

**WHAT DO VOTERS KNOW
ABOUT THE ECONOMY?
A STUDY OF DANISH DATA, 1990-1993**

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I. INTRODUCTION

This article is a study of the macroeconomic knowledge-basis of voters: Hereby we approach the theme of this volume -economic voting- from a different angle. The Introduction to this volume summarizes the findings in the literature on economic voting (ie, VP-functions) in the form of 9 stylized facts. Our approach allows us to learn something about 5 of those: Why Vote-functions are harder to fit to the data than Popularity-functions. Why voters react only to few macroeconomic variables -mainly unemployment and inflation. Why voters are myopic. Why voters react to past events more than to expected ones. Why voters have a grievance asymmetry.

However, we come to look at a problem in economics that reaches well beyond the VP-function. Economic theory builds upon hypotheses about how peoples react to the economy, and hence about their knowledge of the economy. Two strands of literature deal with that basis: (1) Modern *high brow theory* abounds in assumptions of rational expectations, perfect foresight, information symmetry, etc. Sweeping statements -often hidden in a couple of words- imply that people know and understand very much¹ -or, at least, behave *as if* they do². (2) A modest *low brow empirical* literature -to which our article belongs- analyzes peoples' knowledge. Most of the (few) studies available show that people do not know much and understand even less about the macro economy. This literature is surveyed in Aidt (this volume). The two literatures hardly ever touch.

The introduction also gives a preview of the results and some background on recent Danish economic history. The theory section (II) starts with a frame of references, then follows a brief discussion of the relevant concepts of rationality. Sections III-V look at peoples' knowledge about five macroeconomic indicators: (III) unemployment, (IV) inflation and inflationary expectations, and (V) the balances of payments (b-o-p) and the public sector budget -that is, the two "big" balances. Section IV is painful for the economist, but worse is to come in Section VI, showing that the best explanatory factor for economic knowledge is gender. Finally, Section VII offers a few concluding remarks.

I.1. A preview and some background

The main effort below is to analyse a set of eight polls trying to measure what Danes know about the macro economy as described by the five variables listed above and in Table 1. The "true" development in these variables (except p^e) is given in Table 2 for easy reference. Amounts are given in bkr, which is billions of Danish Crowns (10^9 kr) -1 US \$ is app 7 kr.

The two main political events in Denmark, 1990/93, are the general election of December 1990, and (2) the change of government in January 1993. Here the Conservative/Liberal government (of Poul Schlüter), which had ruled for 10 years, was replaced by a coalition dominated by the Social Democrats (of Poul Nyrup Rasmussen). With small changes in the composition of the government the Social Democrats have ruled since then, barely surviving the election of March 1998.

The economic events as told by "our" variables are given in Table 2. The four years covered had low

inflation, while unemployment reached 12.3% -the highest since the 1930s- before it started to fall. The 12 years of the table witnessed several swings in the budget balance, but during “our” four years the budget was in the red. Finally, “our” four years were the first -for a very long time- with a positive b-o-p (balance of payments). The foreign debt burden, which had been rapidly rising, started to fall.

II. THEORY: HIGH AND LOW INFORMATION RATIONAL EXPECTATIONS³

Economic theory predicts that *rational agents* collect information (I) to improve their expectations (E) till the *marginal costs of the improvement* MC(E) equal the *marginal benefits* MB(E):

$$MC(I) \approx MC(E) = MB(E) \approx MB(I) \quad (1)$$

Equation (1) is our definition of RE (rational expectations)⁴. The two sides of relation (1) are both so difficult to assess that one has to study (I) directly.

II.1 Four types of agents: people, decision makers, experts and journalists

We are interested in a small part of the information network -the flows that reaches people. The main streams in the whole network are drawn on Figure 1. It shows five types of agents. Of those two are at the mass level:

- (1) *People* supply labor, savings and votes, and demand goods and services. In the aggregate they are crucial, but each has an *infinitesimal* macro influence⁵. People have two relevant roles:
 - (i) *Voters*. They vote for political assemblies and in their organizations. In addition, there are other, less formal, ways for people to influence central decisions.
 - (ii) *Micro decision makers* in their private economy. They make *big and small micro decisions* relative to their life income, but their decisions are always infinitesimal to the economy.
- (2) The firms are put in the box termed “the economy”. Here the agents are legal persons, so box (2) has been marked differently.

Below we discuss peoples’ *information basis* for voting and taking micro-decisions. Three information flows enter the “people-box” on the figure. One flow (#1) results from peoples’ interaction with the economy. It allows people to make *direct observations* at the micro-level. The other two flows (#2 & #3) are as *macro information* via the mass media -of which some (#3) are directly from the politicians. However, behind “our” information streams there is a much larger network of which the main flows are drawn on the figure. It has at least three other types of agents:

- (3) *Decision Makers* take part in non-marginal macro decisions. We here think of: politicians, heads of organizations (as unions) and maybe managers of large businesses.
- (4) *Experts* analyzing and administrating the economy as their profession. They produce economic *reports*. There are two types of experts:
 - (4a) *Experts employed by the decision makers*, ie, working in the administration of a decision maker. While the number of public and private administrators is large, the subgroup of economic experts is small.
 - (4b) *Independent experts*. In principle, their reports are unbiased (though there may be, of course, more subtle biases). They administrate little, and are a small group.

Most independent experts in Denmark receive their salary from the public sector, but they have an

independent position in the sense that their analysis is communicated to the users without passing through a decision maker⁶. The experts make *economic reports*, which are distributed in a few thousand copies only. They reach people through the mass media:

- (5) *Journalists*. Those working in the mass media, who report on economic affairs to the general public. They are constrained by the necessity to sell the said news to the market.

The decision makers, experts and journalist are so few that they do not matter as voters. The experts write for the decision makers, the journalists and each other. Optimists as Wittman (1995) argue that the whole complex network acts to give the voters exactly the right I-set allowing them to take rational decisions⁷. Whether this is likely is worth a few thoughts.

II.2 The key observation: agents get very different benefits from being informed

With formula (1) in mind let us consider the different types of agents -two are easy:

The income of an **expert** comes from being well informed. It appears reasonable to imagine that experts possess all available information. That is, they form high information rational expectations **HIRE**-the RE-concept commonly assumed in (economic) theory.

A **decision maker** is an agent who participates in making macro decisions. Here $d_{i,t}$ involves amounts which are non-negligible relative to the GDP. Even if the difference between one policy and another is 0.1% of GDP this is still more than kr 100 mil. It is therefore rational to spend a lot on improving the expectations. It consequently makes sense for the main decision makers to have secretariats with experts. An adequate secretariat with 3-8 employees costs 1½-3 millions kr. It appears that the marginal improvement in analytic and forecasting ability of a secretariat falls rapidly after some minimum size of about 3-5 people.

Obviously the secretariats pass their HIRE-information/forecast on to the decision makers. However, this does not necessarily cause decision makers in a democracy to act as if they have HIRE, *for they have to "sell" their policies to people*, and each "**people**" has an infinitesimal influence on the macro outcomes in two ways:

Vote and other mass decisions: Here the MB(I) must be so small as to justify *infinitesimal costs only*. However, we know that many people are interested in politics, in the sense of discussing politics and viewing a great deal of TV-election programs. Since it does not pay to invest much in more precise knowledge, people must have some "cheap" way to orient themselves in the political space. One aspect is that people use the left/right scale (see Nannestad, 1989)⁸. Another aspect is that parties make big efforts to make their message entertaining -ie, they provide a side payment.

