The empirical evidence against neoclassical utility theory: a review of the literature

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Abstract: Current economics textbooks and neoclassical economists justify a theory of consumer behaviour based on utility maximisation on a priori grounds. This methodology follows Lionel Robbins’ idea that economic theory is based on logical deduction from postulates which are “simple and indisputable facts of experience.” Strong evidence has emerged from many different lines of research that these “simple and indisputable facts of experience” are contradicted by human behaviour. In this article, we summarise some of the main contradictions between predictions of utility theory and actual human behaviour. Efforts to resolve these contradictions continue to be made within orthodox frameworks, but it appears likely that a paradigm shift is required.

Keywords: behavioural economics; utility theory.


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1 Introduction

Despite the claims to objectivity and factuality set out clearly in Microeconomics textbooks, the model of consumer behaviour is introduced and justified on the ground of ‘rationality’ – clearly a normative concept. If this microeconomic theory is positive as claimed, then it should be backed up by observations of consumer behaviour which confirm its factuality. No such evidence is presented, because none exists. Indeed, as Sen (1977) has argued in his article ‘Rational fools’, behaviour which is rational according to economic axioms may actually be quite foolish.

Over the past few decades, empirical evidence against the descriptive accuracy of economic theories of human behaviour has mounted. Researchers in theories of decision making, psychology, and more recently behavioural economists who actually study human behaviour, observed the predictive failure of economic theories, leading to substantial reconsideration of the status of such theories.

Today, the orthodox position in many of these domains is that theories of rational behaviour used in economics are normative, and not descriptively accurate. The Blackwell Handbook of Judgment and Decision Making documents an extensive and detailed collection of examples [Soman, (2004), p.135]. This position arrived at after careful, detailed and extensive experimentation on human decision making behaviour, is exactly the opposite of assertions that economic theory is positive and consists of indisputable facts of experience.

One of the most spectacular pieces of evidence is the global financial crisis of 2008. As many leading economists have stated, the stock market crash is not compatible with theories of rational behaviour. On the other hand, based on behavioural theories, Shiller (2005) was able to predict the crash. Because of this dramatic conflict between dominant economic theories and empirical evidence, many Nobel calibre economists have called for a fundamental re-thinking of our basic economic models.

Margolis (1982, p.71) notes that a paradigm starts to become an intellectual handicap, when things that are obvious and obviously important can be seen more easily by a naïve observer than by specialists. In this paper, we summarise the many areas of conflict between the theory of utility maximisation and consumer behaviour. In fact, areas of conflict are so numerous that it is impossible to summarise them in short article. We will focus on areas where economic theory acts as an obstacle to understanding reality: the naïve observer is better able to understand observed behaviour than those armed with economic theory.

2 Diverse human motives

The achievement of Newton in explaining a diverse set of phenomenon with a single principle was universally admired. Scientists in all fields sought to emulate this achievement by using a minimal set of explanatory principles. In particular, as Mirowski (1991, p.3) has documented, the prestige of physics led economists to self-consciously imitate its methodology:

“the progenitors of neoclassical economic theory boldly copied reigning physical theories in the 1870s. The further one digs, the greater the realization that those neoclassicals did not imitate physics in a desultory or superficial
manner; no, they copied their models mostly term for term and symbol for symbol, and said so."

One of the aspects of this emulation was the simplification of human motives to the single one of greed. While this simplification makes mathematical modelling on the style of physics possible, it also makes the models of human behaviour highly unrealistic, as we demonstrate in this section.

2.1 Concern for fairness

One of the most fundamental principles of economic rationality is that people prefer more money to less. The ultimatum game strikes at the heart of microeconomic theory by showing that this is not true. In this two player game, 10 single dollar bills are placed on the table. The first player (P) proposes a sharing rule – for example, he will keep 6 dollars and give 4 dollars to the second player. The second player (R) can either accept or reject. If he accepts, then both players get the proposed amounts. If he rejects then both players get nothing.

Economics is the queen of the social sciences because unlike any of the others, it offers a sharp and unambiguous analysis of this game. The proposer seeks to maximise his own monetary payoff. He will offer the responder $1, and keep $9 for himself. He is secure in the knowledge that the rational responder will not reject his offer – a rejection will give both $0, and the responder will prefer to get the $1 he has been offered. This is the unique utility maximising offer for the proposer. If he tries to keep all ten dollars and offers zero, he runs a risk of rejection, while there is no reason to go for less. This then is a Nash equilibrium of the game: The proposer offers the split ($9, $1), and the responder accepts all positive offers.

Unfortunately, this prediction based on economic rationality bears no resemblance to the actual outcomes. A substantial number of proposers (though still a minority) offer a 50-50 split ($5, $5) based on considerations of equity and fair play, even though this is not their best move in the economic sense. A majority of proposers offer 30% or more to the responders. They are aware that there is a risk of rejection if they offer less. Proposers who behave according to economic theory and offer only a small amount (less than 30%) are frequently rejected. This means that the responders act against their own best interests and refuse low percentage shares of money to punish the proposer for making an unfair offer – even when this ‘unjust’ percentage is large in absolute terms.

In fields which have more contact with actual human behaviour, these ultimatum results cause no surprise. Ordinary human beings have trouble understanding what the fuss is all about; these results seem perfectly clear and natural. Only economists, conditioned to look at reality using wrong theories of human behaviour, are shocked and surprised by these results. In fact, these results run so strongly against the grain of economic thinking that no major economic journal would publish these results for a long time. There were standard objections to these clear results about actual human behaviour from orthodox economics (Fehr, 2003; Lewitt and List, 2007):

- results from a lab experiment would not generalise to the field of actual decisions in real economic environments
- monetary stakes in experiments were too low to induce people to think carefully about their decisions
new and unfamiliar game conditions led people to make mistakes.

