On the role of expectations in Keynesian and today's economics (and economies)

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1. "But there are much wider anomalies in the sheer facts observable in the real world that orthodox economics is unable to explain. The striking disparities in material wealth of the various nations, the awkward extraordinary instability of the world financial markets, the connected enormous size of rentiers' incomes, the disrupting effects of the astonishing movements of the technological frontier, the persistent, widely spread, dangerously increasing involuntary unemployment of masses of working people. … As against these powerful features of reality, the appeal of Keynes's theory, in spite of all, remains strong."[1] Hence what Luigi Pasinetti calls a "separation theorem", which makes it possible, in order to explain the "real" world, to move from the level of the logical foundations of an economic system constructed on "objective" bases to the level of analyses of behavioural relations constructed on hypotheses that better represent the subjective behaviour of an individual or group of individuals. It is to this second level that the investigation of expectations belongs.

2. Within the framework of economic orthodoxy to which Pasinetti refers, the first level consists essentially of a pure production model. The real world does not spontaneously tend towards the "natural" variables that constitute the model's solution; that requires "institutions" and policies. Obviously, the solution of a pure production model differs from that of a general economic equilibrium system. If we consider the latest developments in mainstream macroeconomics, after the new classical macroeconomics of Bob Lucas, that system is expressed as a dynamic stochastic general equilibrium (DSGE), the result of the intertemporal optimization of objective functions under conditions of uncertainty, given a technological or budget constraint. But applied DSGE models, which belong to Pasinetti's second level, increasingly embody the presence of rigidities,

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frictions and free parameters that in one way or another hark back to Keynesian intuitions. More and more, they resemble the macroeconometric models of the neoclassical synthesis, like those of Ando and Modigliani, which "tended" towards balanced steady-state growth but probably too slowly, owing to the rigidities and frictions, for such a steady state to be taken as more than a mere reference point for the real world (thus making the intervention of economic policy necessary[2]). Not only can the approach of the real world to the equilibrium solution be very slow, but it may also be non-monotonic, affected by non-linearities, expectations, beliefs originating from various behavioural hypotheses, technology, and so forth. Hence, again, the importance of institutions and policies. Yet in the case of DSGE models, which we nevertheless should interpret and use recognizing their role as approximations of a continuously evolving reality, there ordinarily remains the hypothesis of rational expectations (perfect foresight barring a random error) along with a basic linearity in the representation of the response of economic agents.

3. In classical theory (particularly in the neo-Ricardian elaboration) and neoclassical theory (particularly in the so-called school of rational expectations), the role of expectations is relatively unimportant both at the first and the second level of Pasinetti's analysis.[3] In the 1980s, however, the very success of the rational expectations school prompted a more careful examination of the role of expectations and information in the realization of economic variables. In "closing" their models with assumptions on expectations, analysts seek to take into account that economic agents' decisions look to the future, but it is not easy then to distinguish the implications of such assumptions from those deriving from the fact that agents' decisions are made in historical time and have to deal with a shifting reality. In dynamic analysis, it becomes difficult to disentangle the role of the various factors at play: adjustments and effects of expectations, institutional frictions and rigidities.

[1] Pasinetti (2007, p. 42).
[2] On this point, see Visco (2005).
[3] What follows is based partially on Visco (1985), Section 1. See also Visco (1988).

4. Human actions take place in conditions of uncertainty (there are differing degrees of ignorance, though these need to be qualified, as to future events and even the future implications of our decisions), and, to repeat, with an effect that is distributed over time and in a continuously evolving reality. Above all, the analysis of expectations is shaped by their principal characteristic: their subjective nature. Expectations are indeed what joins "objective" reality with economic agents' decisions that continually mould and modify that reality. This explains the frequent recourse to "psychological" factors, the attempts to extend the field of inquiry in order to take proper account of expectations and also even to narrow the analysis so as to avoid indeterminacy and make better use of the analytical tools of economics, with two possible consequences: (a) abstracting entirely from expectations, treating them as variables exogenous to the economic analysis (i.e. as parameters not explainable in terms of that analysis); (b) exorcising them by assuming that they are completely determined by the variables that constitute the final object of the theoretical analysis (thus falling into absolute determinism).

