrity' as further discussed in section 3.5. The interest of research institutes is at odds with the official

6. The tool is the FAT-PET MRA, where the FAT is the funnel asymmetry test and the PET is the precision estimate test that corrects the mean for asymmetry. MRA is meta-regression analysis, i.e., regressions on regression coefficients, see Stanley and Doucouliagos (2012).

policy of research integrity. It is arguable that the policy of research integrity is needed precisely to keep the interests of sponsors and research administrators at bay.

It is no doubt possible to build models that treat these agents as constraints and turn Econ's decisions into a complex game, but to make results tractable we assume that Econ has preferences at two levels: His 'deep' preferences, and his 'operational' preferences, which take his perceptions about the agents into consideration. It is assumed that the operational preferences are the rational ones Econ uses in his research. This has an important consequence. As all researchers in the market are facing more or less the same agents it generates a coordination of preferences. Preferences are also coordinated by economic theory, in the sense that few researchers want to publish results with wrong signs.

The advisor has to consider two types of agents: (i) The Minister, who has to sell his policies at the political market, and may appoint another advisor. (ii) His former/future colleagues in academia. That is, he has to give advice that is useful to the Minister and is academically acceptable.

2.3 Preferences of researchers and advisors

Econ has preferences for both the fit and the size of the estimates as shown on Figure 1a. The researcher has the black curves I to I_R while the advisor has the gray curves from I to I_A.

Figure 1. The indifference curves of Econ

Figure 1a. As researcher and advisor

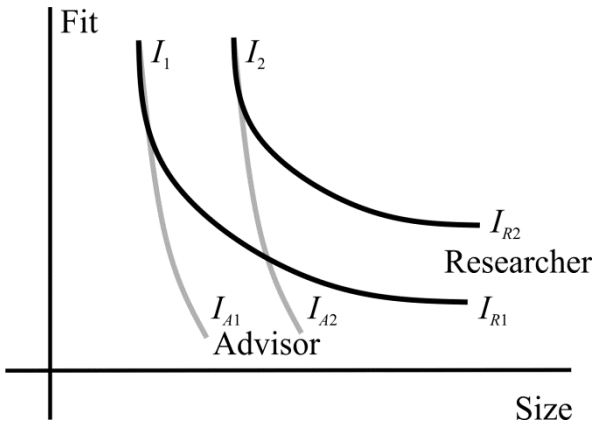
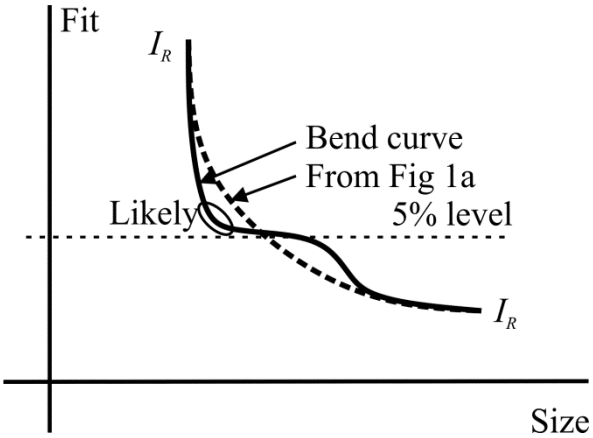


Figure 1b. A 5% bend for researchers



Note: As usual indifference curves for higher utility are to the right.

Ziliak and McCloskey (2008) claim that most researchers look at the *t*-ratio only, so that the indifference curves are horizontal. However, other researchers are more interested in size, and economic advisors are certainly more interested in size. If they prefer size only, their indifference curves are vertical. Below I argue that choices made are robust to the trade-off.

New research reports strong evidence that indifference curves for researchers have bends, with horizontal sections just above the 5% level of significance, see Brodeur *et al.* (2016).[7] This case is drawn as the black curve on Figure 1b. Indifference curves with bends are problematic as they may give multiple solutions. However, apart from such rare cases, they have the advantage that they normally give solutions close to the bend as indicated by the 'likely' part of the curve on the figure. Below we concentrate on the case of Figure 1a.

2.4 Preferences of advisors

Advice is useful for the Minister in the short run if it leads to policies that he can sell on the 'political market'. If the policies are seen to work it may enhance the prestige of the minister in the long-run too, making it 'double' useful. However, much research points to the short time horizon on the political market; see Paldam and Nannestad (1994).