Micro decision: Most are *small decisions* with a short time horizon not needing much expectations. This is the case with most consumption choices. However, some are *big decisions* of a long-run character: The choice of education, house, family composition, etc. Such big decisions are made rarely, even if they are reconsidered from time to time. However, consumption choices are made with some budget constraint in mind. Thus, a small element of a big decision enters into the making of all small everyday decisions. The big decisions are taken with some expectations in mind, but all dealers in the market provide such relevant

information as is available⁹.

All things considered, it appears dubious if there are net benefits for people in being well informed about the economy. If we keep assuming that people are rational we have to conclude that they will spend only infinitesimal costs on being well informed. Peoples' RE are thus **LIRE**-that is low information RE. They just base their expectations upon what they know right now, hence LIRE are likely to be *static and myopic*.

This means that RE are different for experts and people -it is hence inherently unclear which expectations politicians shall use when they plan policies they have to "sell" to the voters. This is one of the basic asymmetries that is behind the theory of Political Business Cycles (see Paldam, 1997).

II.3 Information channels: direct observation (#1) and the media (#2)

Figure 1 suggests that people have two types of information channels: (i) *Direct observation* of the micro evidence. (ii) *Via journalists (and others)* reporting on the macro evidence. Two points have to be mentioned in connection with this distinction:

- (1) Once the knowledge passes through the media, there is a possible element of *distortion*.
- (2) The variables have a different *observability* at the micro level. Inflation and unemployment are observable at the micro level, but the two big balances have no observable micro side.

There is a large literature (and many amusing stories) about distortions generated when information passes through the media. However, it is well known that people view a lot of TV news. In our data 40% of the respondents claimed to have seen the main newscast the day before, and only 26% claim not to read at least one Sunday newspaper. Most people have TV, radio, newspapers, etc. Danes have access to free libraries¹⁰.

Economic information thus abounds, but it is often contradictory. Most experts, with inside information on one case or another, will probably agree that the true information very often appears somewhere in the news media, but also a lot of wrong or confused information appears. People must be able to choose, and to choose, knowledge is necessary. A major investment in time, at one time or another, is necessary to be able to assess the contradictory information/news. Perhaps it is no wonder that most people spend little time on the economics section in the newspapers.

II.4 The election jump in knowledge -adding a channel (#3)

We had one important piece of information as regards the media. As we shall see there was a dramatic change in the level of knowledge between the poll of August 1990 and February 1991. In several fields the information went up, but in one field confusion went up. The point to note is that there was a general election between the two polls -in December 1990.

Above we argued that people need knowledge in order to vote, but our empirical findings are the reverse. We show that the election caused an upward jump in peoples economic knowledge. The election campaign was (to a large extent) fought over economic issues and hence a lot of economic knowledge was disseminated during the election campaign. Our interpretation is that it was because people were going to vote that they took notice of all the information/propaganda about the economy.

The upward jump in knowledge appears to be a new finding. It explains, why polls change much more around elections than at other times. Furthermore, the election jump in knowledge has an important consequence for the VP-function. It means that the basis of knowledge is different for the V-and the P-function¹¹: *When people vote they are much better informed than when they answer to a poll.* Hence V-functions are likely to be less simple and less myopic than the P-functions.

III. UNEMPLOYMENT -SOMETHING PEOPLE KNOW

The polls were collected by telephone interviews with 600 randomly chosen Danes in February and August 1990, 1991 and 1992 and in May and December 1993. Other papers in our project (see note 1) analyze about 20 more questions posed in the same polls. The percentage of “no answer/don't know” ranges from 3-12% for most of these questions. We therefore note that it is easy to obtain answers, and that little in the answers points to strategic behavior¹².

Two questions -(Q1) and (Q2)- concern the number of unemployed at the micro and the macro level. Two points should be made: (i) In our period unemployment peaked with the highest level since the 1930s, so it is no wonder that people take notice of this variable. (ii) Our question is about the number of unemployed, not the percentage unemployed. Pollsters have found that Danes relate much better to the number of unemployed than to the unemployment percentage -this we also found when we ran trials of our questionnaire¹³.

III.1 Macro: How many are unemployed in the country?

Table 3 shows the macro answers -we have made the possible answers asymmetrical around the true answer in order not to “lead” people toward the right answer.

The reader will note that almost half of the respondents know the true number (in bold) quite well. If we add the two neighboring columns, 60-70% of the respondents know the number. Only 17% to 31% answer “don't know” to this question, and, in addition, 10-20% give “wild” answers to the question. We conclude that 30-40% are *ignorant* about unemployment. The difference in the frequency of “don't know” answers at the February and the August rounds of 1990 appears rather large, but apart from that, there is little difference between the answers. There is a tendency that the frequency of right answers is higher in the first round after the election, but this tendency is weak.

The key message from Table 3 is thus that more than *half of our respondents knows the number of unemployed, U*. People may not know unemployment as well as predicted by RE-economic theory, but in the light of the empirical literature it is *remarkable how well people know U*. The answers to Q1 (in Table 3) are interesting to see in connection with the answers to Q2 (in Table 4), which are the macro and the micro images of each other. While 20-30 % answer don't know to the macro question, only 2-3% answer don't know to the micro question.

III.2 Micro: is anyone in your circle unemployed?

In a famous note to the first VP-function Stiegler (1973) argued that if unemployment rose by 1% it was unlikely that the other 99% of people should care. However, two points should be considered: (a) The 269,000 unemployed during 1990 consist of almost 1 million *spells of unemployment* involving a total of 720,000 people¹⁴ -there is an *multiplier of almost 3* when we go from the number of unemployed, U, to the number of people who experience unemployment. (b) Also, we all have a *network* of family, friends, neighbors, colleagues etc, covering maybe 100-300 people. If somebody in that group becomes unemployed, we will notice and be concerned. Hence, if u rises by 1 person this will cause 3 persons to have one or more extra spells of unemployment, and if we know 200 people, we will know an average of 6 people affected¹⁵.

Table 4 shows peoples' micro knowledge about unemployment. Most people know somebody who is unemployed. In a background check, not reported, we cross-tabulated the answers to Q2 with the stratifications into gender/age/occupation/income groups as used in Table 13. The results show that no group is isolated from contact with unemployment. Also the reader should notice that little happens between the second and the third round -the election has no impact on peoples' micro-perceptions.

The numbers obtained from our questionnaire provide a neat way to check the quality of the polls. In Figure 2 we have scaled the answer to Q2 to fit into the official series. It appears that "our" micro-data has a slightly steeper slope than the official series and turns a bit earlier, but the correlation is high. Peoples micro-perceptions of the unemployment corresponds fairly well to the macro picture.

IV. INFLATION AND INFLATIONARY EXPECTATIONS

Students of modern macro economics can hardly fail to notice that few variables are as important as p^e , inflationary expectations. Something as crucial must surely be salient to people -so we expected them to give robust answers and to have a relatively small "don't know" fraction, when we ask them about the rate of inflation and their inflationary expectations¹⁶.

IV.1 The main structure in the answers

Denmark used to have an automatic regulation of wages and salaries, twice a year, using the standard CPI -the *consumer price index*. The indexation was abolished in 1986, but there is still a semiautomatic regulation -so people have a clear interest in following the CPI¹⁷. And each month, when it is published, it is duly mentioned in the media, especially if it deviates from last months figure. In fact, it is arguable that people have a stronger interest in following the CPI than they used to have. The answers to the two questions are given in Table 5. We note that there is some knowledge-jump after the election, but the main observations from the table are the following points:

- (p1) 50% to 60% answer "don't know" -this is in *strong contrast* both to other answers in the questionnaire and to the theoretical prediction. People don't care much about the CPI.
- (p2) The answers have a very clear upward bias, but this bias is due to a fairly small group of about 10% who wildly exaggerate inflation.
- (p3) Only about 25% have realistic perceptions of inflation.