Camerer (2003, p.60) describes the skepticism of economists about ultimatum results as follows: “If I had a dollar for every time an economist claimed that raising stakes would drive the ultimatum behaviour towards self-interest, I’d have a private jet on standby all day.” Replication of these results in a wide variety of different context, with high stakes (equivalent to a month’s salary or more), with experienced players in realistic field experiments has led to the conclusion that these results are robust (Fehr and Schimdt, 2006). Economists have reluctantly accepted the validity of these results. Nonetheless, there has been no progress towards integrating these results into the body of economic theory; the flat contradiction between the assumptions of microeconomics and these observations of human behaviour make it unlikely that a resolution can be found which fits into the framework of orthodox theory.

The assumption of economists that people only care about their own share and not about fair and equitable distributions, leads economists to propose drastically wrong policies in the domains of taxation and income re-distribution. Norton and Ariely (2011) document substantial consensus in the US population about the desire for a more equitable distribution of wealth. People think the distribution of wealth is more equal than it actually is; and they think it should be much more equal than their already unrealistically-equal notion of its current state. For example, the top 20% of the US wealth distribution actually controls nearly 85% of total wealth; people think the top 20% controls under 60%; and they think it should control just over 30%. Since concern for fairness is not currently part of economic theories, these issues get swept under the rug, to the detriment of all.

2.2 Resentment, revenge, gratitude, carelessness

Figure 1 sketches the extensive form of a two-player game discussed in Goeree and Holt (2001). At the first move (P1), player 1, Adam has the option of ending the game and getting the safe option of $7, by playing RIGHT. Alternatively, he can choose to play LEFT, which puts Ben on the move. Ben gets $3 + x < $5 if he moves L, and he gets the higher payoff $5 if he moves R. Initially, assume that x < 2, so that $(3 + x) < $5. The standard game theoretic analysis of this game provides us with the following insights:

1 At node labelled (P2: Ben), utility maximisation predicts Ben will choose to play R, which gives him the higher payoff $5 > $ (3 + x). This implies that Adam will receive $10.

2 Adam can rely on economic theory, which states that Ben will choose R over L, as long as $5 > $ (3 + x). This means that Adam can rely on receiving $10, if he puts Ben on the move by playing LEFT.

3 A rational and selfish Adam will play LEFT, since that leads to an outcome of $10, while RIGHT leads only to $7.

4 The value of B, which Ben gets if Adam plays RIGHT, is irrelevant.
All four of these insights are wrong. Furthermore, ordinary untrained subjects who play this game behave in ways which show deeper understanding of human behaviour. Thus, game theory systematically handicaps the understanding of observed behaviour in this game.

Experimental evidence reveals the following patterns of behaviour:

1. When the difference between $3 + x$ and $5$ is small, Adam cannot rely on Ben making the right move. Suppose $3 + x = 4.75$, which is only a bit smaller than $5$. In one experiment, 15% of the second players choose L, which gives them a quarter less than the optimal move R. This ‘mistake’ substantially reduces the payoff to Adam. Anticipating this possibility, many players choose the safe payoff of $7$ by moving RIGHT.

2. As the difference between $3 + x$ and 5 increases, the chances of player 2 playing R increase. In experiments, Player 1 anticipates this and chooses LEFT more often. None of these phenomena is predicted by game theory, showing the theory is blind to aspects of the game which untrained observers are aware off.

3. A high value of $B$ creates resentment in player 2. For example, if $B = 10$, the LEFT by player 1 reduces the payoff of player 2 to a choice between $3 + x$ and $5$. This could easily motivate player 2 to take revenge by playing L and punish player 1. Anticipating this, player 1 takes the secure option of RIGHT very often in this situation. Again this behaviour shows greater wisdom than game theory.

When the difference between $3 + x$ and 5 is small, player 2 might ‘carelessly’ choose the lesser value. This is an instance of satisficing instead of maximising. There are many other possible explanations for this carelessness; computational costs may exceed benefits, for example. A large and negative $B$, like $B = -$100, leads to another interesting case. Now the safe choice of Right by player 1 incurs a large penalty to player 2. Therefore, we expect that player 2 will feel gratitude if player 1 plays Left. Player 2 might then choose to move Right, maximising the payoff to player 1, even if this is less than optimal for him – for example, if $3 + x = 6$. This scenario has not been tested in experimental games, since experimenters do not use setups which involve penalties to the players for various reasons. Nonetheless, it seems plausible on intuitive grounds, while having no basis in game theory at all.

What is the harm of reducing the complexity of human motives to simple greed? We have just seen that understanding human behaviour in a very simple game requires taking into account resentment, gratitude, revenge, carelessness and reciprocity. Contrary to
reductionist economic views, a vast number of market transactions are based on motives other than greed. The widely recognised phenomenon of conspicuous consumption creates an externality and hence market failure which should be regulated – however economists fail to acknowledge the phenomenon because it requires motivations other than greed. An additional problem is that highlighting a single motive both legitimises and encourages it: witness the ‘Greed is good’ maxim of the movie *Wall Street*.

### 2.3 Altruism

There has been a fundamental paradigm shift within social scientists in the last part of the 20th century. Earlier, it was not intellectually acceptable to argue that true generosity or altruism existed. All such behaviour had to be explained with reference to some underlying selfish concern. However, it has now come to be recognised that true generosity exists, and indeed is an important characteristic of human beings. Such an understanding is fundamentally at odds with the central ideas of utility theory, which posits selfishness as the central motivation for consumer behaviour.

In the ultimatum game described earlier, the vast majority of offers lie between 30% and 50%, contrary to game theoretic predictions of very low offers bordering on zero. There was some dispute as to whether the high offers are due to a preference for fairness, or due to the fear of rejection. To differentiate between these possibilities, the dictator game was introduced. In this variant, the offer of the proposer is automatically enforced – the responder has no choice. Utility maximisers will always take 100%, and leave nothing to the other party. In real life games, only a small minority behaves like *homo economicus*. Most players leave something for the other party, sometimes a token amount. Amounts left for others are at cost to oneself, demonstrating clearly the existence of altruism.

Aknin et al. (2010) also provide strong global empirical evidence for generosity, based on their analysis of survey data from 136 countries. They find that ‘prosocial’ spending is consistently associated with greater happiness. In contrast to traditional economic theory, they find that the reward experienced from helping others may be deeply ingrained in human nature, emerging in diverse cultural and economic contexts.

