

Forecasting, prediction and precision: a commentary

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The following is a set of general arguments but not definitive answers regarding the background issues and assumptions that inform our understanding of probability and the nature of forecasting. They are highly relevant to economics since the greater part of the credibility of, and authority of, economics resides in its claims to effective forecasting.

- 1) Forecasting tends to forget that it is conjecture and what that really means. Its scientism overburdens how it is articulated and how it is perceived.
 - 2) We tend to think of forecasting as degrees of precision in prediction and of successful prediction as successful description of phenomena at some future point.
 - 3) There is something basically inconsistent within the implications of this minimalism.
- **Sherlock or sheer luck?**

In the latest BBC Sherlock Holmes series Sherlock would seem to have the following attributes:

- 1) In situ eidetic memory – he remembers for recollection the whole picture of his immediate experience as a real time movie.
- 2) Hyper observation – he is able to focus in on specific details as points of relevance in minute detail within the whole (hems, spots, stains, calendars in the background)
- 3) He has instant recall of all aspects of further information; his immediate experience at some point has included the absorption of street maps, timetables, texts, news feeds etc.
- 4) He is able to integrate 1) 2) and 3) based on some undefined but additional synthesis of relevance to the case.
- 5) Predicate perfection – he immediately reconstructs the whole as a deductive model that flows from True predicates to True conclusions [there are no lemmas, but there can sometimes be mistakes – because predicate perfection is not the guarantor of the correct predicates – there can be external shocks]

Sherlock's interior world is not our own. It is recognizable yet alien. But not as alien to economists as it would be to most people. To economists, Sherlock's interior world immediately evokes that of the Walrasian auctioneer, the implicit

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conditions of Arrow & Debreu's complete contracts, and the similarly weird world of many ideal models.

But is the set of characteristics 1-5 also implicit in any form of probability calculations about the future? Do they bear on the background issues for forecasting and the conditions of successful description?

- **When naming is not numbers but numbers are named?**

We are accustomed to thinking of statements of likelihood being equivalent to numerical statements of the same thing. But are they simply that?

If we think about the future, to state 'it is likely that' is to indicate some proposition concerning that future. In terms of events/outcomes it can indicate:

'The occurrence of outcome A is more likely than the absence of A'
 'The occurrence of outcome A is more likely than B'

At a minimum this can be translated into:

'There is a greater than 50% likelihood of A'

This, of course, can be adjusted by the conditions of the initial statements. For example:

'The occurrence of outcome A is more likely than B, but neither A nor B is the norm or dominant situation.'

Thus:

'There is a greater than 50% likelihood of A than B, but not of A in fact.'

But the point remains that the translation gives the impression that not only can the meaning of likelihood be translated into number, but that the attribution of number adds something additional to the statement. Yet in this case the number is simply a translation of the statement of likelihood. It has not become more precise by the restatement.

The equivalence here is not between a statement of likelihood and the precision of number but the statement of likelihood and the imprecision of number. The semantic equivalence between the two is not about precision. However, we look to number to give us precision – even if that precision is specified as a range. This is an important point in regard of probability and social reality.

A probability is a calculation of likelihood of some future phenomena. It is not itself a statement of the event.²

One can state that GDP for 2012 will be 3%.

One can state that one is predicting or forecasting this outcome; one can then state the terms on which the prediction is made – statistical inputs x, y and z were of particular levels, the relations of x, y and z over time have led us to expect an outcome of GDP 3% based on previous occurrences and some stated assumptions, and this has held on, say, 90% of previous occasions.

One might then state that there is a 90% likelihood of a 3% outcome (though one might then hedge this).

One might adjust the claim by the likelihood of error in the initial statistics for x, y and z, and thus of error in the modeled outcomes of the presumed relations.

One might adjust for likely deviation in the precision of the presumed relations of x, y and z as they pertain to GDP, and thus of deviation in the modeled outcomes of the presumed relations.

One might then state a range of possible outcomes for GDP for 2012 – a forecast range of 2.5% to 3.5%.

One might then state a further probability of the range based on the previous relations of x, y, and z coinciding with that range of outcomes.

One might then run a series of further ‘scenarios’ allowing for additional changes in x, y, and z over the period in which they are deemed to impact on GDP for 2012.

One might then also adjust one’s forecast during the period up to the completion of the forecast as and when data could be used to replace the anticipated/interpolated numbers.

Several features are worth noting here:

- 1) The statement of the future outcome or event is linked to a statement of probability but the probability of the event is rarely what we focus on in public discourse.
- 2) Both the probability of the outcome or event and the series of statements regarding the outcome or event that are the forecast are a curious mix of precision and imprecision.
- 3) The received understanding, however, is that there is something in the underlying calculation that is being done in a precise way and that this gives credibility to the forecasting process.

In the end, however, what one has is a series of outcomes or events, which either did or did not coincide with the forecasts.

² The following is not a claim that this separated series is what actually occurs in any programmatic sense in any given instance of modeling for forecasting. The list is just that – a list of what can be stated.