5. As we well know by now, the starting-point is the distinction between risk and uncertainty. The former is based on the repeatability of an event and induction (logically as against psychologically a priori),[4] even if one can certainly distinguish between subjective probabilities and relative frequencies (and objective probability). We have decisions under conditions of risk when we are able to assign definite probabilities to the mutually exclusive possible "states of the world" associated with each individual decision. It is not necessary that these be defined in advance; it is sufficient that the events be recurrent, so that the probabilities have a statistical basis. And even this is not necessary, since subjective probabilities can be defined on the basis of which the decision can be taken. The differences between the subjectivist and the logic approach should also

[4] See, in particular, Hume (1739) and Popper (1972), where there is also a treatment of the links between what Popper calls the "problem of induction" according to Hume (for whom it does not appear logically possible to determine the probability of realization of a past event), and the "problem of Hume" according to Kant, which concerns the existence of propositions valid a priori. According to Popper, in particular, one possible solution to the problem of Hume could take place through learning, i.e. comprehension of the factors determining a phenomenon, to be attained by discarding the theoretical hypotheses proven false by experience. Expectations would thus appear to arise independently of repetitions, if not prior to them (hence the reference to Kant, given

be recognized. Indeed, with reference to the latter, Knight and Keynes define a further notion of uncertainty, which obtains when there is not sufficient information to assign any objective probability to future events that are the object of economic agents' decisions.[5] According to Keynes, many of the decisions taken in an economic context regard uncertain future events to which statistical-mathematical probabilities cannot be assigned; these are what Shackle (1955) calls "crucial decisions".[6]

6. "But there is some regularity in economic life. Although Knight's insistence on the unique aspects of each situation cannot be neglected, economics must also recognize the recurring elements. It must do so if it is to aspire to any explanatory power."[7] Yet it is easy to fall into the opposite extreme, if one introduces the hypothesis of "rational" expectations, positing that economic agents have sufficiently stable methods for collecting and processing information and that they use the information to predict the future in a consistent fashion, with no systematic or with easily rectifiable errors.[8] The basic question is the nature, and in the final analysis the stability, of economic processes. Specifically, can short- and medium-term fluctuations in economic variables be considered as recurrent movements and thus treated using probabilistic hypotheses? Briefly, we can say that an affirmative answer to this question is offered by general equilibrium models with rational expectations (and intertemporal choices under uncertainty – or, to be precise, risk – to explain the economic cycle according to Lucas), but a negative one derives from the impossibility of plausible explanations based only on the so-called fundamental variables, without assigning proper and in some cases decisive weight to more imponderable variables bound up

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the "immensely powerful need for regularity … which makes them cling to their expectations dogmatically", pp. 23-24).

[5] See Knight (1921) and Keynes (1921). In effect, Keynes also appears to exclude a subjectivist foundation for the measurement of probability, although, as Vicarelli (1983) observes, he sometimes seems inclined to accept the point of view of Ramsey (1931), for whom probability concerns "degrees of belief", a priori in the Bayesian sense and subject to numerical measurement. In this case, according to Vicarelli (p. 295, translated by the author), even if the "selection of facts or propositions from which to start out in order to acquire a reasoned knowledge is naturally subjective", the probability with which to assess possible future events is not subjective.

[6] According to Knight (1921, pp. 231-32), firms' decisions concerning one-off, unique situations play an especially important role in economics.

[7] Frydman and Phelps (1983, p. 1).

[8] Lucas (1977).

with the markets' opinions, changes in the confidence of economic agents, variations in individuals' attitudes and moods. This is where Keynes and his expectations in the "long run" come into play.[9] Essentially, it is long-term expectations that spark entrepreneurs' "animal spirits," i.e. the propensity to invest. [10] To be sure, if investment depended solely on animal spirits and if these could not be modelled at all (as Phelps appears to hold[11]) then not only would there be a potential, fundamental problem of instability of capitalism[12] but also a general problem of indeterminacy of the economic system.[13]