Below we shall take the usefulness aspect to be described by the concept of '*politically possible*'. In the classical Tinbergen-Johansen type analysis (cf. Tinbergen (1960 and Johansen 1977/78) has a clear division of labor where Minister takes care of preferences and the experts describes the choice set. Although this is not entirely wrong, we all know that the distinction is somewhat blurred in practice, and the advisor role is at some middle: He is to help the Minister looking at the politically relevant part of the choice set.

My assessment is that the most Ministers have a policy to sell on the political market. Hence, they want everybody to believe that the policy is efficient, so they want the advisor to exaggerate effects, which we take to mean that they prefer big values of β rather than small. In the same way the opposition wants small values.[8] Another important point about political advice is that the typical Minister cares little about the fit. The advisor will, of course, hedge his bet by stressing the uncertainty, but at the end of the day, he has to provide a central assessment of β within the political constraints. Thus, the indifference curves for the advisor are steeper than the ones of the researcher as shown on Figure 1a.

7. Brodeur *et al.* (2016) also identifies a bend just above the 1% level, but we just include the 5% level.
8. The reader may think of the reports made in the UK by the advisers to the pro-UE government and the Brexit-campaign. Even when highly respected economists were engaged on both sides it is obvious that most reports suffered from considerable exaggeration.

3. Econ as researcher

Section 2.1 looks at the optimal research effort; section 2.2 considers the *PPF*, production possibility frontier; while section 2.3 combines the PPF and the researcher's indifference curve to find the optimal estimate.

3.1 Running regressions: marginal costs and benefits

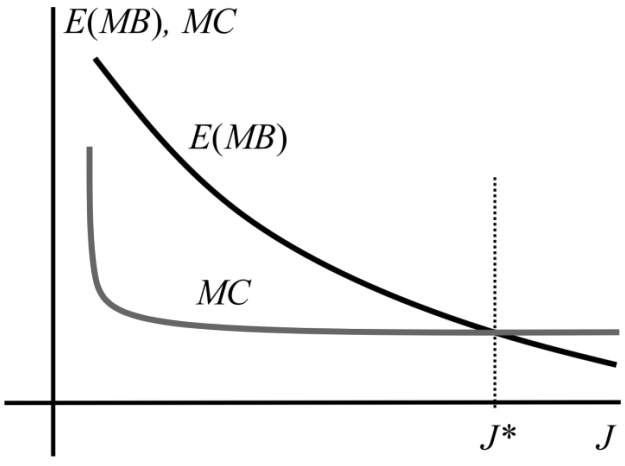
The optimal effort is the number of regression *J**, where *MC*, the marginal costs equals the *MB*, the marginal benefits of the regression.

MC. The first regression is fairly expensive, but once the data is in the computer, it takes a couple of minutes to choose the variables, run the regression and look at the result. Thus, *MC*(*J*) quickly becomes constant as *J* rises

E(MB). There are often surprises when you run regressions, so the benefits have a random element. Thus, the expectation operator *E*() is used on the benefits, but Econ starts with the most promising regressions so the expected benefits are a falling function of *J*. The fall will cause *E*(*MB*) to converge to zero.

Thus, we get the results written as equations (1) to (3) that gives one solution for J*, the optimal number of regressions, as also depicted on Figure 2.

Figure 2. The determination of *J**, the optimal number of regressions



Note: The *MC*-curve starts with the high costs of finding the data and organizing them as a set of potential regressors in the computer. The figure is developed in Paldam (2013), where it is used to analyze the big downward shift over time in the *MC*-curve due to the great improvement in computers and econometric packages. Also, it discusses the effect of new estimators that give a temporary upward shift in the *MC*-curve until the new estimator becomes another command in the next version in the main econometric packages.

(1) $E(MB(J)) > MC(J)$ for all $J < J^*$ — J is too small ➔ keep on regressing

(2) $E(MB(J)) < MC(J)$ for all $J > J^*$ — J is too big ➔ stop regressing

(3) $E(MB(J^*)) = MC(J^*)$ — the solution

It is easy to go one step further and assess the crude orders of magnitudes: Econ can easily run 15 regressions and consider their merits per hour. If his hourly salary is € 35, the marginal cost per regression is about € 2.

Econ's academic career depends upon his *publication record*, which is the number of papers weighted with their impact factors. The success of the career may be measured as the present value of his remaining life income, W.[9] Let σ be his time preference, R his expected remaining life, and y_t his future annual earnings. Let y_t be constant except for career steps. One such step is Δy_t:

(4) $W_t = y_t\, C(\sigma, R)$, where $C(\sigma, R) = \sum_{i=0}^{R} (1+\sigma)^{-i} \approx 20$, for $R = 50$ and $\sigma = 0.05$.