In a truistic sense forecasting is successful description of some future phenomena. But one can add a number of possibilities here for under what circumstances that success is occurring:

- 1) Successful description can be simply coincidence.
- 2) Successful description can be approximately successful and the approximation may be highly conditional – creating a great deal of leeway in claims of successful description.
- 3) Successful description can actually be a basic illusion, trading on the perpetual adjustment to the modeled process of forecasting as and when new data emerges that confounds the initial basis of the initial forecast.
- 4) Successful description may actually also be because the forecasting process had (in sum or parts and to different degrees based on power, position, and institutional location and remit) constituting influences on the outcomes or events.
- 5) Successful description may be no more or less than a special case of coincidence – the conditions that allowed for outcomes to be of a particular kind were captured for some brief period because they were stable – it is the stability that is being captured and not the complexity of relations that are sometimes stable; the forecasting, therefore, is descriptively successful in an approximating way for some period; in so far as it is successful it is ‘right’ for the wrong reasons and thus forecasting works reasonably well right up to the point where you actually really need it to work – when things fundamentally change. Then it doesn’t work. At such points one might then get more of 2) and 3).

These points ought to make us consider carefully the way we think about the link between the success or failure of forecasting as description. They also raise issues in regard of the role of precision and of our understanding of probability in forecasting for social reality. All forecasting involves an underlying conceptualization of probability. It is this that gives sense to the notion of precision in number that makes us think of economic forecasting as more than simply complicated guesswork. We think of it as well-founded statement, a science and not an art of numbers – we are encouraged to think of it as something like Sherlock’s predicate perfection, subject to shocks.

- **What are the grounds of precision in probability?**

Ultimately, probability is a particularized numeric statement linking conditions to outcomes, trading on, and thus expressing, a determinative statement of a relation. It is determinant by range since to state a probability of 35% is to also state the range – what will occur within the other 65%. There is, at minimum, a tacit completeness, even if the statement of some portion of the rest is a statement of the range of ignorance (the indeterminacy is itself a determinant range within the whole).

But:

It is an error to conflate a probability with a pattern.

- 1) One can identify a pattern and state the pattern, as is, so far.
- 2) One can quantify elements of some kinds of patterns.
- 3) One can state that the pattern under some description of that 'pattern' that is quantified has shown no deviation, specific deviation, repeated deviations of specific forms...

But:

- 1) It is the grounds of the pattern that account for the fact that elements of the pattern can be quantified and that it may show no deviation, specific deviation, repeated deviations of some form...

Therefore:

- 1) It is the nature of the grounds of the pattern that are significant to the pattern's form and continuation.
- 2) It is the grounds of the pattern that provide the basis for any possibility of probability statement and for such probability statements to be precise.

Further:

- 1) Though social/economic reality has elements that can be 'patterned' the further identification of any pattern is, truistically, a human construct about human constructs. The expression of patterns is a provisional representation. For example, one can look at a housing market and observe for circumscribed statement:
 - a. A house has been sold, a house has been sold, a house has been sold...
 - b. Some houses have been sold. Houses are being sold.
 - c. Three houses have been sold – imposing a break in time and a quantifier.
 - d. Again, a house has been sold, a house has been sold, a house has been sold, 3 houses have been sold, 6 houses have been sold.

The numbers are real object references but also interventions in flows based on categories that are used to state patterns. They are constructs and they are not the grounds of the real referents that the constructs are constructed about.

Therefore:

- 1) The possibility of probability statement requires further characteristics of the identifier of the pattern in order for s/he to formulate a probability in a descriptively real sense.

One can now ask:

- 1) What grounds are conducive to probability statement?
- 2) What attributes must the probability stater exhibit in order to make probability statements?

For probability statement to be possible one might expect:

- 1) Given patterns of outcomes to be stable
- 2) Given patterns of stability to be observable
- 3) Given patterns of observable stability to be translatable into quantifiable forms

And

- 1) Possible patterns of outcomes to form a totality – the range; where that range is complete
- 2) Possible patterns of outcomes – the range – to be stable
- 3) Possible patterns of outcomes – the range – to be inferable-observable-deducible
- 4) Possible patterns of outcomes – the range - to be translatable into quantifiable forms

The implication is thus:

- 1) A fixed, complete, social/economic reality, exhibiting in its parts and its whole a system that is essentially a stasis.
- 2) The stasis extends from the manifest outcomes to the possibilities of outcomes that have not been but can be – the determining relations or grounds.
- 3) The focus of those describing patterns and stating probabilities may be on repetitive manifest regularities; but the system need not be one of repetitive regularities as patterns. However, for the *probability range* of any acknowledged complexity to be descriptively true it must be of a complete pre-conditioned possible patterning of complexity.
- 4) As such, the grounds necessary for the precision of probability are both closed and complete.
- 5) This closure and completeness would appear to extend from the actual pattern manifest to the range that might be.

Furthermore, the forecaster would seem to require precisely the attributes of Sherlock in order to capture this completeness completely. That is, Sherlockness would seem to be necessary to match successful description of the future to a describable future social reality.