7. One can get out of this bind in the manner of Keynes, by bringing in conventions, norms, institutions. Here we can make a useful distinction between exogenous uncertainty, when an individual's actions do not affect the probability of an event's occurring, and endogenous (or behavioural) uncertainty, when they do. In this case decision-making can take the form of a cooperative, positive-sum game, with the possibility of mixed strategies and sometimes unstable results.[14] In Keynes's view, this type of uncertainty is particularly important. It gives rise to the "beauty contest" situation in which decisions are made according to personal expectations formulated in the attempt to anticipate the "average opinion." This phenomenon arises in stock markets in particular – with regressive processes on the pattern "I expect that you expect that I

[9] Keynes (1936), especially Chapter 12. It should be noticed that, in Keynes' analysis, these expectations have the status of "exogenous"variables – ad hoc assumptions, outside his analytical framework for determining effective demand. But more on this later.
[10] Keynes does also deal with "short-run" expectations in treating ex ante production plans and ex post outcomes, only to conclude, years afterward, that his analysis would have been more effective had he dropped them in favour of the hypothesis of perfect foresight – or, as we would say today, rational expectations (see Vicarelli, 1983, pp. 304-05, recalling Keynes's remarks in the notes on "Ex post and ex ante" for his 1937 lectures). Thus according to Keynes the role of expectations goes beyond that considered by the "Swedish school," whose working framework is closer to what has been called "risk" rather than "uncertainty" (see Kregel, 1976).
[11] Phelps (2008).
[12] Vicarelli (1977).
[13] According to Kregel (1977, p. 497), this is the reason "economists had started searching for more 'objective' causes of cycles, or, at the very least, more 'objective' causes of the determinants of expectations," as in Friedrich von Hayek (see also Hayek, 1937, 1939).
[14] Pesaran (1984).

expect ..." – and so can result in great volatility, as there is no sound basis for robust estimates of the market's average opinion. This has significant consequences for firms' investment activity.[15]

8. However, one need not necessarily wait for economic agents to form expectations; nor must such expectations always be unstable in any given period of time. The very existence of this type of uncertainty will tend to create a set of institutions to guarantee the stability of the principal economic tendencies. This will produce conventions and habits on the basis of which agents make their decisions (hence the procedurally rational, adaptive albeit sub-optimal behaviour studied by Herbert Simon[16]). Note that in his theoretical analysis Keynes took long-run expectations as constant at a given level, not variable, in accordance with the state of endogenous uncertainty, and volatile insofar as they are tied to moods. But this was an ad hoc hypothesis that Keynes adopted in order to "demonstrate" his thesis of under-employment equilibrium in a monetary economy. In the real world, these expectations are met by conventions, institutions and economic policy.

9. In today's economy and today's economics the average opinion, conventions and institutions are still crucial, as the current crisis so clearly shows (here is the return to Keynes, owing more to the force of events than the power of ideas). Until 1971, we had the Bretton Woods convention (thanks in part to Keynes), which collapsed for reasons that Keynes himself had anticipated (asymmetry in adjustment, the dollar as international currency linked to gold, and so on). Different market conventions came and were established, new institutions for governing money were formed, but in practice the force of financial instability remained. Today, people are advocating a new Bretton Woods to achieve financial stability. This assertion needs to be fleshed out with substance, perhaps as part of the international monetary reform being undertaken by the G20.

[15] For that matter, this was directly observed in the economies known to Keynes. See Kregel (1977) on the consistency of Keynes with the English neoclassical tradition on the role of expectations (Mill, Marshall, Lavington, Pigou). See also A. Ellis (1892, p. 114): "It is often noticed by those who follow the stock market that a diffused or strong opinion that a given event will have a certain effect on a market is more potent in the way of influencing prices than the event itself," and his analogous considerations on the credit market.