(5) A career step gives the gain: $\Delta W_t \approx \Delta y_t \cdot 20$

If one step is worth, e.g., Δy_t = € 10,000 per year, then ΔW_t = € 200,000. Let us further imagine that app. 10 papers extra are needed to make the step, then the expected income gain from a paper is $\Delta W_t/10$ = € 20,000. This is surely a crude estimate, but it is fairly robust to polishing. Fine empirical results may add 50% to the publication chance. Thus, the regression search is worth about € 10,000 for Econ.[10]

If he runs J = 400 regressions to find a fine result, the average regression has the benefit of € 25. The $E(MB)$ are higher at the start, and then they fall gradually to zero. Hopefully, $E(MB)$ intersects MC well before 400. This is expressed by equations (2) and (3) as drawn on Figure 1. There is, as mentioned, some stochastics involved. Researchers with a strong intuition may find a good result quicker; researchers with a large risk aversion may go on longer, etc. But basically, there is a solution, and it is likely that J^* is quite large.

Searches with large values of J have a problem known as *overfitting* or *data mining*; see e.g. Leamer (1983). As J goes up this reduces the degrees of freedom. This should reduce t-ratios, but the amount of mining done is a private matter for the researcher. To demand that he reveals precisely what he has done invites an unfair burden of moral hazard. Data-mining

9. Researchers also derive *pure* utility from the work and the publication of a paper. The money-equivalent value of that utility should be added. If the paper goes nowhere, this utility is small. Thus, the pure utility is roughly proportional to the expected income gain. The key point is that Econ expects a substantial personal gain if he makes a paper that does well on the market.

10. For researchers, who are full professors the gain is smaller, but event hen there are incentives.

decreases the probability of making Type I errors (rejecting the true model), while it increases the probability of making Type II errors (accepting false models). Thus, data mining causes overfitting (see Clark, 2004). When *J* is large some results are surely too good. If Econ chooses these results, he produces a bias.

3.2. PPS, the production possibility set, and the PPF, its frontier

The assessments of the PPS draw upon the *simulations* in Paldam (2015b and 2016).

The PPS is an object where the long axis has a positive slope as drawn on Figure 3. In most cases some negative estimates appear too as shown on Figure 3a, but in cases where large data samples are used, there may be no negative estimates as on Figure 3b. As the *t*-ratio has the same sign as the estimate, quadrants II and IV are empty by definition. The fit and size are positively correlated – the simulations show that in the case of Figure 3a the typical correlation is about 0.85, but it may fall to 0.25 in the case of Figure 3b. It is difficult to get close to the axes; i.e., large estimates rarely have a fit that is close to zero, and vice versa. The *PPS* is a function of two factors of production: The *ingenuity* and *effort* of the researcher. The ingenuity causes the width of the *PPS* area, while the effort is the size of *J*. If *J* increases from J_1 to J_2, the object increases as shown.[11]

Figure 3. The production possibility set of estimates

Figure 3a. Small to moderate data samples

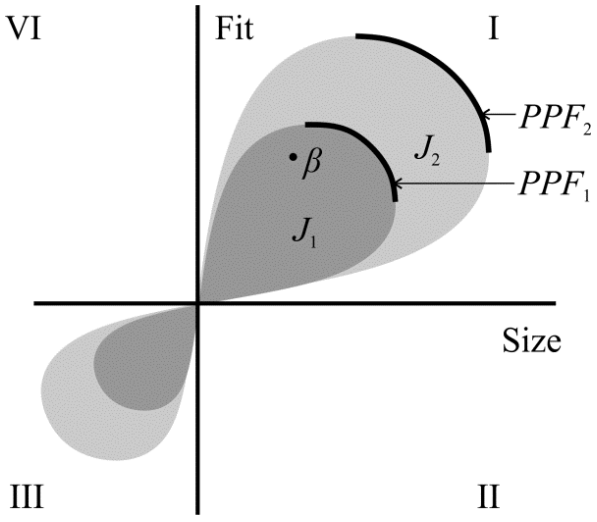
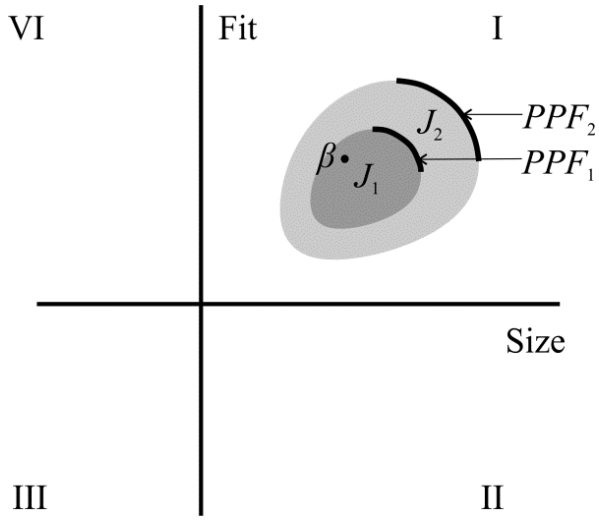