(p4) The answers appear rather static when the two sections of the table are compared -this is an important point, worth exploring a bit more.

The table shows that people know much less about inflation than they know about unemployment as previously shown. We note that we are looking at a period where inflation was no problem while unemployment was unusually high. We shall return to this point in Section V.3 below.

IV.2 Comparing known and expectations inflation

To further analyze (p4) we have generated Table 6. It considers the answers of the respondents with “reasonable” answers to both Q3 and Q4 -that is answers in columns (1) - (10).

The table is made to study how stable the expectations are. In May 1990 we find $13+43+23+3=82$ respondents, who have non-stable expectations, that is 13.7% of the sample. However, 26 ($=23+3$) of the 82 think that inflation will go up, while 56 ($=13+43$) think that it will go down, as it actually did. The net number of respondents “guessing” the tendency is hence 30 ($=56-26$). This is 5% ($=30/600 \times 100\%$) of the respondents. However in August 1990 the net result is a majority of 30 guessing that inflation will rise, while it continues to fall -the net right “guess” at the first two polls is thus zero. Inflation falls all the 7 first polls and rises the last. The average number of right guesses for all eight polls is 2.5 persons of 600 or 0.4%.

We conclude *that our data show that 99.6% of the voters have either no expectations (68.2%), arbitrary expectations (13.4%) or stable expectations (18.0%), while only a net fraction of 0.4% have expectations in the right direction.* This is highly consistent with the finding that it does not matter if expected or retrospective data are used in VP-functions -for all practical purposes *people have static expectations of inflation.*

One of the most well known facts about inflation is that it is a series with considerable inertia, also in first differences. Therefore, RE theory predicts (i) that the rational person should be able to forecast at least the direction (that is sign) of the changes in inflation, and (ii) this prediction should be unbiased. The second of these predictions is perhaps *the* key prediction of RE-theory.

Our data allow us to test these two predictions: Figure 3 uses the net answers (N) from column (9) in Table 6 to predict the actual changes (A) in the rate of inflation as given in column (3). The bold line is the OLS regression $A = a + bN + e$. Here a and b are the coefficients estimated, and e is the residuals. The two theoretical predictions are that (i) $b > 0$ and (ii) $a = 0$. The slope is significantly positive (the t-ratio is 2.03), so (i) is confirmed, but the intercept is significant too. And, if we force the regression through (0,0) the whole regression fails, so (ii) is rejected.

V. THE TWO BIG BALANCES -AND WHAT PEOPLE WORRY ABOUT

Danish economic debates both among politicians and economists turn very much on the two big balances: the b-o-p (balance of payments) and the public sector balance. The official numbers were given in Table 2 already. As the reader may recall, the b-o-p changed from a long-standing deficit into a surplus just

as our polls started, while the budget balance from hovering around zero the last three years before our polls changed to become clearly negative.

V.1 The balance-of-payments -when was the historical change noticed?

Table 7 looks at the b-o-p, B. It is fortunate that 1990 is *the* year, after a long period, where B turned from being negative into becoming positive.

The big change was not clear (even to the experts) in February 1990, but it emerged as a possibility in August. In the February 1991 round of the poll it was clear -it was a big theme in the election campaign and in early February, when the official b-o-p figure was published, it turned out to be even better than expected and created a large amount of comment.

During 1990 few people understood that the b-o-p was turning into a surplus. About $\frac{3}{4}$ of people “knew” that Denmark had a b-o-p deficit, even when it was finally disappearing! After the election the picture changed dramatically -now $\frac{2}{3}$ of people knew that there was a surplus. Note, however, that about 20% of the respondents still give the wrong answer, so the net knowledge is only 47.6%.

When we then turn to the size of that deficit, it appears that normally only around 3% to 5% know. Also, it appears that the largest “know-score” is normally some past value of the b-o-p.

However, just after the election (at the Feb 91 poll) no less than 21% knew and a further 15% was close. Half a year later this has fallen and a year later the “knowledge peak” has disappeared. Our data thus contain a clear case of *knowledge myopia*. *People may be myopic in their voting precisely because their basis of knowledge erodes very quickly.*

V.2 The public sector balance -confusing the two big balances?

Table 9 looks at peoples’ knowledge about the sign of the public sector balance. The balance was negative throughout the period, but changed into the negative only in 1989, after a five-year period with surpluses. We note that well over half the population knew this. But half as many (25%) think that there is a surplus -especially after the election, where people were told a great deal about the two big balances. The net knowledge it thus less impressive. In fact, it appears that there is a clear drop in the knowledge just after the election. People have learned that there is a marked move away from the deficit, but they do not really understand which deficit it is.

When we turn to the knowledge of the size of the deficit it should first be stated that it is difficult to know. There are several related budget balances and incessant revisions of the numbers. So, it is no wonder that the knowledge is even lower here.

In order to allow people the possibility of a correct answer, we have asked about 1989, where the deficit was almost zero ($G=-4$ bkr), during the whole of 1990. We have correspondingly asked about 1990, where the deficit was substantial ($G=-12$ bkr) in February 1991, etc. If we add the increase in columns (2) to (4) in Feb 91 together, it appears that 3-4 percentage points (or 15-20% of the 22% who claim to know G) mix up

the two big balances. But the percent in these columns should have fallen -as G shifted the other way- so the confusion is larger, perhaps 20-25%.

During the election campaign the government strongly stressed its “b-o-p triumph”. One of the most frequent counter arguments by the opposition, was to point to the seriously deteriorating government budget balance. In this way the two “big balances” were constantly mentioned together during the election campaign. There is nothing new in this: B and G tend to be mentioned together, so perhaps people confuse the two balances.

Tables 8 and 10 actually look rather alike up to a point. That point is the election. Before the election the right answer is almost the same to the two questions and the two answers are alike too, even when B improves. In February 1991 the right answers to the B-question and the G-question have diverged: B has changed from -8 to +8 bkr while G has gone from -4 to -12 bkr. While there is a large shift in the right direction as regards B, as already discussed, the shift is to the same side for the G-answers. It appears that no less than 20-25% of the respondents confuse the two balances.

The main result from Table 9 is that the great majority know that there is a deficit on the public budget (even when it varies a lot); but only 4% to 8% know the size of the deficit, and many confuse the budget balance and the balance of payments.

As regards both of the *two big deficits* we conclude: *they are matters people don't care about.*

V.3 To worry and to know

There is another piece of evidence to consider. If we question people about their worries, it appears that they worry a great deal about the matters they know so little about. This is shown in Table 11. It should be added that we have spent some effort in analyzing the pattern of worry: who worries more and who less, but the resulting tables are not included. Most of the results are as expected, but one puzzling finding should be mentioned. It appears that women are consistently more worried than men, even when the structure of the worries is the same for both genders.

It appears that people worry much about unemployment. As about 90% of people know someone, who is unemployed, this appears very reasonable. 80% worry “much” or “somewhat” about unemployment -this is considerably more than those who know the size of unemployment.