10. In any event, with a view to monetary stability the institution of the "central bank" has been revised, and inflation expectations have been successfully stabilized (in the "long run," possibly even in Keynes's sense as well as with reference to the time horizon), thanks to the new monetary policy framework based on independent central banks with the pre-eminent if not exclusive objective of price stability (under the most recent models, such as flexible inflation targeting[17]). This seems to have worked, as we can see from the stability of economic agents' medium/long-term inflation expectations even during the recent bout of financial instability (Figures 1-3). But where the "one instrument, one target" paradigm has failed is not so much on full employment or on achieving the potential GDP growth rate – an elusive though useful concept – as on financial stability itself. This is not the place to go into the reasons for this failure, among which I would mention persistent balance-of-payments disequilibria, excessively lax and spotty financial regulation in some countries, and deliberate neglect of real and financial asset prices.[18] Anyway, the new global rules being drafted will bring new prudential constraints (for banks, such measures as dynamic provisioning, capital buffers, leverage caps, and more): conventions, norms on which to base "regular" conduct once again, hopefully in an economy where short-term imbalances can be handled with the policy tools available to us (and where rational or quasi-rational expectations that "efficiently" process the available information, the recurrent elements in economic phenomena, can play a useful "pragmatic" if not forecasting role).

11. Lately, scholarly work has been according a new, enhanced role to psychological elements, or perhaps simply to the recognition that there are limits to what one can know. In the field of so-called behavioural finance in particular, in some cases this may go so far as to "validate" actions defined as irrational.[19] However, in this context it is worth recalling De Finetti's argument for a "theory of finance": "In order for a theory of behaviour to say something, it must necessarily be

[16] Simon (1958).
[17] See among others Bean (2003) and the discussions, therein, by Visco and Wadhwani.
[18] For a recent discussion, see Visco (2009).

restricted to that which is derived as the consequence of a few main concepts and criteria and which can accordingly (if somewhat arbitrarily) be defined as 'rational behavior'. Then the theory will set out conclusions that are valid in the absence of accessory factors. This is not to deny or downplay the possible presence or importance of such factors; only, it is preferable to shift the study of deviations from the 'theoretical' behaviour implied by those conclusions to a later moment and to the detailed plane of complementary observations, rather than cloud all distinctions in a single theoretical construct which, in the attempt to embrace and set on an equal plane the congeries of systematic and accessory factors, would be reduced to a non-theory suitable solely to conclude that all kinds of behaviour are equally possible (for caprice or madness, even, as is in fact the case)."[20]

12. Yet one cannot fail to recognize that at times "risk" models have been applied in "ingenuous" or "mechanical" fashion in situations where there was an evident lack of the requisite empirical confirmation or in the absence of the necessary conditions of regularity and stability necessary for the application of nevertheless useful theoretical principles.[21] Specifically, the financial crisis in the summer of 2007 highlighted the severe failings in the practical applications of structured finance. Eminent economists argue that we cannot ignore psychological elements in explaining both conservative attitudes and such phenomena as contagion and speculative bubbles.[22] Lastly, there have been efforts to take account, in the realm of theory as well as empirically, of incomplete information and "imperfect knowledge," abandoning the search for "sharp predictions."[23]

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[19] See, among others, Barberis and Thaler (2003).
[20] De Finetti (1957, p. 71, translated by the author).
[21] In many respects Davidson's critique (1982-83) of the rational expectations hypothesis is based on analogous considerations. Davidson observes that as economic processes evolve in historical time and are not independent of the initial conditions, it is hard to accept the assumption of stationarity; to use statistical terminology, these are non-ergodic processes.
[22] For a recent contribution, see Akerlof and Shiller (2009).
[23] Goldberg and Frydman (2007, 2009).

REFERENCES

Akerlof, G.A. and R.J. Shiller (2009), *Animal Spirits: How Human Psychology Drives the Economy, and Why It Matters for Global Capitalism* (Princeton: Princeton University Press).

Barberis, N. and R.H. Thaler (2003), "A Survey of Behavioral Finance" in G.M. Constantinides, M. Harris and R.M. Stulz (eds.) *Handbook of the Economics of Finance*, 1, chap. 18 (Amsterdam: North-Holland): 1053-128.

Bean, C. (2003), "Asset Prices, Financial Imbalances and Monetary Policy: Are Inflation Targets Enough?", BIS Working Papers no. 140, September 2003 (with "Discussion" by I. Visco and S. Whadwani), http://www.bis.org/publ/work140.pdf?noframes=1.