In general, utility maximisation predicts that given a choice between a $100 dollar meal at a high class restaurant and the alternative of donating it to feed hungry children, people would prefer the first choice. In fact, substantial numbers of people prefer the second option, and this is well known to most people. Psychologists have shown that this is a wise choice, since long run happiness is achieved and sustained by such choices (Sheldon and Lyubomirsky 2006). This illustrates our theme that intuitive lay opinion is better informed about human behaviour than economic theory, in many situations.

### 2.4 Cross-cultural studies

Is it true that a simple model of self-interest where all actors maximise material payoffs to themselves provides a good first approximation to human behaviour which is universally applicable? Many economists appear to believe this, and the utility maximisation model is the bedrock and foundation of economic theory. Nonetheless, there is overwhelming empirical evidence that this is not so. Henrich et al. (2001) searched for *homo economicus* in 15 societies but could not find him anywhere. Their
experiments confirm findings which have extensive empirical support from a large number of studies:

1 Generosity, in conflict with economic theory, is widespread, though the levels vary with many factors. This means that simple utility maximisation models fail to provide even a rough guide to human behaviour in a wide variety of situations.

2 Preferences are not exogenous, but responsive to social and structural circumstances surrounding the choices to be made. This means that human welfare cannot be measured solely by the final consumption bundle. Both the process by which it was obtained, and the consequences to others, matter.

3 Institutional details and social norms impact greatly on human behaviour. Thus, human behaviour is far more flexible than assumed by economic models, and also subject to shaping by social structures.

Incorporating these findings would require radical reshaping of economic theories.

### 3 Social norms

Neoclassical economists generally subscribe to ‘methodological individualism’, whereby group behaviour can be reduced to individual behaviour. Every group is, after all, just a collection of individuals. If we understand how individuals behave, we can aggregate to get an understanding of group behaviour.

This is the intuition behind the widespread use of dynamic stochastic general equilibrium (DSGE) models, which reduce the entire society to a single (aggregated) individual who optimises consumption over various complex and uncertain scenarios. Interestingly, DSGE models have been blamed for the recent global financial crisis of 2008. Testifying before a Congressional Committee investigating the reasons for the crisis, Solow (2010) blamed the unrealistic DSGE models that currently dominate macroeconomic theory both pedagogically and in policy circles, and argued that they have nothing to say about the problem, and are systematically blind to the issues which created the crisis.

More generally, there is substantial evidence that ‘methodological individualism’ is wrong. The statement that ‘Britain is at war with France’ cannot be reduced to any collection of sentences about citizens of Britain and France. The idea of ‘emergence’, where the whole cannot be reduced to the sum of the parts, is now well established in many different disciplines. Communities create methods to live by common rules. Choices about the language we speak, the side of the road we drive on, the legal framework we live by and many others which govern social behaviour cannot be reduced to individual choices, or studied separately from the community.

Economists generally subscribe to the idea of the ‘invisible hand’; that is, individually selfish behaviour leads to optimal social outcomes. This is another reason for their neglect of ‘society’. Evidence that this does not hold is given in Zaman (2012b). Bicchieri (2006) writes that “Pro-social norms of fairness, reciprocity, cooperation, and the like exist precisely because it might not be in the individual’s immediate self-interest to behave in a socially beneficial way.” In this section, we give some examples where social norms lead us to behave in ways which conflict with predictions of economic theory.
3.1 Cooperation

The prisoner’s dilemma (PD) is perhaps the most widely investigated game, generating thousands of papers in diverse fields. The payoff matrix can be described as:

The first coordinate gives the outcome for player 1 and the second for player 2. To create a PD, the four payoffs must be ordered as follows for both players:

Sucker < Low < High < Temptation

The socially optimal outcome is for both players to cooperate, which gives the high payoff to both. If players are selfish and value individual benefits over cooperation and social behaviour, both will be tempted by the higher temptation payoff. If both betray, both will get the low payoff, which is both socially and individually inferior.

<table>
<thead>
<tr>
<th>Player 1</th>
<th>Player 2</th>
<th>Cooperate</th>
<th>Betray</th>
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<tr>
<td>Cooperate</td>
<td>(High, high)</td>
<td>(Sucker, temptation)</td>
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<tr>
<td>Betray</td>
<td>(Temptation, sucker)</td>
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Based on utility maximisation, game theory offers a clear and unambiguous solution for this game. The betrayal strategy is the dominant strategy: regardless of what the second player does, it is best for the first one to betray. If second player cooperates, one get the higher temptation payoff. If second player betrays, one is saved from the poor sucker payoff. If both players play their dominant strategy, then both will get the low payoff.

While this is what utility maximisation predicts for rational and selfish players, it does not make intuitive sense. It seems likely that both players can figure out that both will be made better off by cooperating, and achieve the high payoff, which corresponds to actual behaviour; cooperation is much more widely observed than predicted by economic theory. A few particularly strong conflicts between intuition and game theory are listed below:

1. Economic theory predicts that ‘cheap talk’ – communication between players without substantive information or binding commitments – will have no effect on outcomes. Intuitively, we all know this is not so, and communication will lead to greater cooperation and fewer betrayals. There is strong empirical evidence that communication creates cooperation.

2. According to game theory, as long as the inequalities specified hold, the size of the temptation and the sucker payoff do not matter. In fact, changes in these payoffs have predictable effects – increasing temptation payoff increases betrayals, while increasing sucker payoff increases cooperation. Furthermore, intuitive players can predict this behaviour and respond appropriately, while game theorists cannot.

3. With fixed finite repetitions of the PD, game theory makes the startling prediction that betrayal in all rounds is the unique dominant Nash equilibrium. This follows from a straightforward backward induction. Human beings routinely use the opportunity offered by multiple games to signal friendliness, create cooperation, and achieve far higher payoffs than *homo economicus*. 
In general, untrained intuition provides a much better guide to understanding the vast literature on experimental evidence regarding the PD, while game theory serves as an obstacle to understanding. Economists often perform poorly in PD games, not achieving the same levels of cooperation as those non-economists (Frank et al., 1993).