When we turn to price rises, 55% worry. This is more than twice as many as know the inflation $\pm 2\%$. Even if we include only the ones who claim to worry “much”, they still significantly outnumber the ones who know. The extend of worry appears rather high when we know that inflation is in fact down to 3%. Here it is interesting to note that the amount of worry goes down significantly in the last poll, where people have learned how small the inflation actually is.

Finally, 63% claim to worry about the foreign debt. The debt is the cumulated result of the b-o-p, so it is difficult to connect the utter lack of knowledge about the size of the b-o-p and the widespread worry about the external debt. There is a fall in the amount of worry after people have learned that the b-o-p is in surplus,

but the fall is not big. However, as the question deals with the total debt burden of about 300 bkr (or 45% of GDP), it is reasonable that people keep worrying even when a few per cent are chipped off the debt burden, but it has now fallen below 25%, and should be no big worry anymore. When the knowledge-answers and the worry-answers to unemployment and inflation are compared, it appears that people know most about the question which worries them most. This would appear a natural situation. However, when the b-o-p/debt questions are included, this conclusion becomes dubious.

VI. WHO IS KNOWLEDGEABLE AND WHO IS NOT?

When we want to dig into the question raised in the headline, we quickly get too few respondents in each category. In order to get enough data, we have merged all eight polls so that we obtain 4,800 respondents. In the regressions we have divided the constant into one dummy for each round of the poll, to check if the resulting coefficients differ.

VI.1 Do the same people know about unemployment and inflation?

Table 12 is a cross-tabulation of peoples' knowledge about unemployment and inflation. We have classified people according to their knowledge about the two variables, as mentioned in the note. The right answer changes and we allow the two neighboring answers for the inflation rate. We can use this table for a crude classification of people according to knowledge.

The classification divide people into four groups -A, B, C & D- of which A and D are the interesting ones: The **A-group** is *the knowledgeable*, while the **D-group** is *the ignorant*.

Table 13 analyzes how the population is distributed across these groups. The two middle columns containing results for the B and C groups are included mostly as a check of consistency¹⁸. The pattern in the A- and D-group is as predicted, though perhaps the difference between the knowledge of men and women is surprisingly large.

The ignorant, of the D-group, are found among (i) women, (ii) old people/pensioners, (iii) students and (iv) those who give no answer to the occupation/income questions. Vice versa, the A-group consists of (i) men, (ii) those with more education, for whom it is easier/cheaper in time to be knowledgeable, and (iii) those who need knowledge, eg, because they run a business.

The pattern found in Table 13 may hide a lot of collinearity. The reader may suspect that the reason why women appear so much more ignorant than men (about the economy) is because they have less education and are more rarely in independent business. In order to analyze the pattern suggested by Table 13 in more detail we have run a set of multivariate regressions.

VI.2 A multivariate analysis

The first point to notice -when Table 14 is considered- is that the dummy for each poll fails to become significantly different in all four regressions shown, so the merger of the polls appears justified.

The pattern found is clear as regards the knowledgeable A-group: The best explanatory variable is gender: men are more interested in the economy than are women¹⁹. A little is also explained by education, age and income, but with the other variables included, occupation drops out as an explanation. The correlation matrix between the explanatory variables does not point to serious multicollinearity, but there may be some, nevertheless.

Gender is a politically incorrect explanation of ignorance, so we tried to eliminate it. Perhaps the causality is the other way: women are ignorant because they are differently educated, choose other professions, have lower income, etc.²⁰. We consequently tried to see what happens if gender is dropped as a regressor. The first thing to notice is that the number of cases explained (concordant predictions) falls only marginally, so there is multicollinearity. Secondly, it appears that most of the remaining variables become a little *poorer* as explanatory variables when gender is dropped. This suggests that causality is the reverse -gender is the basic factor explaining the other variables.

It is also interesting that the weak pattern for the C-group (knows U, but not p), appearing in Table 13, turns out to be of a dubious significance. When we delete the least significant variables, we just manage to get gender significant -we are surely dealing with a weak pattern.

When all of this is considered, it is clear that the pattern found corresponds only partly to the pattern one would expect from considerations of rationality. Furthermore, the reader will see that the differences are rather small in most cases. Even when those running their own business have an interest in being better informed, it is dubious if they are.

Finally it should be mentioned that the poll also contains questions about the newspaper(s) people read. We here find that reading a tabloid has no (or a negative) effect on peoples knowledge, while the reading a "serious" newspaper does improve knowledge significantly. However, this might reflect a self-selection bias. We thus have some evidence that people are being (or can be) informed by the media if they care to.

VII. CONCLUSIONS

From the theoretical section it appears that economic theory predicts that people should know little about the macro economy. Our findings are thus well in accordance with the theoretical prediction -one may even say that people know more than expected. In a number of cases we have made predictions about the signs of certain connections -based on normal considerations of rationality and interests- and, in most cases these predictions have actually been confirmed, but often they have been found to give a weak pattern in the data only.

VII.1 General comments

Maybe our main finding is that, apart from unemployment, people know little about the economy. Hence, it is clear that our findings cast some doubt on various types of extreme assumptions found in many economic models. A few examples may suffice:

- (1) Our findings appear to contradict the key idea behind the “Ricardian Equivalence” theorems of Barro (1974) -and many subsequent writers.

The Ricardian Equivalence theorem says that the rational representative taxpayer has to take the budget deficit into consideration both as an asset and as a liability - of roughly the same size²¹. A budget deficit can hence have only very little effect on the economy. Our findings as reported in Table 10 seem to rule out such rationality -it is hard to imagine that people can take the budget deficit into consideration when the net fraction of voters who know if there is a deficit or a surplus is $1/3$, and much fewer know its size.

- (2) Also it appears from Table 5 that the majority of people just doesn't form inflationary expectations, and the minority forming realistic expectations is small. Furthermore, the expectations of that minority are static and have biases that may last a long time -in our data the bias lasts for the whole of the four-year period covered²².

This does not, of course, rule out that decision makers (at the central level), who have secretariats with experts can play rational expectation games with each other, but to the extent that people enter into these games the model must be different. In a more general way it would appear that little in our results makes it likely that a realistic theory can be built on assumptions where everything is explained as the interactions between a few representative agents.

Clearly, these conclusions are rather drastic ones -far too drastic for being drawn from eight small polls from within four years in one small country - even when we have 4,800 observations. In the year 1990 Denmark was suffering from 10% unemployment, but had an inflation of only 2.6%. This is reflected in the knowledge: people know the unemployment, but not the inflation. It is likely that people would pay much more attention to inflation if it rose dramatically.

On the other hand it should be noted that the Danes are a relatively literate people, who can be expected to have a higher level of knowledge than most others. Also, our results are not the only ones examining what people know, and they don't deviate much from other studies.

VII.2 Back to economic voting

The introduction (Lewis-Beck & Paldam, this volume) mentions some items which appear to generalize in the many studies published on the VP-function. Our study sheds light on 5 of these items:

The VP-function reacts only to few macroeconomic variables -mainly unemployment and inflation. Our study has found that many Danes actually know the unemployment, and their macro-knowledge corresponds to their micro-observations. However, they know little about inflation, and the other macroeconomic variables we have included.

Voters are surprisingly myopic. We have found evidence suggesting that the same myopia is found in peoples' knowledge. That is, people come to know a great deal about such sociotropic items as the balance of payments and the public sector budget balance during an election campaign, but afterwards that knowledge quickly erodes.

Voters react to past events more than to expected ones. However, the difference is tiny in most studies. We have seen that peoples' expectations are largely static.