Figure 3b. Large data samples



11. As J is finite, the points in the gray area are a point scatter, and the rim consists of straight lines, but for ease of presentation I shall stick to the continuous 'expectation' presentation as drawn.

The β-theory says that the sign on β is positive, so the estimates in quadrant III are 'wrong'. Only the segment in quadrant I make sense. As the β-theory basically sound, it is likely that the true value is within the *PPS* as shown.

The bolded part of rim of the *PPS* is the efficient part of the object where the size can be increased only if the fit decreases and vice versa. The bold curve known as the production possibility frontier, *PPF*. The two *PPF*s drawn are for two values of *J* as mentioned, and they are drawn to be roughly homothetic with respect to the origo of the coordinate system. While the eight-shaped production possibility sets look somewhat special, the *PPF*-curves look as the standard textbook case both on Figures 3a and 3b, just as the indifference curves did.

3.3 The optimal solution

As both Figure 2 and 3 are drawn in the same diagram, they can be merged in the usual way. It is done on Figure 4 which shows two *PPF*-curves – PPF_1 is for a lower *J* and PPF_2 is for a higher *J* – and the two indifference curves C_1 and C_2 that touch the two *PPF*s. Two cases are drawn. Figure 4a is for the typical researcher, while figure 4b is for the advisor, as discussed in section 4. As C_2 is better for Econ than C_1, it follows once again that it pays to make a good many regressions.

Figure 4. The optimal solution: The solutions S_1 and S_2

Figure 4a. Main case (researcher)

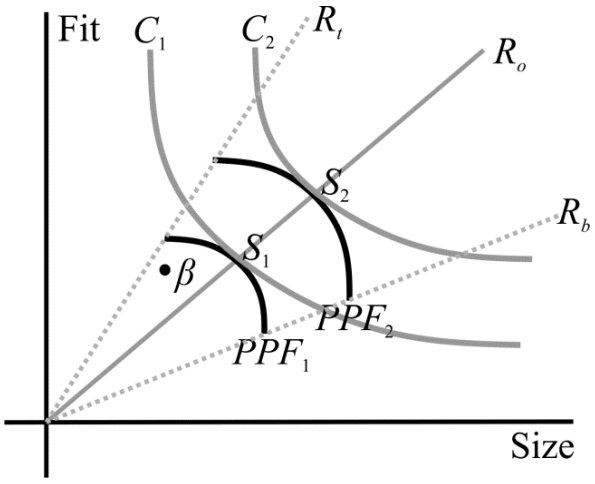
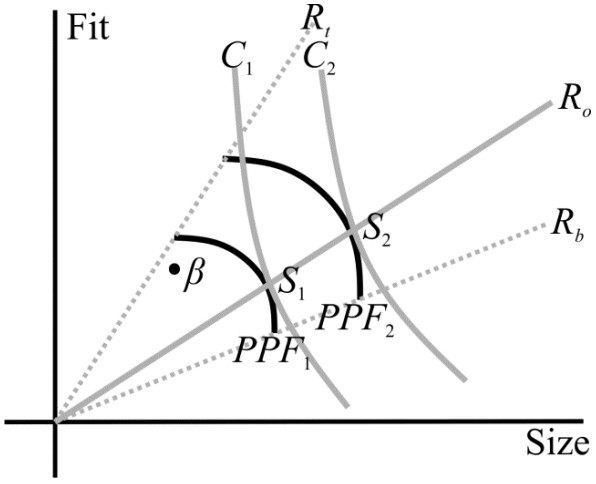


Figure 4b. Size counts most (advisor)



If both the indifference curves and the *PPF*s are homothetic as regards the origo of the coordinate system, the expansion path for the optimal solution as a function of *J* becomes a ray, i.e., a straight line from origo (0,0), as drawn. It is likely that the two sets of curves

deviate a little from the strict homothetic forms so that the expansion path bends a little, but it is not clear if they bend upwards or downwards, so the case drawn is the middle case.