Important practical implications arise in the case of externalities. These are situations where individuals can make profits for themselves at public expense (by polluting the environment, for example). Solutions proposed by economists systematically ignore the most important factors relevant to solving such problems, which relate to social norms of cooperation. This is because economic models predict that they do not exist, or else they do not matter.

3.2 Public goods and free riding

Public goods have been an area of concern to economists for a long time, since economic theory predicts that everyone will free-ride and inadequate quantities will be supplied. However, many experiments show that the tendency to free ride is much less than predicted by economic theories. A summary of Hirshleifer (1985, p.55) by Dawes and Thaler (1988, p.188) notes that:

“the analytically uncomfortable (though humanly gratifying) fact remains: from the most primitive to the most advanced societies, a higher degree of cooperation takes place than can be explained as a merely pragmatic strategy for egoistic man.”

The issues pertinent issues can best be illustrated within the context of a simple public goods experiment. There are \( i = 1, 2, \ldots, N \) players. Each one receives an endowment \( E(i) \). Each can choose to contribute \( C(i) \) between 0 and \( E(i) \) to the public good. The total contribution is \( C = C(1) + \ldots + C(N) \). The benefits from the public good are represented by a multiplier \( M > 1 \). The total benefit is \( M \times C \) and this is distributed equally to all players, regardless of whether or not they contributed. Thus, the \( i^{th} \) player gets \( [(MC)/N] \) from the public good, plus \( E(i) - C(i) \) the amount he did not contribute.

To see the conflict between public and private interest more clearly, consider a case where \( N = 4, M = 2, \) and \( E(i) = $10 \). If each of the four players contributes the full $10 to the public good, the total contribution of $40 is doubled and redistributed, so each player gets $20, which is the social optimum. However, the social marginal benefit from contributions differs from the private marginal benefit. Each dollar I contribute is doubled, but then it is shared by four, so I get back only 50 cents. If I do not contribute anything, but all others do, then $30 will be doubled to $60, and redistributed four ways, so I will get $10 + $15 = $25. My gains of $5 will also cause a loss of $5 to each of the other three, for a net social loss of $10.

Standard economic theory predicts that no one will contribute anything; everyone will free ride. This prediction is strongly contradicted by actual behaviour over a wide environment and a variety of experiments in the field and in the lab. Sally (1995) summarised the conflicts between economic theory and observed behaviour in over 35 years of experimental studies. Below we list three specific conflicts which have received strong empirical support, as discussed in Kagel and Roth (1995, p.26).

1 Whenever \( M/N < 1 \), the marginal private benefit is less than 1, and economic theory predicts zero contribution to the public good. In fact, contributions are never zero, and respond systematically to \( M/N \), increasing as the marginal social benefit
increases. Economic theory provides no explanation of this, whereas there exist competing explanations based on psychological and social theories of reasons for cooperative behaviour which might justify this response.

2 In multiple rounds of play, cooperation starts out high levels, and then declines. Some explanations based on economic theory have been assessed and rejected: for example, players learn with time how to play in order to maximise utility. The most plausible hypotheses to explain this empirical regularity rely on social norms, outside the scope of economic theory.

3 It is easy to manipulate the environment so as to achieve nearly full cooperation. Other manipulations achieve the economic theory outcome of nearly zero contributions. People respond to expectations of others, and these expectations can be manipulated by experimenters. In environments where high levels of cooperation are expected, high levels of cooperation are achieved. In environments of distrust, very low levels of cooperation (but rarely zero) are observed.

These findings have very important policy implications which have not been absorbed by economists. The vast majority of research on public goods focuses on mechanism design, incentive compatibility, and other problems created by the supposed ‘free rider’ problem. In fact, human beings are trained to be social from childhood, and there exist mechanisms for inducing cooperative behaviour which lie outside the bounds of current economic theory. The behavioural research reveals that solutions to public goods problems can only be found if we drop *homo economicus* and consider observed social behaviour of human beings.

### 3.3 Moral values and cheating

According to Dawes and Thaler (1988, p.187), economic theory assumes that people “care nothing for outcomes to other players … and have no qualms about their failure to do the right thing”. Due to the assumptions of the standard economic model on rational and selfish human behaviour, cheating is a result of deliberate calculations of the expected gain, the probability of being caught, and the magnitude of punishment (Allingham and Sandmo, 1972; Becker, 1968), which can be regarded as an external cost-benefit analysis. However, psychologists show that internal values can play an important role in decisions due to internalisation of the norms and values of society (Campbell, 1964; Henrich et al., 2001).

A series of carefully designed experiments by Mazar et al. (2008) highlight the conflict between the economic view of morality and morality as a set of internalised values. Students were paid for correct answers to tests under different kinds of conditions which allowed for cheating. Some of the main results were as follows:

1. Even when students self-report their own scores, and there are no cross checks, only about 10% to 15% of the opportunity for cheating is utilised, whereas the economics model predicts 100% cheating.

2. Increasing the payoff from cheating actually decreases the amount of cheating, opposite to the economic theory predictions. The authors explain that small payoffs make cheating a small violation of internal morals which is tolerable. High payoffs
make it clear that cheating is a gross violation of internalised morals, which is done only by a few.

3 Reminders of an honour code, or of religious values, prior to testing, reduce cheating to zero. According to economic theory, such reminders should have no effect on behaviour.

4 Students are not aware of their own internalised moral values. When asked to predict outcomes of these experiments on cheating, they utilise the economic model, which yields wrong predictions. This means that students are not ‘rational’ in the economic sense: they cannot predict their own behaviour or that of their fellow students in moral dilemmas.

Because economic theory neglects morality, Nobel Laureates Arrow and Solow both went astray in their analysis of an anomaly pointed out by Titmuss (1970). Titmuss argued that monetary incentives would actually reduce blood donations, since it would undermine the sense of civic duty which leads donors to donate. Both Arrow (1972) and Solow (1971) thought otherwise; they argued that the two incentives would supplement each other. Frey and Oberholzer-Gee (1997) show that crowding-out holds in donation: monetary incentives interfere with the sense of civic duty, as argued by Titmuss.