We have looked at a period with unusually low inflation and unusually high unemployment. Here people know much about unemployment and little about inflation. This is consistent with the idea of the grievance asymmetry. People care about the "big" problem, but "forget" about the problem solved.

Basically, we have gained some insight into what voters *know* about the economy, and how the knowledge is formed. The media is probably important, but people also gain some confirmation of their knowledge from direct observation.

One final point is worth stressing. We have found that peoples' knowledge is much higher around (after) a general election than at other times. This suggests that the Vote-function differs from the Popularity-function. With more knowledge the voters are likely to react more as predicted by RE-theory at elections than at polls. It also explains why polls are particularly volatile around elections.

Table 1

A preview of results to come

Variable	Peoples knowledge
p, inflation	Small – people care little about inflation (at least when low)
p ^e , expected inflation	People form few (largely static) expectations
U, unemployment	Large for the number, U, smaller for the rate, u.
G, budget balance	For both balances: the long-run sign is mostly known, but not the magnitude. The two balances are often mixed up
B, balance of payment	

The variables are defined in Table 2

Table 2

The state of the economy, 1985-1995

Variable	Last four years before				Covered by study				Next four years			
	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
p, inflation rate (CPI)	3.6	4.0	4.6	4.8	2.6	2.4	2.1	1.2	2.0	2.1	2.1	2.3
U, unemployment ^a	218	219	241	266	269	296	318	349	343	288	246	220
unemployment rate ^a	8.9	8.0	8.9	9.5	10.0	10.5	11.2	12.3	12.2	10.3	8.8	7.8
B, balance of payements ^b	-36	-20	-9	-8	8	13	25	30	17	10	17	10
H, trade balance ^b	-9	6	12	10	20	22	35	42	38	28	35	33
G, budget balance ^c	13	9	4	-4	-12	-18	-25	-34	-32	-19	-15	7
G/Y-ratio ^c	2.3	1.5	0.6	-0.6	-1.5	-2.1	-2.9	-3.9	-3.4	-1.9	-1.4	0.6

Rates are in per cent growth or percentage points. B, H & G are in bkr (10⁹ Danish Crowns). 1 kr is ap 1/7 US\$.

a. Number in 1000 persons. Rate as per the OECD definition

b. The trade balance H<0 nearly all years, 1836 to 1987, and the b-o-p, B<0 mody years too

c. General government balance. Y is GDP at factor costs

Table 3

Peoples' macro knowledge about unemployment

Q1 Do you know the number of unemployed in Denmark for the time being?								
Number	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Answer	Below						Above	Don't
in 1,000	100	100-150	151-200	201-250	251-300	301-350 ^a	350	know
Feb. 90	0.8	2.2	5.5	19.5	46.5	7.7	-	17.8
Aug. 90	1.8	3.0	4.2	13.8	41.5	4.3	-	31.3
Feb. 91	1.3	1.5	2.8	10.0	49.0	7.8	-	27.5
Aug. 91	1.2	2.5	3.5	3.5	57.1	6.3	-	25.9
Feb. 92	1.0	0.5	1.0	4.7	19.0	49.0	2.7	22.2
Aug. 92	1.0	1.3	1.2	5.0	16.5	49.3	4.2	21.5
May 93	1.2	0.7	1.0	2.2	11.0	58.3	14.5	11.2
Dec. 93	0.7	0.2	1.3	3.3	8.5	48.0	21.5	16.5

Answers in % -rows sum to 100% of the respondents in each poll. Right answers are bolded. Also, we have bolded the first poll after the feneral election of December 1990

a. Largest response possible before Feb. 1992

Table 4

Peoples' micro knowledge about unemployment

Q2: Have you noticed a change in unemployment among family, friends and acquaintances within the latest 12 month?

%	Increasing	Unchanged	Falling	Know no unemployed	Don't know
Feb. 90	18.0	58.7	5.0	15.8	2.5
Aug. 90	21.0	56.8	2.5	16.5	3.2
Feb. 91	25.2	57.7	3.5	10.7	3.0
Aug. 91	26.4	56.7	3.2	11.7	2.0
Feb. 92	31.3	53.5	4.2	9.2	1.8
Aug. 92	28.3	56.0	3.2	10.8	1.7
May 93	34.0	52.0	2.8	9.5	1.7
Dec. 93	27.1	56.4	5.2	9.2	2.2

Answers in % -the horizontal numbers sum to 100% of the 600 respondents in each poll

Table 5

The inflation questions and the aggregate answers

Q3: Do you know how much consumer prices have increased during the latest year?

Number	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Answer	1%	2%	3%	4%	5%	6%	7%	9%	9%	10%	s.e.	d.k.
Feb. 90	0.2	2.0	4.8	11.5	7.0	2.3	2.3	1.5	0.0	4.3	2.3	61.7
May 90	1.2	2.5	6.2	10.3	7.2	2.7	1.3	2.2	0.0	4.0	2.8	59.7
Aug. 90	0.5	5.3	6.0	9.2	7.2	2.5	1.0	1.7	0.0	2.0	2.5	62.1
Feb. 91	1.3	8.5	11.8	5.3	3.8	1.2	1.0	0.3	0.0	1.8	3.8	61.0
Aug. 91	1.5	8.3	10.3	6.2	5.5	1.8	0.8	0.8	0.2	3.8	3.5	57.2
Feb. 92	1.8	14.8	12.3	4.7	2.7	0.7	0.3	0.5	0.2	1.7	4.0	56.3
Aug. 92	1.5	13.5	10.2	2.7	4.2	0.5	0.7	0.0	0.2	1.3	3.5	61.8
May 93	8.8	18.8	5.2	2.0	3.7	0.5	0.2	0.7	0.0	1.8	7.8	50.5
Dec. 93	9.3	13.8	6.7	2.3	4.2	0.5	0.5	0.2	0.2	1.3	10.2	50.8

Q4: How much do you expect consumer prices to increase during next year?

Number	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Answer	1%	2%	3%	4%	5%	6%	7%	9%	9%	10%	s.e.	d.k.
May 90	1.5	7.0	6.8	10.3	9.7	3.0	0.5	1.2	0.0	2.8	4.0	53.2
Aug. 90	0.7	5.3	4.2	8.5	8.2	3.5	1.7	2.2	0.5	3.7	2.5	59.1
Feb. 91	1.7	11.0	12.3	7.3	4.5	1.2	1.0	0.3	0.0	1.2	5.2	54.3
Aug. 91	2.0	11.0	12.7	7.2	6.7	1.3	0.7	0.3	0.0	2.7	5.3	50.2
Feb. 92	3.2	17.0	14.8	4.8	6.2	0.0	0.5	0.7	0.3	1.5	4.7	46.3
Aug. 92	3.7	15.2	10.8	3.5	4.2	0.8	0.3	0.2	0.2	1.7	4.0	55.5
May 93	6.2	20.8	7.2	3.3	4.7	0.8	0.8	0.3	0.2	1.8	10.7	43.2
Dec. 93	6.3	17.3	8.3	3.3	5.8	0.7	0.3	0.2	0.0	2.0	11.2	44.5

Answers in % -rows sum to 100% of the 600 respondents in each poll. There are 12 possible answers: (1) "1%", (2) "2%", ..., (11) "something else" and (12) "don't know". As seen in Table 2 inflation fell from 4.8% in 1989 to 2.6% in 1990, and then steadily down to just above 1% in the second half of 1992

Table 6

Does expectations predict price movements?