Davidson, P. (1982-83), "Rational Expectations: A Fallacious Foundation for Studying Crucial Decision-Making Processes", in *Journal of Post-Keynesian Economics*, 5, no. 2: 182-98.

de Finetti, B. (1957), *Lezioni di matematica attuariale* (Rome: Ricerche).

Ellis, A. (1982), "Influence of Opinion on Markets", in *Economic Journal*, 2, no. 5: 109-16.

Frydman, R. and M.D. Goldberg (2007), *Imperfect Knowledge Economics* (Princeton: Princeton University Press).

Frydman, R. and M.D. Goldberg (2008), "Macroeconomic Theory for a World of Imperfect Knowledge", in *Capitalism and Society*, no.3, http://www.bepress.com/cas/vol3/iss3/art1.

Frydman, R. and E.S. Phelps (1983), "Introduction", in R. Frydman and E.S. Phelps (eds.), *Individual Forecasting and Aggregate Outcomes. Rational Expectations Examined* (Cambridge: Cambridge University Press).

Hayek, F.A. (1937), "Economics and Knowledge", in *Economica*, New Series, 4, no. 13: 33-54.

Hayek, F.A. (1939), *Profits, Interest and Investment* (London: Routledge and Kegan Paul).

Hume, D. (1739), *A Treatise on Human Nature*, edited by L.A. Selby-Bigge and P.H. Nidditch (Oxford: Clarendon Press, 1978).

Keynes, J.M. (1921), *A Treatise on Probability* (London: Macmillan).

Keynes, J.M. (1936), *The General Theory of Employment, Interest and Money* (London: Macmillan).

Knight, F.H. (1921), *Risk, Uncertainty and Profit* (New York: Houghton Mifflin).

Kregel, J.A. (1976), "Economic Methodology in the Face of Uncertainty: The Modelling Method of Keynes and the Post-Keynesians", in *Economic Journal*, 86, no. 342: 209-25.

Kregel, J.A. (1977), "On the Existence of Expectations in English Neoclassical Economics", in *Journal of Economic Literature*, 15, no. 2: 495-500.

Lucas, R.E. Jr. (1981), *Studies in Business Cycle Theory*, (Cambridge, MA: MIT Press).

Pasinetti, L.L. (2007), *Keynes and the Cambridge Keynesians: A 'Revolution in Economics' to Be Accomplished* (Cambridge: Cambridge University Press).

Phelps, E.S. (2008), "Commentary: Revolutionary Times, Then and Now", in *Capitalism and Society*, no. 3, http://www.bepress.com/cas/vol3/iss3/art5.

Popper, K.R. (1972), *Objective Knowledge: An Evolutionary Approach* (Oxford: Clarendon Press).

Ramsey, F.P. (1931), "Truth and Probability", in *Foundations of Mathematics and Other Logical Essays* (London: Routledge and Kegan Paul): 156-98.

Shackle, G.L.S. (1955), *Uncertainty in Economics* (Cambridge: Cambridge University Press).

Simon, H.A. (1958), "The Role of Expectations in an Adaptive or Behavioristic Model", in M.J. Bowman (ed.), *Expectations, Uncertainty and Business Behavior* (New York: Social Sciences Research Council): 49-58.

Vicarelli, F. (1983), "Dall'equilibrio alla probabilità: una rilettura del metodo della *Teoria Generale*", in F. Vicarelli (ed.), *Attualità di Keynes* (Bari: Laterza): 289-318.