Hausman and McPherson (1996) have given an excellent exposition of the problems which arise from ignoring the moral dimensions of economics. Many policy recommendations made by economists on apparently positive grounds incorporate hidden value judgements. For example, Zaman (2012a) argues that the apparently objective concept of ‘scarcity’ is actually based on several normative propositions. Mongin (2006) and Weston (1994) have argued that it is impossible to do economics on purely positive and factual basis. Rather than hide normative judgements, it is preferable to make them explicit in the analysis.

3.4 Social capital

The global financial crisis of 2007 to 2008 has led many prominent economists to the realisation that unrestrained greed does not lead to socially optimal outcomes. While unregulated markets cannot be trusted, governments have repeatedly failed to live up to the role of being wise, responsible, just and impartial regulators of the economy. Bowles and Gintis (2002) emphasised the role of the community as a suitable intermediate between the microcosm of the individual and the macrocosm of the government. Social capital refers to trust, concern, and a sense of responsibility towards the community, as well as a willingness to live by the norms of one’s community and to punish those who do not. Communities can solve certain problems in ways that neither governments nor markets can, because of two factors not taken into account in conventional economic theories:

1 Communities have access to inside information about benefits and costs, ability and willingness to pay, skills, talents and capabilities of the members. Both markets and governments lack access to this localised information.

2 Communities can create and enforce social norms using education in formal and informal ways, as well as approbation, ostracism, and other mechanisms not available to markets or to governments.
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The Grameen Bank succeeds in getting high repayment rates and returns in poor communities where transaction costs in terms of gathering information on creditworthiness and enforcing repayments would be too high for a commercial operation. Inside information and social pressure based on community is crucial to its success (Stiglitz, 1990). The Orangi Pilot Project succeeded in laying down sewer lines in a poor neighbourhood at minimal cost because of community involvement (Khan, 1998). The community knew which members could afford to pay, and could enforce an equitable distribution of the burden. It could also exploit knowledge of relevant engineering skills available with members of the community.

Frey and Oberholzer-Gee (1997) provide a startling example of how communities violate predictions of economic theory. Based on survey conducted in a Swiss community chosen as the site for depositing nuclear wastes, they found that about 50% of the citizens agreed to accept the site out of a sense of civic duty. With full awareness of the risks and hazards of these sites, they were prepared to sacrifice personal benefits for the sake of the good of the larger community. Offering large payments as compensation for placement of the site reduced the willingness to accept the site to 25%. The monetary incentive ‘crowds-out’ the social incentive. These findings are exactly the opposite of the predictions of economic theory.

Bowles and Gintis (2006) provide many more examples of successful operation of community-based initiatives and firms in situations where conventional theories predict failure based on incentive and informational problems. They point out that communities are fragile, and government policies can make or break communities. Since communities are invisible in the conventional economic theory framework, economic policy and governments as decision makers generally ignore them, resulting in destruction of tremendous amounts of valuable social capital.

4 Computational complexity

In the previous section, we showed that people are often concerned with payoffs to others, justice, equity, and also reciprocate both good and bad done to them. They have broader concerns than just individual selfish utility. In this section, we look at the ‘maximisation’ part of the utility maximisation model. Herbert Simon won the Nobel Prize for showing that people often do not maximise; instead they satisfice. In some cases, maximisation may fail because people lack the computational abilities to maximise. Instead they use rough and ready heuristics, which have systematic and predictable biases. These heuristics have their advantages, but they do not resemble the optimisation strategies we routinely assume in economics.

One well-established case where heuristics leads to systematic violations of utility maximisation is ‘preference reversals’. Consider two lotteries, one with a high payoff with low probability, and a second with a low payoff with high probability. If offered a choice between the two, people focus on probabilities and prefer the second. If asked to price the two, people focus on the payoffs and evaluate the first as more valuable (Tversky and Thaler, 1990). Part 3 of Gigerenzer and Todd (1999) explains the efficiency of this heuristic of ‘one reason’ decision making.

We give several examples of situations where people systematically fail to compute optimal strategies required to maximise utility. In this connection, it is of interest to note
the arguments of Koppl and Rosser (2002), showing that there are many situations where it is logically impossible to compute an optimal strategy.

4.1 The beauty contest

The object of this section is to present an example which makes the following points:

- economic theory assumes (unbounded) rationality
- people only make a small (bounded) number of calculations.
- people (not Economists) know that other people only make a small number of calculations, and make accurate predictions on this basis.
- therefore, in this context, intuition outperforms economic theory.

One example to demonstrate these phenomena is ‘The beauty contest’. The discussion and empirical evidence given below is based on Camerer (2003, p.16). The game is played with N players. Everyone writes down a number between 1 and 100. The one closest to 70% of the average wins. We now consider intuitively how we might play this game. Let us suppose all people write down numbers at random within the range specified. Then the average will be around 50, and 70% of this is 35. So if people make no strategic calculations at all, and just write down a number at random, a good choice to win the game would be 35.

Now, suppose all people make this calculation – this is first order strategic thinking. Then, the average number written down is 35. In this case, I can win by putting down 70% of 35, which is 24.5. Next, suppose all people carry out TWO rounds of strategic thinking and assume others also do so. Then they would realise that the average number written down would be around 24.5. In this case the winning strategy would be to write down 70% of 24.5 which is about 17.5. Economic theory predicts that everyone would do infinite rounds of reasoning, which converges to zero. So all people should write down ‘0’.

What actually happens when this game is played? On the average people do about two rounds of iteration. Smart players, who can anticipate that others will calculate around two rounds of iteration on the average, construct winning strategies based on this assumption. In some pools, a few ‘economists’ can be found who iterate to infinity and therefore predict ‘zero’, but they are a very small percentage and never win.