	Measured inflation			Answers: Expected - actual						(10) No answer
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	
	Last year	Next year	Change	Down <-2%	Down 1-2%	Stable	Up 1-2%	Up <2%	Next right	
May 90	4.24	2.46	-1.78	13	43	112	23	3	30	406
Aug. 90	3.64	2.52	-1.12	14	16	78	37	23	-30	432
Feb. 91	2.55	2.35	-0.20	10	26	94	36	4	4	430
Aug. 91	2.57	2.25	-0.32	20	33	100	36	5	12	406
Feb. 92	2.36	1.96	-0.40	14	23	138	38	2	3	385
Aug. 92	2.24	1.32	-0.92	12	24	121	22	5	9	416
May 93	1.73	1.53	-0.20	9	22	109	53	11	-33	396
Dec. 93	1.26	1.99	+0.73	7	17	112	53	10	39	401

Inflation is published with a 5 weeks delay. So “last year” in May 1990 goes from May 1989 to April 1990. The “next year” goes from May 1990 to April 1991, etc. The net right column (9) is the net number of respondents guessing the sign of the change. The average of column (9) is 2.5, while the average of column (10) is 409

Table 7

The balance of payments sign

Q5: The balance of payments shows the relation between Denmark and the rest of the world. Do you know if there is a surplus or a deficit on that balance?

Number Answer	(1) Surplus	(2) Balance	(3) Deficit	(4) Dont' n now	(5) Net right
Feb. 90	15.8	1.5	72.8	9.8	55.5
Aug. 90	10.2	2.5	75.8	11.5	-83.5
Feb. 91	66.8	1.2	18.0	14.0	47.6
Aug. 91	52.2	1.7	24.3	21.8	26.2
Feb. 92	63.5	0.7	19.0	16.8	43.8
Aug. 92	63.0	1.5	19.7	15.8	41.8
May 93	65.8	1.5	17.8	14.8	46.5
Dec. 93	59.5	0.8	19.8	19.8	38.9

The right answer to question Q5 is (still) bolded, but the right answer to Q8 is in italics. High values in italic –when the two columns differ- hence indicate confusion between the deficits. The confusion appears to be almost 20%

Table 8

Into the unknown: the size of the balance of payments size

Q6: Do you have an idea about the size of this surplus/deficit? (The possible answers are in bkr)										
Number	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Answer	Surplus >20	Surplus 10-20	Surplus 5-9	Surplus <5	Balance	Deficit <5	Deficit 5-9	Deficit 10-20	Deficit >20	Don't know
Feb. 90	0.0	1.7	1.3	2.8	1.7	2.6	3.0	26.8	6.5	53.8
Aug. 90	0.0	1.1	0.6	2.6	2.8	1.9	5.8	17.5	7.7	59.9
Feb. 91	1.0	7.8	21.1	7.2	1.6	0.6	0.2	<i>1.0</i>	1.0	58.5
Aug. 91	1.0	4.7	11.5	10.7	2.1	1.1	2.4	<i>1.5</i>	1.7	63.3
Feb. 92	5.2	17.8	4.6	5.8	0.8	1.0	0.2	0.8	<i>1.0</i>	62.7
Aug. 92	3.5	20.2	4.4	4.0	1.8	1.2	0.0	0.2	<i>1.6</i>	63.2
May 93	12.9	8.2	5.9	4.9	1.6	0.6	0.4	1.0	<i>1.8</i>	62.8
Dec. 93	9.6	8.9	2.3	5.0	0.6	1.3	0.4	0.4	<i>0.8</i>	70.7

Answers in % -the horizontal numbers sum to 100% of the 600 respondents in each poll. Once more we bold the right answer and use italics for the confused answer

Table 9

The sign of the public budget balance

Q 7: The budget of the State shows the relation between taxes and public expenditures. Do you know if there were a surplus of a deficit during the last financial year (the year is mentioned)

Number	(1)	(2)	(3)	(4)	(5)
Answer	Surplus	Balance	Deficit	Dont'n know	Net right
Feb. 90	20.7	1.7	59.3	18.3	36.9
Aug. 90	11.2	2.5	67.3	19.0	53.6
Feb. 91	29.3	2.2	46.0	22.5	14.5
Aug. 91	22.5	2.3	49.8	25.3	25.0
Feb. 92	25.5	0.8	49.2	24.5	22.9
Aug. 92	<i>19.7</i>	0.5	53.0	26.8	32.8
May 93	<i>24.3</i>	0.7	56.2	18.8	31.2
Dec. 93	<i>19.8</i>	1.5	55.3	23.3	34.0

The amount of confusion, measured as in Table 8, is well above 20%

Table 10

The size of the public sector balance

Q8: Do you have an idea about the size of this surplus/deficit?

Number	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Answer	Surplus >20	Surplus 10-20	Surplus 5-9	Surplus <5	Balance	Deficit <5	Deficit 5-9	Deficit 10-20	Deficit >20	Don't know
Feb. 90	0.4	1.2	1.6	3.8	2.0	9.3	5.5	10.4	1.2	64.3
Aug. 90	0.0	0.2	1.4	2.5	3.1	4.9	7.0	14.8	4.3	61.7
Feb. 91	0.4	1.9	4.3	3.7	2.8	1.7	2.6	5.6	5.8	71.2
Aug. 91	0.5	1.3	1.3	3.6	3.4	4.0	2.9	6.0	11.4	65.6
Feb. 92	0.9	1.3	1.3	4.2	1.1	2.4	3.1	3.8	14.6	67.3
Aug. 92	0.5	2.1	1.4	1.6	0.7	2.5	0.9	3.6	17.3	69.5
May 93	1.4	1.6	1.9	2.3	0.6	1.9	2.7	5.1	22.4	60.2
Dec. 93	0.9	2.0	1.7	1.7	1.7	0.9	2.2	6.8	14.8	67.3

Constructed as Table 8. For the two first polls the year requested was 1989, then it is 1990 for the next two, etc.

Table 11

The worry question

Q9: How much do you worry about...

	(1) Much	(2) Somewhat	(3) Only a little	(4) Not at all
<i>Unemployment</i>				
Feb. 90	46.3	32.2	12.7	8.8
Aug. 90	52.0	28.0	13.2	6.8
Feb. 91	48.7	33.5	13.0	4.8
Aug. 91	55.3	27.7	11.7	5.3
Feb. 92	65.4	21.2	9.4	4.0
Aug. 92	61.7	25.3	8.5	4.5
May 93	75.7	17.5	5.5	1.3
Dec. 93	71.2	21.0	5.7	2.2
<i>Inflation</i>				
Feb. 90	19.3	28.0	34.3	18.3
Aug. 90	26.3	29.7	30.7	13.3
Feb. 91	12.8	28.2	38.3	20.7
Aug. 91	16.0	26.2	41.4	16.4
Feb. 92	15.8	24.5	40.3	19.3
Aug. 92	17.7	26.0	36.7	19.7
May 93	14.4	23.9	44.7	17.0
Dec. 93	10.0	25.5	43.7	20.8
<i>Foreign debt</i>				
Feb. 90	26.5	28.0	31.2	14.3
Aug. 90	34.8	28.3	27.0	9.8
Feb. 91	19.3	27.5	33.5	19.7

Answers in % –the horizontal numbers sum to 100% of the 600 respondents in each poll. When the balance of payments improved the last worry question was stopped