Econ's optimization can only reach the true value of β if it is on the *PPF*. Section 3.4 will argue that β is an internal point so that two key results follow: (i) Econ produce a bias due to his *rationality*. (ii) The rationality bias is in the *direction of his priors.*

If good results are big and significant estimates, he chooses estimates that are systematically *too* big and *too* significant. It follows that if most researchers prefer good results the mean of the estimates and t-ratios in the β-literature are too big. Thus the literature has a publication bias, and hence it is biased.

3.4 The robustness of the bias

Figures 4a and 4b show the effect of rather different preferences, and it looks as the choices they generate are fairly close. The simulations (in Paldam 2015b and 2016) show that the gap between the results produced by extreme vertical and horizontal indifference curves are remarkably small – typically less than 10%. The results for more reasonable indifference curves are always in the interval between the two extreme solutions. Thus, all reasonable indifference curves give much the same result that is always biased. This also follows from two lines of argument:

(i) The true value β is a point in the possibility set of estimates, which is an area that has infinitely more internal points than rim-points. Thus, the probability of hitting the rim by chance is zero. With no strong reason for β to be on the rim, it will not happen.

(ii) This formal point also applies for a finite set of estimates when the behavior of researchers is considered. Imagine that:

(6) $y = F(x)$ is the true model. It contains the true controls.

(7) $Z = (z_1, \ldots, z_n)$ is a set of n false controls that sometimes 'work' by chance.

The false controls should not be in the model, but as the z's are correlated with x in some data samples by chance, some researchers have used one or the other of these controls. From reading up the literature the Z-set becomes part of the *β-knowledge* of the researcher. But he does not know if they are false or true, and he will thus experiment with such variables. Some of the z's in the Z-set are negatively correlated with x, when they are included in the model x obtains an extra effect, so that the estimate of β becomes too large.

An extension follows from *search theory* where a key concept is the reservation

outcome that the searcher seeks to reach. The β-knowledge is likely to contain a 'state-of-the-art' estimate $\beta^R = (b^R, t^R)$. From the argument till now it is likely that $\beta^R > \beta$. We like to believe that the estimates in this literature converge to the true value β. That is, hopefully $\beta^R \rightarrow \beta$. But at any point in time researchers may consider β^R as the reservation estimate they have to reach.

When Econ sends his paper to a journal the editor will assign referees. They are likely to be authors of the β-literature. They have helped making the estimates that have made the profession believe that β^R is 'reasonable'. Econ will know that most referees belong to that group. They will surely like that he gets a reasonable result that is close to β^R.

In the search process at the labor market there is a realistic market price that the search process will converge to. That is, if the searcher sets his reservation wage too high, he will be disappointed and lower his goal. However, in the estimate search discussed it is quite clear that it is doable to find estimates that are too high. Thus, the adjustment process of β^R down to β due to disappointment is not strong at all.

3.5 An altruistic researcher and mimicking: The rotten researcher theorem

The official policy of the typical ministry dealing with research and many universities is to demand that researchers have a high level of *research integrity*.[12] This is in accordance with the ethos of research that sees the researcher as a pure seeker of truth.

Imagine a researcher who seeks truth only. This means that her results will be below β^R in both dimensions. Thus, she will be an underachiever. It is likely that neither referees nor editors will like her paper(s). It will also cause sponsors to disregard her.

The university administrators will soon note that she does not deliver the goods: Neither publications that attract public research funds nor other sponsors. So she will bring in no funds to tax. Consequently, this preference will harm her career. Thus, pure truth seeking is altruistic in the sense of giving away personal gain for the greater good of truth.[13]

In contrast Econ finds an estimate that is a little 'better' than β^R. Thus, he will add to the β-knowledge that the 'state-of-the-art' estimate is β^R, or maybe even a bit higher. Econ's research gives a small divergence from the truth, not convergence to the truth.

12. The official Danish report on the Code of Conduct for Research Integrity (2014) is typical of such reports. It was made by a committee of 12 leading administrators of academic institutions citing 24 similar reports and declarations from other countries and international organizations. From these reports it is clear that researchers, who declare that they are rational, may be submitted to a great deal of bureaucratic hassle, which is likely to harm their career.