What are the practical consequences of this failure of perfect rationality to economic theory? Mankiw (1985) shows that small menu costs – changing prices at a restaurant requires reprinting the menu – can lead to large business cycles. Similarly, Akerlof and Yellen (1985) show that ‘near rationality’ – or approximate maximisation – can have large effects on markets. More than 800 publications which cite these papers show that approximate instead of exact maximisation could be responsible for a wide range of phenomenon, such as sticky wages, the Phillips curve, non-neutrality of money, efficiency wages, and many others. If objective functions to be maximised are nearly flat in a neighbourhood of a unique global maximum, then approximate maxima can range over a very wide set, leaving the approximate equilibria very indeterminate. Virtually no one would seriously argue that people always exactly maximise utilities, but it is widely believed that approximate maximisation would lead to approximately the same results as
exact maximisation. The literature cited above shows that this is not true; bounds on computational ability have serious consequences for economic theory.

4.2 The winner’s curse

It is more or less self-evident that people are not good at solving maximisation problems. We do not expect the average consumer to be able to maximise even the simplest utility functions subject to budget constraints (most people do not know calculus). This is similar to an argument that was made against rational expectations – the most informed agents are the econometricians armed with the data, applying the most sophisticated modelling techniques. When their forecasts can be systematically wrong, how can ordinary people do better? The goal of the previous section was to show that people systematically make a limited number of computations. The goal of this section is to show that people can systematically be wrong, and can fail to learn and incur large losses due to errors in computations even in the long run.

Winner’s Curse refers to a situation where the winning bid in an auction is systematically too high, so that the winner systematically makes losses. Such a phenomenon was reported in a number of real life auctions such as bidding for drilling rights to oil, publishing rights to books, professional baseball free agent contracts, and corporate takeover battles [Kagel and Roth, (1995), p.537]. In many of these situations, bidders are experienced and the amounts of money involved are very large, so economists have strongly contested claims of failure of rationality implied by a winner’s curse. If rationality fails to hold in these ideal situations, it can hardly be relied on elsewhere. Below we examine one simple case where winner’s curse can clearly be demonstrated, and is clearly due to failure of the (infinite) rationality assumption.

We consider a Vickery second price auction. There are j = 1, 2, ..., N bidders for an object which has value V(i) to the i\textsuperscript{th} bidder. Each bidder submits a sealed bid B(i) to the auctioneer. The highest bidder wins the object, but he must pay the second highest bid (SHB). The profit to the winning bidder is P = V(i) − SHB. What is the optimal bidding strategy in this situation? It can easily be proven that the optimal strategy is B(i) = V(i) − the bid should equal the value of the object to the i\textsuperscript{th} bidder. Experimental evidence shows that most players cannot calculate this simple optimal strategy. Figure 7.1 of Kagel and Roth (1995, p.509) shows that bids remain significantly above this optimal level, even after 30 rounds of play. Any bid higher than V(i) runs the risk of loss from winning in situations where B(i) > SHB > V(i) − thus experimental results confirm the existence of a winner’s curse. Kagel and Roth (1995) demonstrate a wide range of alternative configurations for auctions, many of which lead to winner’s curse.

After ruling out a number of explanations more compatible with the economist’s world view of rationality and maximisation, Kagel and Roth (1995) find the plausible explanation to be a mistaken calculation by the bidders. Bidders reason (wrongly) as follows. I do not have to pay what I bid. If I increase my bid B(i) over my private valuation V(i), my chances of winning the auction increase a little, but my cost (the second best bid) remains the same. The correct reasoning is as follows:

There are two cases: the second highest bid is below V(i): SHB < V(i). In that case B(i) = V(i) will win, and there is no gain from B(i) > V(i). In the second case, if SHB > V(i), then only then will a bid B(i) > SHB > V(i) win. However, in such a case winning will lead to loss since I will have to pay SHB > V(i) to win an object of value
So the only case in which my probability of winning increases is the case in which winning the auction leads to a loss (SHB > V(i) case). Therefore, I should never bid B(i) > V(i). In general, people have difficulty understanding and implementing that the bid B(i) should be made conditional on the assumption that it will be the winning bid. The value of the bid matters only if it is the winning bid. This conditioning can change the relevant distributions and calculations. Failure to condition in this way leads to the winners curse in many different situations (Kagel and Roth, 1995).

It is empirically shown that people fail to compute the optimal strategy, and do not learn it from experience, even in very simple situations, contrary to the assumptions of utility maximisation. Almost all over the place in economic theory, we start with the assumption of rational agents figuring out the maximising strategies in very complex environments. These are calculated to explain behaviour, make predictions and derive policy implications. Empirical evidence shows that this assumption is wrong, and leads to wrong policy prescriptions by economists in many different domains. One striking illustration is given by Gigerenzer and Edwards (2003). Doctors and patients make decisions on diagnosis, medical tests, and prescriptions on the basis of statistical information. Professionals with an average of 14 years of experience routinely made wrong inferences and decisions when given data about prevalence of disease, sensitivity and specificity of tests in their own speciality. When the same data is presented in an easier to use and more directly accessible format, these errors are dramatically reduced. Contrary to assumptions of economists, experience and high stakes do not serve to induce rationality.

4.3 Forward looking behaviour

Many economic theories are based on the assumption that people look forward and maximise utilities over their lifetimes. Short-sighted behaviour which may prove harmful in the long run is ruled out: wisdom prevails over temptations. Does consumer behaviour correspond to this assumption, which is the basis of many economic theories such as the life cycle hypothesis? There is strong empirical evidence against it, some of which we document in this section.

4.3.1 The small worlds of Savage

In setting up the framework of decision theory, Savage (1954) recognised that all decisions are interlinked, but to consider these linkages would make the complexity of the problem unmanageable. He therefore made the ‘small world’ assumption which isolates a particular decision problem and assumes that it can be studied without reference to forward and backward linkages. Barberis and Thaler (2003) present empirical evidence favouring ‘narrow framing’, or solving problems in isolation, and how it can impact adversely on real world consumer decisions.