Social/economic reality is, in its entirety, simply not like this and we, as economists are not like that. If there is a way forward here, then it involves a decision: is the problem a mathematical one to be solved by mathematical means – Steve Keen’s approach – or is the problem a problem of mathematics to be solved by a turn to non-mathematical means – Tony Lawson’s approach. The

answer hinges on how far one can make mathematics compatible with social reality. Keen would have it that there is a way to make the internalities of models capture genuine change and contingency, as such, forecasting may still be useful when you need it most...

Conclusion

The conclusion I want to draw here is not that forecasting has failed to have some traction within social/economic reality. The implication is that the relative success or failure of forecasting cannot be based on:

- 1) A *consistent* isomorphism between probability calculation and reality as is in its complexity
- 2) The necessary attributes of a person calculating probabilities in regard of that reality, in a Sherlock sense.

The failures of forecasting flow from the lack of isomorphism and the impossibility of the necessary attributes. But so also do the circumscribed successes. The lack of isomorphism does not mean that there cannot be brief points of tangency – stabilities in reality that seem to conform to the completeness and overall stasis that seems to be needed. The lack of the necessary attributes does not mean that our real attributes are not sometimes sufficient to express probabilities for some time in some place within social reality. However, ultimately, we should think again about the nature of forecasting. We should think carefully about the nature of social reality that it is seeking to ‘describe’. In particular, we should think again about its institutional role i.e. its ideological function and also its role in construction. We ought, for example, to be thinking far more in terms of the issue of foresight rather than an ideological precision in forecasting.

Foresight and forecasting are not the same things.

Forecasting is about stating the future that will be, foresight is about anticipating possible futures and shaping them – perhaps avoiding what may otherwise be, and where one considers a possible state of affairs to be adverse. Foresight involves the negative in the sense of what may now never be and also why one would not want the outcome that may now never be. Foresight recognizes that the issue of possible futures begins from alternative possible presents.³ This is also what forecasting is about, though in the case of forecasting the relation is not emphasized. Forecasting is about possible presents in two senses:

- 1) In many institutional contexts forecasting is also an expectations shaping exercise. The highlighted future shapes a present behavior. This is implicit in the expectations theorizations and practices of central bank policy. More broadly, a forecast can justify a present policy. There is a credibility compromise at play that is well understood. For example,

³ The political economist Heikki Patomaki has many interesting things to say about the issue of possible futures and alternative presents.

forecasting in conjunction with predictive models played a key role in the stress tests of banks in the EU and the US over the last 4 years. The stress tests were positioned precisely as damage limitation exercises. Possible futures were constructed that minimized the degree of statement of the current undercapitalization (if any) of the banks. Possible futures were being constructed in order to stabilize the present i.e. in order to form a possible present that (hopefully) prevented some possible futures.

- 2) Forecasting typically shares an imaginary world with general equilibrium and with the EMH. It shares a paradox of implicit understanding of the flow of time. Both the EMH and general equilibrium are essentially timeless as models in any real sense. However, the EMH, for example, assumes that all information is commonly available, commonly processed and well used. The present is in effect an assimilation of the relevant elements of the future. The present performs the future but the future dictates the present. Since the basis of doing so is descriptive completeness, then effectively every point of the present becomes fixed by an accurately anticipated future. One is effectively living backwards from the future to the present and living the future twice – both as a perfect simulacrum and as an actual event. Since each point in the past is an instance of this (in order for the model to be confirmed) then one is permanently living backwards from the future to the present as a series of moments that become future pasts. The problem here is the basis of description shared by forecasting; i.e. completeness and closure that then become the basis of the possibility of prediction as calculative precision for forecasting.

The future may be in the present and expressed through the tentative relation between possible presents and likely futures, but this is not a situation that can be encompassed by a simple notion of description. Forecasting, as currently practiced, has a disjoint between its actual significance and its manifold of justifications and expressions. It thus occurs within an ideological frame. It is partial description in three senses. It is partial in the sense of being incomplete because social reality is incomplete. It is partial in the sense that it is incomplete because no forecasting system and forecaster can fully capture what is not complete. And it is partial in the sense of partiality – it is part of the multiform manner in which social reality is shaped.⁴ I'll finish here with a quote from Geoffrey Dicks, chief economist at Novus Capital Markets:

“Forecasters tend to hunt in packs. At one time they are all downgrading; at others they will be revising their forecasts higher. It may sound a contradiction, but typically forecasts will lag rather than anticipate trends in the real economy.

⁴ These are issues addressed in various ways by David Hendry in econometrics (constructively critiqued by Steve Pratten at Cambridge), and by Donald Mackenzie in the sociology of finance, as well as by the CRESC group at Manchester University (Karel Williams, Julie Froud, Ismail Eerturk, Adam Leaver etc.)

In the financial crisis and the recession that followed in 2008-9 the forecasters were in perpetual catch-up mode.”⁵

⁵ G. Dicks, 'Forget the gloom, the numbers say be happy,' The Sunday Times, 19th February, 2012.