13. Economists recognize altruism as a fact of life, and empirical studies regularly find altruism, but it is also a main finding that it plays a limited role. A famous quote by Gordon Tullock is that 'people are 5% altruistic'

It is nice to believe that truth will prevail in the long run. If it does, truth may pay in that perspective. From the argument above it follows that the long run may be rather long. The career of the economist takes place in the short to medium run. This is surely a problem. The pure truth seeking strategy has two more problems. The second is that it is difficult for the researcher herself to know if she has found truth or confirmed her priors and the ones of the market.

The third problem follows from the fact that everybody else pretends that they seek truth only, and has great 'research integrity' as demanded by official policy. In relation to these ideals Econ is a 'rotten' researcher, but he does not want to appear so, as it would harm the publication chances of his paper and his career in general. Thus, Econ will mimic the altruistic as much as he can, and he will, of course, be terribly offended if anyone suggests that he accommodates sponsors, referees etc. Thus, for the reader it is difficult to know if the researcher is rational or altruistic.[14] It follows that both rational and altruistic authors do their best to create credibility by the same devises.

One method is to present *robustness* experiments. The average paper publishes about ten estimates in order to show the robustness of the main result. The main problem with robustness experiments is that what matters for the bias is the number of experiments per published one, not the number published (see Paldam 2015b).

A second method is *out-of-sample projections* (see here Clark 2004). It is not as common as robustness experiments, but it is not rare either. Obviously, the rational researcher may mine both the sample and the out of sample data. This is likely to be a stepwise process, but it can surely be done.

The main characteristic of a true estimate is that it survives *independent replication*.[15] What is needed is another researcher who tries to replicate *exactly* the same model on another data set. If it survives, it increases the probability that it is the true model. After repeated independent replications it is likely that the true model has been sorted out.

Finally, it is also possible to get close to the true value by making meta-studies of the literature. Here the distribution of the results may indicate that the published results are systematically skewed and should be corrected by the appropriate methods.

3.6 Jumps and schools

The above analysis concentrates on an individual researcher, who writes a paper on a market,

14. This theory is, of course, inspired by the 'rotten kid theorem' from Becker (1974).
15. See also, Dewald *et al.* (1986), McCullough *et al.* (2008) and Duvendack *et al.* (2015).

where a reservation estimate exists. However, sometimes jumps occur, and in some fields several schools occur with different reservation estimates.

Let us for a moment imagine that the twist in the model that Econ makes is so big that it generates a prediction that is substantially different from the going reservation estimate, and that he finds fine estimates to confirm that result. That will make his paper difficult to sell – it is likely to take one or two year longer. But if he succeeds it is possible that his paper will be cited more than most papers. However, it will take several years for the extra citations to start to be visible. Thus we are dealing with a risky strategy where the costs are quick to materialize and the benefits come after 5-6 years only. If Econ is at a critical step in his career the risk may be forbidding.

Also, in some cases two or more schools exist in the market with different reservation estimates. There are even cases where the schools differ as to the signs of the parameter researched. Here Econ has to choose his market, but then there is a choice.

4. Econ as policy advisor

Econ is appointed political advisor as he is assumed to have the β-knowledge, and one of his jobs is write a one page memo with his best assessment, β^A, of β to the Minister, and through him to the political market. The memo is available to the media, and it may be based upon a technical background paper. Section 4.1 gives some background.

Section 4.2 argues that Econ has to consider two types of agents: (i) He has to give advice that is useful to the Minister, who may find another advisor if this is not the case. (ii) His advice has to be academically respectable. The advisor may quit if he has to give advice that is too politicized. Thus, he functions between the sacking and the quitting point. Section 4.3 considers some consequences and extensions.

4.1 Some background: Great expectations, their disappointment and myopia

One of the most general findings in the political economy of elections is that the average government loses the support of about 2.5% ($\pm$5%) of the voter from ruling a normal election period.[16] A simple way to understand this result is to note that to be elected, a party has to promise too much.[17] When elected a government come to reveal that some of the promises were exaggerated. Thus, economic policy has exaggeration cycles.

Another commonly found result in studies of elections and politics in general is that the political process enforces a short time horizon; see Nannestad and Paldam (1994). The political myopia is one of the mechanisms allowing exaggeration cycles.

This creates some distrust to the political system including the Minister. Outside advisors are chosen to give credibility. Thus, the advisor has to give politically useful advice – that is advice the Minister can 'sell' on the political market – and on the other hand he needs to keep his credibility. The credibility is relative to Econ's academic audience. It is a problem for Econ, in the longer run, if many in the academic audience see his political advice as overly politicized.