Camerer (2003, p.165) provides striking evidence against multiperiod maximisation hypothesis in the context of a two stage ultimatum game. In the first stage, Proposer offers Responder a share of a $20 pie. If the offer is accepted, the game ends. If it is rejected, neither party gets anything, and a second game is played where the role of the Proposer and Responder is reversed, and the size of the pie shrinks to $8. In such multi-stage games, the phenomenon of ‘disadvantageous counter-offers’ is frequently observed. This means that an initial offer of ($15, $5) is rejected by the responder. In the
The empirical evidence against neoclassical utility theory

second stage, responder offers an equal share ($4, $4). Instead of offering $4, which gives him only $4, is he not better off accepting the $5 offered on the first round? Many explanations of this phenomenon which are compatible with multi-stage maximisation are examined and rejected. Examining eye-movements and mouse cursor moves of the players shows that many people do not examine the payoffs in the second stage of the game and those who do, do not pay much attention to them. Optimal strategies work by backwards induction and require taking careful account of each stage, starting from the last. In fact, players look carefully only at the current game and not too much at later stages. Each decision appears to be made in isolation, without taking into account the multi-stage character of the game.

Many economic theories invoke the life cycle hypothesis, according to which agents plan their current decision taking into consideration their lifetime prospects of earnings and consumption patterns. If the forward looking hypothesis can be rejected in simple environments like this, how can we rely on it for complex lifetime utility maximisation calculations? Shefrin and Thaler (1988) show the differences which result from taking into account the quirks of human behaviour, which deviates from the globally rational maximising model.

4.3.2 Incorrect probability forecasts

The future is always uncertain. Forward looking rational behaviour requires that people should make roughly accurate assessments of the probabilities of different types of possible events. There is substantial evidence that people make systematically distorted judgements about probabilities (Kahneman and Tversky, 1979), and that these impact on economic affairs in a serious ways.

Camerer and Kunreuther (1989) list several cases with important policy implications in situations where low probability events are involved. People suffer from a systematic ‘it cannot happen to me’ bias. They smoke cigarettes, do not wear seatbelts, under-insure for flood risk, and undertake many actions which are not rational on the basis of correct risk calculations about the probability of future event. In the wake of 9/11, there was a massive switch to driving instead of airplanes, when the risks of accidents from driving were substantially higher than those from flying (Sivak and Flannagan, 2003). In such situations, where people systematically make mistakes in computation of probabilities, there are several non-market mechanisms which can be used to improve welfare (Thaler and Sunstein, 2003, 2008).

Barberis and Thaler (2003) list several areas where probability judgements are systematically wrong, along with their effects on stock market behaviour. For example, there is a systematic ‘overconfidence’ bias. Events that people consider as certain occur with about 80% probability, while events that people consider ‘impossible’ occur with 20% probability. As a typical real world illustration, Jean Drapeau, mayor of Montréal, said that “The Games could no more have a deficit than a man could have a baby!” shortly before the 1976 Montreal Summer Olympics ran a $2 billion deficit (Griffin and Brenner, 2004).

People judge probabilities by their recent experience or by salient events, which are often not representative. They do not differentiate between large samples which give reliable evidence and small samples which do not. Irrelevant details can lead people to judge the probability of an intersection of events $A \cap B$ to be more likely than $A$, which is of course impossible. Schoemaker (2004, p.277) writes that people often do not look at
relevant frequency information, and fail to differentiate between probabilities of 1 in 1,000 and 1 in 10,000 even though one is ten times the other.

The image of a rational planner accurately calculating the probabilities and consequences of all possible outcomes cannot be maintained in face of overwhelming empirical evidence to the contrary. Dropping this model would facilitate welfare-improving policy interventions which provide training to people to make correct decisions under risk.

4.3.3 Temporal inconsistency

There are many situations where a sequence of decisions made by a single consumer is not consistent with the idea that all of the decisions maximise a common objective function, as assumed by economic theory. There are many cases of conflicts – if one decision is optimal, then the others cannot be and vice versa. This again shows that the standard multi-period model of consumer behaviour which maximises a sum of utilities is wrong. We give two different examples of such conflicts; many more are documented in the literature.

Attitudes to risk depend on outcomes: In a sequence of optimising decisions, outcomes of past decisions are irrelevant. In sequences of risky choices, Thaler and Johnson (1990) observe the following empirical regularities:

1. risk aversion after prior losses
2. risk seeking after prior gains
3. changes in risk-taking behaviour when one outcome (certain or risky) can allow decision makers to ‘break even’.

This behaviour, where decision making changes according to outcomes, is not consistent with the standard multi-stage utility maximisation model.

Figure 2 Hyperbolic discount function

Read (2004) provides empirical evidence that people do not use exponential discounting to evaluate future prospects. The best fit to survey data appears to be some form of hyperbolic discounting. Unlike exponential discounting, hyperbolic discounting has the unpleasant property of time inconsistency, demonstrated in Figure 2. Viewed at time 0,
the larger-later reward ($x_2$) is preferable. However, later on, for a brief period of time, the smaller-sooner reward ($x_1$) will be preferred. This comes under the heading of self-control problems, which have been extensively studied in behavioural economics. Anticipating this problem, the consumer might take steps to ensure that he will not be able to choose $x_1$ so that the temptation might be bypassed. The classic case is that of Ulysses, who has himself bound to a mast to avoid being tempted by the sirens. There is a conflict of interest between self-now and self-later which does not arise in economic models. More discussion on this topic is given in Section 6.4 about savings behaviour.

The DSGE model is one example, where lifetime utility is maximised by a representative agent in a very complex, dynamic environment with uncertainty. Testifying before a congressional committee investigating the failure of economic theories to predict the global financial crisis, Nobel Laureate Robert Solow (2010, p.2) stated that “a thoughtful person, faced with the thought that economic policy was being pursued on this basis (DSGE models), might reasonably wonder what planet he or she is on.” Solow, and others, have argued that use of models where agents make rational forecasts is a major reason why economists failed to foresee the global financial crisis. Had they foreseen it, prevention could have occurred. Thus, defective theories about human rationality and foresight may be held responsible for major economic crises.