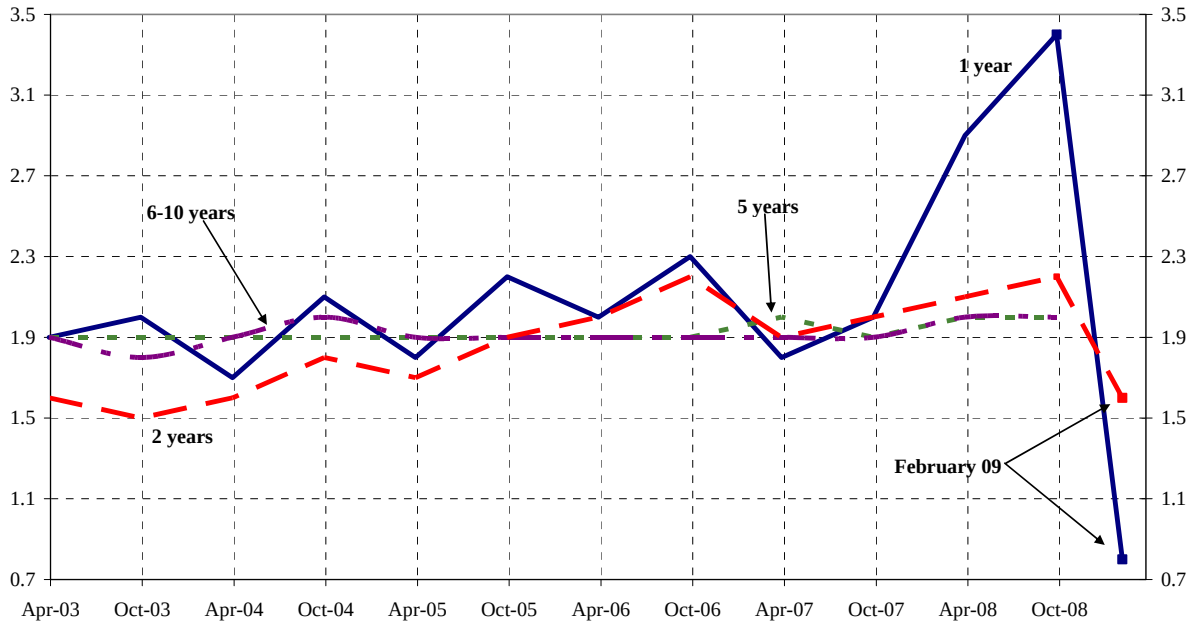
Visco, I. (1984), "Introduzione", in I. Visco (ed.), *Le aspettative nell'analisi economica* (Bologna: Il Mulino): 7-42.

Visco, I. (1988), "Note bibliografiche su *Ascesa e declino della nuova macroeconomia classica*, a cura di G. Rodano, and *The Limits of Rational Expectations*, di M.H.Pesaran" *Moneta e Credito*, 41, no. 164: 505-13.

Visco, I. (2005), "From Theory to Practice in Macroeconomic Models: Post-Keynesian Eclecticism", in *Banca Nazionale del Lavoro Quarterly Review*, Vol LVIII, nos. 233-234, June-September 2005, pp 67-90.

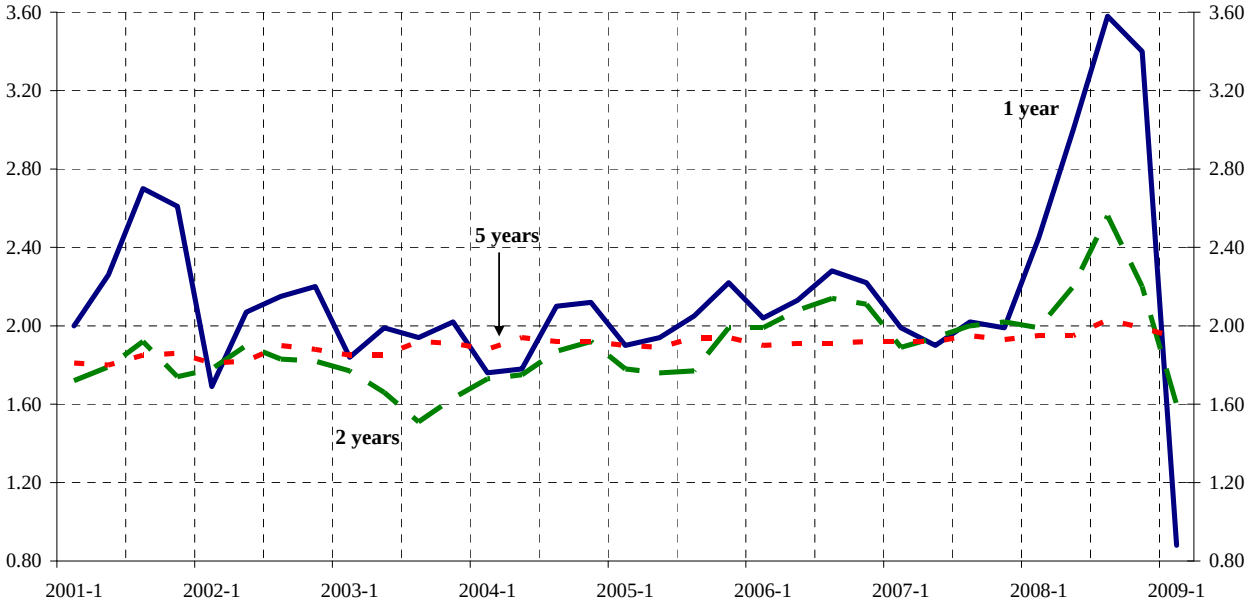
Visco, I (2009), "The Financial Crisis and Economists' Forecasts", in *BIS Review*, no. 49, 2009, http://www.bis.org/review/r090423f.pdf.