Part of the cyclical nature of policy-making is that some policies that have been over-sold come to be seen as discredited. This is an important part of the (K3) casual observations that form part of the β-knowledge. That is, if an announced value of β has been used for a

16. This result is based upon 283 elections in 19 established 'western' democracies. The result does not depend upon the size of the country or the election law. See Nannestad and Paldam (2002).

17. In a set of influential papers Alesina (1987, 1989) showed how rational political business cycles may occur in the short run, when election outcomes are uncertain. However, the evidence may also be interpreted as unsuccessful attempts by new governments to implement electoral promises, see Paldam (1991).

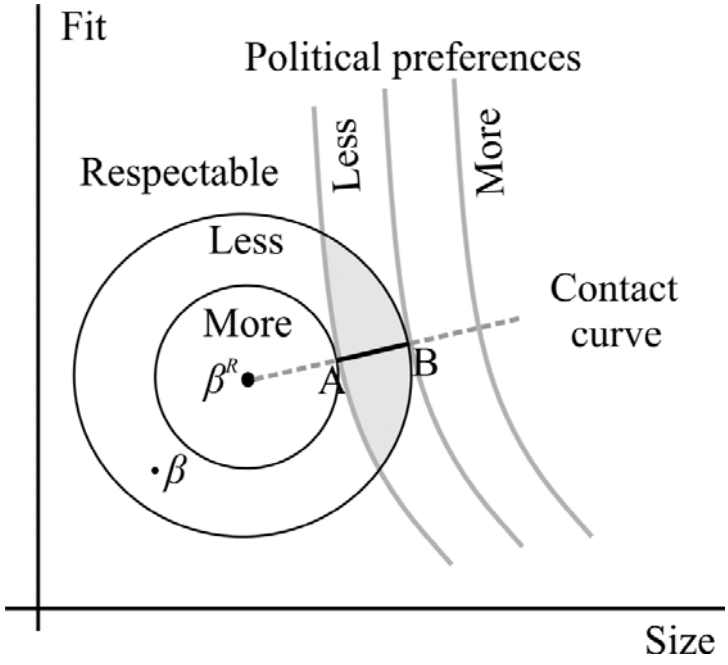
policy that did not deliver (fully) on its promises this reduces the size of β that can be sold on the political market in the future. However, people forget, new situations appears, etc.

4.2 The choice of Econ's best advice: An Edgeworth game

The advisor is engaged in a game that can be explained by two sets of preferences. A key to the academically respectable advice is that the β-knowledge about β contains a 'state-of-the-art' estimate, β^R, which is a bit larger than β. In principle, β^R is the value that Econ should use as his key advice. However, Econ also want his advice to be useful for the Minister, who has the political preferences drawn on Figure 1a.

Econ has some leeway: The literature does not fully agree about the state-of-the-arts estimate, β^R, and it is possible for Econ to stress some study that produces a more desirable estimate, as a particularly fine study. Also, it is supposedly a ceteris paribus estimate, which it is surely not, what is needed. Thus, β^R should be adjusted for the relevant conditions. This is not easy to do and here a background paper with estimates on recent national data may come handy. And by a careful search a range of results will surely appear. Thus, the respectability preferences are a set of circles around β^R that becomes less preferable the further away from center they are.

Figure 5. Econ as advisor to the Minister



The political preferences from Figure 1a are as mentioned rather steep indicating that the Minister do not care much about the fit but want a big size.

The political preferences are Econ's assessment of the Ministers preferences, but we assume that they have talked and the Econ's assessments are rational. The two sets of preference curves give a typical Edgeworth box. The tangents points are the (dashed gray) contact curve drawn as a straight line that has to start in β^R and go to the right. Point A is the sacking point, where the minister chose another advisor. Point B is the point where Econ quits as an advisor. This gives the (gray) lens, which contains the relevant part of the contact curve. It is the black line between A and B.

Economic theory does not predict which point will be chosen. It depends upon the power and negotiation ability of Econ and the Minister. The typical Minister is surly good at such power-games. So we assume that β^A will be close to point B.