Table 12

The knowledge of unemployment and inflation cross tabulated

		Inflation	
		(i) knowledgeable	(ii) ignorant
Unemployment	(i) knowledgeable	A: 758 (15.8%)	C: 1633 (34.0%)
	(ii) ignorant	B: 393 (8.2%)	D: 2014 (42.0%)

To be knowledgeable regarding inflation people should answer in the right column or one of the neighboring columns to Q3 in Table 6. To be knowledgeable regarding unemployment people should answer right regarding unemployment to Q1 in Table 3

Table 13

The composition of people according to their knowledge, as per Table 12

	Code	Unemployment Inflation	Goup A	Goup B	Goup C	Goup D
			Know	Ignore	Know	Ignore
		All answers	15.8	8.2	34	42
Gender	1	Men	24.5	10.3	36.5	28.8
	0	Women	7.5	6.2	31.7	54.6
Age	1	15-29	11.5	6.9	31.5	50.1
	0	30-66	18.6	9.3	35.3	36.9
		67-	13.8	6.8	34.3	45.1
Education	1	7 yers	10.9	5.8	35.8	47.5
	2	8-9 years	12.4	6.8	31.6	49.2
	3	10 years	15.4	8.9	33.4	42.3
	4	higher	22.6	10.3	34.8	32.3
Job	1 or 3	Independent bus.	19.6	9.9	32.0	38.5
	2	Priv. employee	15.1	7.0	34.2	43.8
	2	Publ. employee	18.8	10.1	34.3	36.8
	3 or 1	Unemployed	12.9	7.8	35.2	44.1
	4	Student	13.8	6.8	29.8	49.6
	4	Pensioner	14.5	6.8	38.1	40.6
	4	Other	9.4	9.8	29.9	50.9
Income	1	<120,000	12.1	5.5	35.7	46.7
	2	120-199,000	13.2	7.9	34.5	44.4
	3	200-299,000	16.3	8.9	35.3	39.5
	4	300-400,000	16.7	7.4	37.3	38.6
	5	<400,000	24.1	11.7	32.7	31.6
	0	no answer	6.1	3.8	24.0	66.2

Answers in % -the horizontal numbers sum to 100% of the 4,800 respondents in the polls added together. The "code" is the one used for the regressions in Table 14, where the first alternative is used explaining the A-group and the second alternative in explaining group C

Table 14

Probit regressions explaining the knowledge-groups from Table 12

	Explaining group A				Explaining group C			
Feb. 90	-2.34	(15.6)	-1.73	(12.5)	-0.39	(3.2)	-0.33	(2.8)
Aug. 90	-2.63	(17.9)	-2.01	(15.0)	-0.38	(3.4)	-0.32	(2.9)
Feb 91	-2.14	(15.2)	-1.54	(11.9)	-0.43	(3.9)	-0.37	(3.4)
Aug. 91	-2.14	(14.3)	-1.50	(10.9)	-0.25	(2.1)	-0.19	(1.6)
Feb. 92	-1.95	(13.2)	-1.34	(9.8)	-0.52	(4.4)	-0.47	(4.0)
Aug. 92	-2.11	(14.1)	-1.48	(10.7)	-0.46	(3.8)	-0.40	(3.3)
May 93	-1.81	(12.4)	-1.21	(8.9)	-0.43	(3.6)	-0.38	(3.2)
Dec. 93	-2.00	(13.6)	-1.38	(10.1)	-0.58	(4.9)	-0.52	(4.4)
Gender	0.79	(15.3)			0.13	(3.2)		
Age	0.24	(4.3)	0.18	(3.5)	0.06	(1.3)	0.05	(1.2)
Education	0.17	(6.8)	0.11	(4.9)	0.01	(0.4)	0.00	(0.0)
Occupation	-0.01	(0.3)	-0.04	(1.3)	-0.00	(0.1)	-0.00	(0.1)
Income	0.03	(1.7)	0.06	(3.4)	-0.02	(1.4)	-0.02	(1.0)
f ^a	4259		4259		4259		4259	
concordant ^b	83.3%		83.1%		64.9%		64.9%	

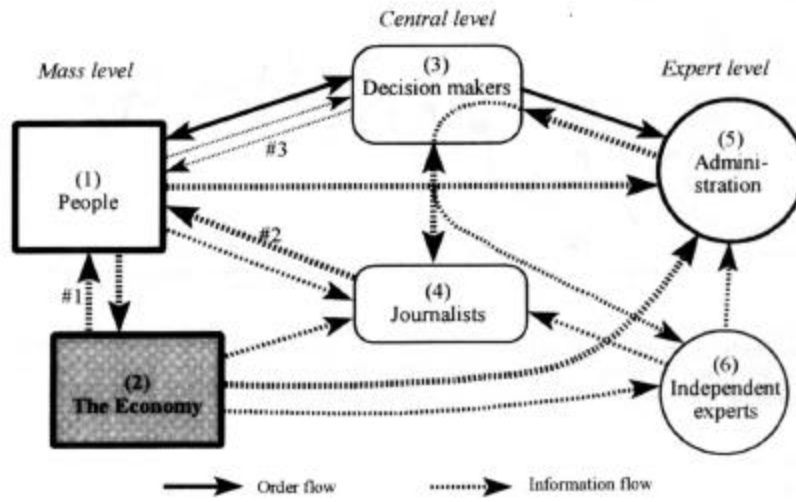
The explained variables are coded as 1 if in group –zero else. Regressors are codes as indicated in Table 13.

Besides each coefficient-estimate are its t-ratio in brackets

a. The f given are the number of usable cases in the regression

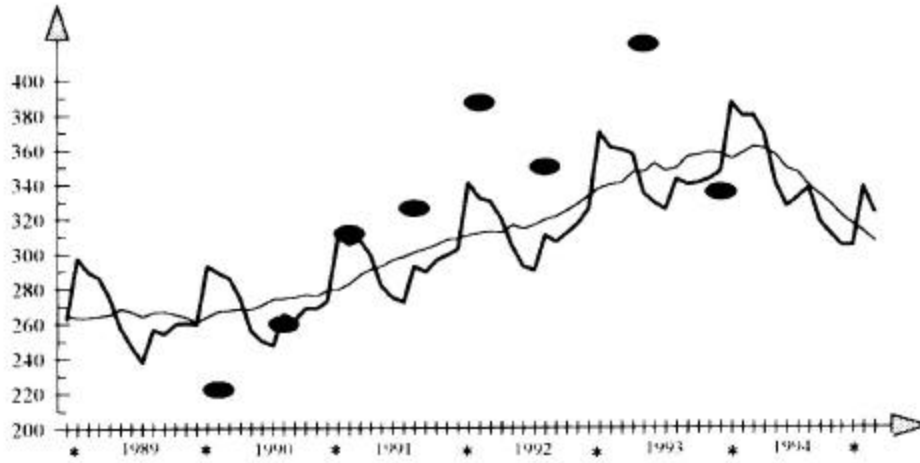
b. The percentage of cases correctly predicted (in %)

Figure 1
The Main economic information streams



Note: The arrows drawn are the most important ones. Production of private and public goods are included in box (2), some firms are so large that this box is placed skewly towards the central level.