Figure 1. Average inflation forecasts for the euro area: Consensus Economics
(average of analysts' forecasts for 1, 2, 5 and 6-10 years ahead)



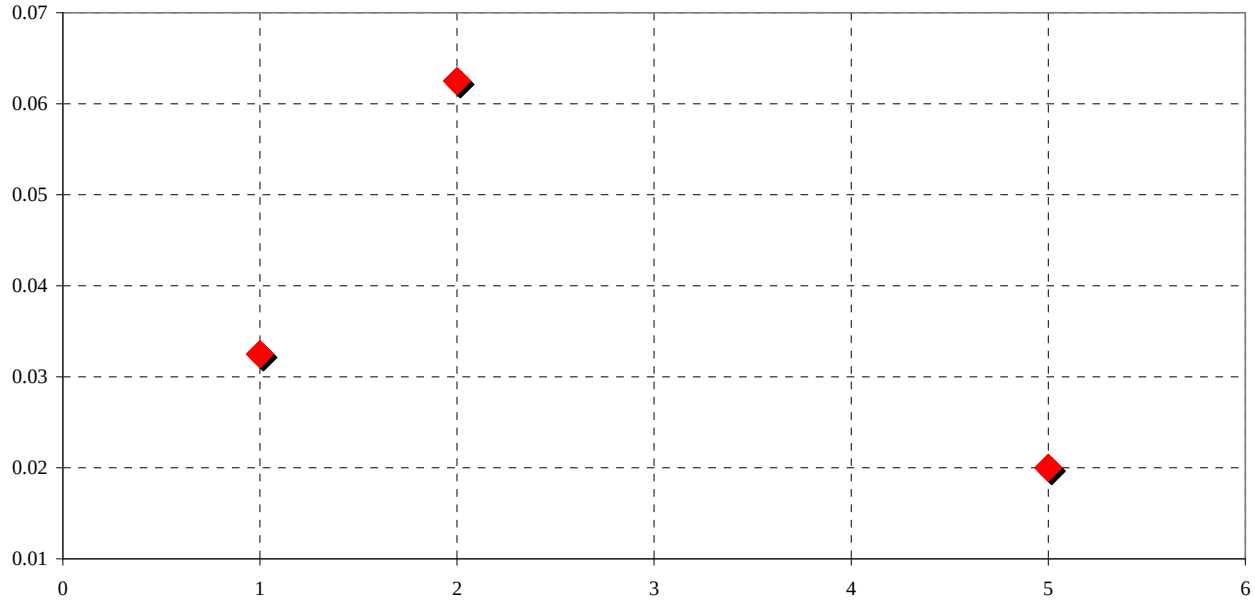
Source: Consensus Economics, *Consensus Forecasts* .

Figure 2. Average inflation forecasts for the euro area: Survey of Professional Forecasters
(average of analysts' forecasts for 1, 2 and 5 years ahead)



Source: ECB, *Survey of Professional Forecasters* .

Figure 3. Standard deviations of inflation forecasts for the euro area: Survey of Professional Forecasters
(standard deviations of the forecasts by analysts surveyed for 1 year, 2 years and 5 years ahead during the period from the second quarter of 2007 to the first quarter of 2009)



Source: ECB, *Survey of Professional Forecasters* .