4.3 Consequences and extensions

We take the main case to be that the Minister wants a large value of β. This causes the following sequence:

(8) $\beta < \beta^R < \beta^A$

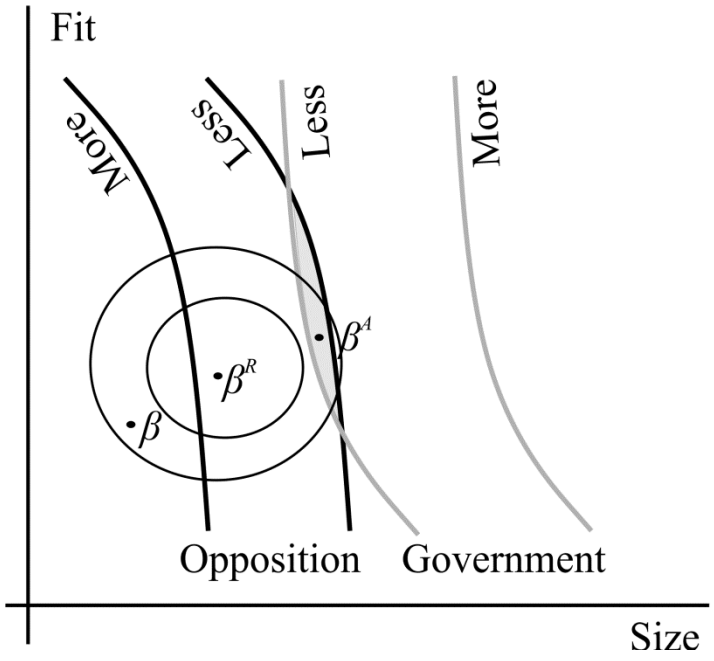
This is the case if β is a measure of policy efficiency. The Minister wants to decrease the consumption of a certain good, G, that is deemed to be harmful and hence want increase the tax, t_G, on that good, so $\beta = \partial G/\partial t_G$. It is always a problem to increase taxes, so the best would be if the tax was very efficient. Another case is that the Minister wants to reduce a tax and hence want the Laffer-effect to be large, etc. However, there are cases where the Minister wants a small effect. For example, he wants to abolish a policy made by a former government, so he wants to be able to argue that the policy is inefficient. In such cases equation (8) breaks down. It may even happens that $\beta > \beta^A$. However, the main case gives a contribution to explain why policy cycles occur.

The model explains how an able adviser comes to choose the best advice. It shows how the two sets of preferences generate the choice. Neither of these preferences is his own. Thus, any other able advisor will choose almost the same choice. Thus *able advisors are interchangeable*. In spite of the problems of 'exaggerating' advice it is clear that the exaggeration would be larger without the adviser.

Several extensions are interesting to contemplate: The most important is that advisors are sometimes appointed to give independent advice. The advisor may be appointed to advise the Parliament or the public at large. The idea may here be that the advisor is to help the government and the opposition to agree more easily by discrediting extreme policies.

On Figure 6 the government and opposition have the reverse preferences. To get to lens as shown by the gray area that allows a reasonable compromise, both have to go to less preferable preferences. Here Econ cannot allow himself to give advice that is much more preferred by either the government or the opposition than by the other party. Thus, Econ is even more constrained than in the previous case. In order to give useful advice Econ may get even further away from the true value.

Figure 6. Econ as adviser to the Parliament



Obviously, the case on Figure 6 has a much more possibilities than the previous cases. Also, a whole set of additional ppossibilities occur when Econ advises about more issues. Here he can give advise that is more pro-oppositiion on one issue if he gives advise that are more pro-government on another issue, so a particular kind of log-rolling results.

5. Conclusion: A rationality bias that sticks

The analysis has considered the choices of the rational economist Econ, who can be modeled by economic theory.

The first models are of the research process as a choice problem with two steps: Step one is choice of effort *J*. It is found where the marginal benefits of the effort equal the marginal costs. It is likely that *J* is substantial. Step two is the choice of the optimal estimate. It is found where Econ's outmost indifference curve touches the production possibility frontier. It is shown that his choices normally lead to exaggerated results.

If the reader goes through everything, it is possible to identify cases where no bias is produced. This may happen, e.g., when economic theory does not predict the sign on β, or in cases where the interests of sponsors differ. And, in fact, about one third of meta-studies find no publication bias. All I want to claim is that it is for good reasons that two thirds of meta-studies in economics detect biases.

The second case modeled is the case where Econ is a policy advisor. Here he enters in a game of some complexity, as he is dealing with two set of preferences. On one hand he wants to give useful advice. That is, advice that is within the politically possible. On the other hand he wants to give respectable advice that is acceptable by the economic profession. It is shown that under reasonable assumptions this lead to an even greater exaggeration.

It is easy to criticize the theory and the reader may look inward and come to the conclusion that his decisions are much more complex or much less rational than Econ. However, economic theory is not made to describe any particular individual, but the representative individual.

However, precisely because I have shown that the solutions to typical problems facing an economist are easy to analyze using our standard textbook theory it is a problem if it is rejected for the representative economist.

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