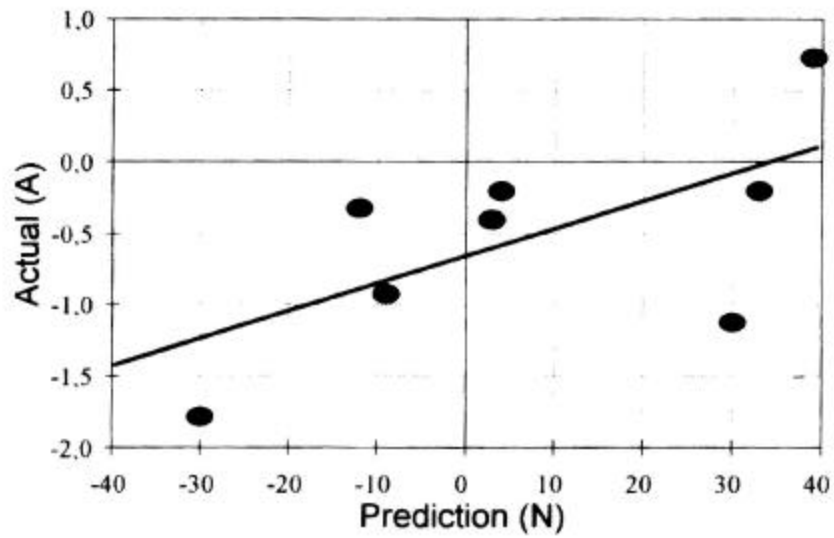
Figure 2
The Path of unemployment - three data sets



Note: The two lines give the official (monthly) data for unemployment, the bold line give the raw data, while the thin line is the seasonally adjusted series. The big round points are the "increasing" columns from Table 5 scaled by the best average factor.

Figure 3

How well does the net change in the answers (N) in column (9) predict actual changes (A) in the inflation in column (3)



NOTES

This is the last output from a large project. It has hence had a long gestation period. The Danish Social Science Research Council and Aarhus University Research Fund have financed our polls, made by IFKA (Institut for Konjunkturanalyse). Previous versions, based on less data, have been discussed at seminars at Århus Univ., Stockholm Business School, the IIES at Stockholm University, and at a European Public Choice Meeting and a SPES Conference. We are grateful for all comments received, also at the Sandbjerg conference -and for further comments and discussions with Toke Aidt and Mike Lewis-Beck.

1. Few are on record saying that they believe in the realism of these assumptions, so it is partly a game, making theory consistent, tractable, elegant and compact, as is necessary publication-wise.
2. The as-if-idea is often illustrated by the parable of the hawk that strikes as if it had solved the aerodynamic differential equations. The parable is pretty, but perhaps not enough to connect theory and empirics. Wittman (1995, cpt 2) is an eloquent defence of the “as if” position in political economy.
3. See also Aidt (this volume). Note in particular, how little literature he (we) managed to find with empirical studies of peoples knowledge -we are here dealing with an under-researched area.
4. Two other main definitions are: (1) Pure theory defines RE as model consistent expectations. (2) Efficient markets theory defines RE as the ones making all exploitable price regularities disappear.
5. In the 1990s there were 5.2 mil Danes -of these 4.2 were eligible voters. The participation rate at national elections is above 80%, so 3.4 mil vote. The influence of one person is thus 1/3.4 mil or 0.00003%.
6. Often experts have a considerable degree of independence and it is hard to tell exactly where the limits are. The independence of eg, the Central Statistical Office (DS) is large de facto, but it is an agency of the government.
7. Theologians have for a couple of thousand years discussed the *Theodicy Problem*: If the good God has created the world, how come it is so full of evil? Economist are faced with a similar problem: If man is rational, how come we observe so many crazy outcomes? High inflation, debt crises, persistently falling GDPs in some countries, etc. We still need to explain why everything does not always work out just perfect.
8. It turns out that only two dimensions are significant for peoples’ orientation in the policy space. By far the most important of the dimensions is the left/right-one (see Nannestad, 1989). Much evidence shows that parties, journalists and people agree on a basic left-to-right scale in Denmark. Within this simple perceptual grid they are well informed as to party orientations and movements (policy shifts) as well. The other dimension changes from one election to the next.
9. A typical Danish one-family house costs about 1½ mill kr. Most house-loans run at least 15 years. Developments in the credit markets during that period are important for people’s economy. It makes a big difference if the economy grows faster or slower, if tax laws are changed, etc. In short, it is worth spending considerable efforts to improve the decision. However, banks and other credit institutions, real estate agents etc., all give people a lot of advise geared to that particular decision. To sum up, it is hard to imagine that it pays using, eg., three months to study macro economics.
10. Some statistics are: The 5.2 million Danes are divided into 2.2 million households. They consume a daily production of newspapers of 1.85 million and 1.6 million at sundays. 2.0 million are paying subscribers to the state radio. In addition, all kinds of periodicals and magazines sell in 15 million copies per issue. The public libraries lend 120 million books a year. Even if only 0.1% of all this volume of information and entertainment deals with economics, people get several hundred pages about economics into their hands.
11. Also, when people answer at a poll they have 5 minutes to react. When they vote they have a month to decide.

12. It is interesting that it is easy to get answers to polls in Denmark, as it is becoming increasingly difficult in the USA (according to Rothenberg, 1990). One reason probably is that phone sales are largely forbidden in Denmark, and, furthermore, it is a fact that no stories have appeared about breach of trust in polling in Denmark. People probably feel confident that the answers they give to polls will not be misused.
13. There are at least two reasons: (1) In political debates the number is used more frequently than the percentage. (2) The definition of the unemployment percentage has changed from an old national method to the OECD measure, so there is some confusion as to what different people mean when a percentage is mentioned.
14. Jensen (1996) derives the spell-distribution for Denmark. We included a question about the spells of unemployment in our questionnaire -it confirmed his analysis.
15. In addition, it should be mentioned that a small part of the unemployment has got rather visible in Denmark as small groups of permanent outdoor beer drinkers appeared in most towns. Most of these are probably on permanent public support; but they are often seen as a product of the permanent unemployment that reached a level of 50-60,000 people when unemployment hovered around 300,000.
16. Unfortunately, there was a mistake in our organization of the poll, so there was no expectation question in the February round -this mistake was corrected in May.
17. The interviewers were provided with adequate information in case people wanted to know what measure of price increases we were after. Also, our questions were preceded by a small introduction saying that these questions dealt with the economy as a whole and were posed for a research project.
18. One may argue that it is interesting to analyze the C-group (covering the 34%, who know the unemployment, but not the inflation). It would be rational if the group consisted of those who were most threatened by unemployment, ie, the unemployed and the low income wage earners, and there appears to be a tendency in that direction; but the pattern appears to be weaker than could be expected. Basically the wage earners in the private sector and the unemployed appear to know the same. If the insider/outsider model predicts a difference we don't find it in these data.
19. This finding seems to correspond to the strange gender proportion (probably 10/90 for women/men) among economists in Denmark. This very skew proportion is slowly changing, but even today it is still (25/75) among the undergraduate students of economics.
20. We have data for the length of education, but not for its content in our questionnaire. There is no difference in the length of mens and womens education in our data -this corresponds to the national finding.
21. The argument runs as follows: A government deficit has to be somehow financed. Therefore, it creates an asset and a liability for the private sector. The *asset* (A) is an income »gift« given now. The gift is paid for by a (forced) loan financing the deficit -people hence acquire a *liability* (L) at the same time as the asset. A perfect market would assess the asset A equal to the (capitalized value of) the liability L. Markets are not perfect so perhaps there are a few small modifications. When people take both the asset and the liability into consideration, the net effect is likely to be about zero on their behavior.
22. It is not easy to test the theory of rational expectations on data such as ours; but it appears from the tests we have made that simple adaptive expectations are doing a good job explaining what we observe.

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