5 Market prices, preferences and values

The supply and demand model for determination of prices is the bedrock of modern economic theory. It is considered both a great achievement of the marginalist school and as firmly established empirically. Strong ideological commitment to supply and demand is demonstrated in the hostile responses to empirical evidence against it produced by Card. This ideological commitment prevents a rational examination of the evidence. The mainstream literature almost completely ignores a major controversy on the foundations of the theory, which shows that supply and demand must interact, except under very stringent conditions on the market structures (Saglam and Zaman, 2012).

Supporting evidence for the standard supply and demand theory of price determination is obtained by showing that certain predictions of the theory conform to observations. For example, increasing prices lead to decrease in sales. However, many alternative theories also lead to the same predictions. Ariely et al. (2003) proffer the hypothesis of ‘coherent arbitrariness’ which shows that consumers make arbitrary choices, while maintaining coherence with previous choices. Such a behaviour pattern appears to conform observationally to utility maximisation while actually being radically different. Our goal in this section is to demonstrate that how much consumers are willing to pay for goods can be very arbitrary. It also depends on many factors not account for in conventional microeconomic theory. Incorporating these factors would require substantial revisions of standard textbook accounts.

5.1 The endowment effect

Consumer decisions are influenced by status-quo biases. Status-quo bias arises when an individual’s decision is affected by the status-quo itself. One indicator of such a bias is the willingness to accept-willingness to pay (WTA-WTP) disparity, one of the most
controversial anomalies in choice theory. There are many goods for which the price people will accept to sell the good in their possession is very high, but the price they will pay to purchase the good when they do not own it is very low. The existence of even a single large WTA-WTP is regarded as pathological (Arrow, 1993; Diamond, 1996), since that would lead to unreasonably large income effects in the study of utility maximisation (Mandler, 2004). Thus, the traditional analysis of indifference curves has no reference to current endowments. However, in many experiments, subjects require a relatively large amount of money to move from status-quo, contrary to utility theory.

Kahneman et al. (1990) test WTA-WTP disparity and whether this disparity vanishes when subjects learn in market settings. For this purpose, consumption objects (e.g., coffee mugs) are randomly given to half the subjects in an experiment and then markets for the mugs are then created. According to conventional theory, it is expected that supply and demand curves should be intersecting at their common median and half of the goods provided should change hands. However, people with mugs demand about twice as much to give up their mugs as others are willing to pay to get one. The possession of the mug creates an ‘endowment effect’ and owners are unwilling to part with them.

Carmon and Ariely (2000) find similar disparities on their experiments based on four studies examining buying- and selling-price estimates of tickets for college basketball games. Ariely (2008) reports that the disparity between WTP of a student who wants a ticket, and WTA of a student who holds a ticket was up to 15 times. This implies that if a good is evaluated as a loss when it is given up, and as a gain when it is acquired, loss aversion and endowment effects induce higher values for owners than for potential buyers. These phenomena cannot be explained by standard utility maximisation models.

Another striking example of the WTA-WTP disparity arises in the context of risk of death (or value of life) calculation. In order to accept even small increases in the risk of death, people ask for huge amounts of money. However, they are willing to pay very little in order to decrease risks already present in their existing circumstances. This disparity, documented in many sources, such as Martín-Fernández et al. (2010), has significant implications for economic policy involving Value of Life calculations.

These results clearly invalidate the Coase theorem, which argues that the allocation of resources is independent of the assignment of property rights when costless trades are possible. The experimental results remain the same when there are costless trade opportunities, meaning the Coase theorem predicts more trade than actually occurs. An implication of this asymmetry is that there is much less trading than economic theory predicts, since status quo is preferred by all. The Coase theorem implicitly assumes no disparity between WTA and WTP, and is the basis for many types of economic policy discussions which are based on erroneous assumptions about human behaviour and psychology.

5.2 Value ambiguity

People value objects along dimensions which cannot be priced in markets. Gifts can carry sentimental value which makes them more precious than the identical good in the market; these conflicts with utility theory which would price identical goods equally. Furthermore, this non-marketable value can be instantly acquired, as the experiment with mugs described in the previous section shows. Thaler (1994, p.183) states that “Preferences … may exhibit value ambiguity, that is, consumers may not be able to
assign a unique monetary value to an object.” We discuss several cases of value ambiguity and how it impacts on economic theory.

5.2.1 Some things are priceless

People who struggle to achieve the potential for excellence within the hearts of all human beings learn that life is infinitely precious. They would refuse to play Russian roulette for all the gold in the world. They are surprised at the attempts to measure the value of life, since this is not commensurate with worldly goods and wealth. They would refuse to sell their wives and children at any price. They would be baffled at calculations of costs and benefits of raising children, since these relationships provide meaning to and shape the purpose of life, while gold is meaningless in terms of these larger dimensions. Some economists, on the other hand, have made all of these calculations, publishing papers on many topics normally considered outside the bounds of market. The fundamental economic paradigm reduces all things to a common scale. The pleasure derived from children is a utility like all other consumption utilities and can therefore be measured against other utilities like the pleasure derived from driving a car. Once this commensurability (which is one of axioms of utility theory) is assumed, then such horrifying calculations become possible. It then becomes possible to assign a dollar value to a million lives destroyed, and consider the trade-off between this loss and the gain in terms of profits from oil.

The idea that human lives cannot be purchased for money seems to be in direct conflict with the existence of a labour market, where such transactions are routine. Actual human behaviour keeps breaking out of the bounds to which economic theory confines it. Human beings routinely refuse to behave as commodities which can be bought and sold on the market like any other. This refusal has a major impact on real world economics. We illustrate that “Man does not live by bread alone”, in a separate section which develops this critique; see also Section 6.3 below.

5.2.2 Values are generated by arbitrary choices

Economic theory assumes that we have built in preferences which allow us to make choices among different types of consumer goods. There is strong evidence to show that this is not true. When faced with a choice, people make decisions using arbitrary clues to guide them. Once the choice is made, a preference is created which is adhered to for the sake of consistency. This phenomenon has been labelled ‘coherent arbitrariness’ by Ariely et al. (2003). We provide three types of evidence to show that people create preference when confronted with choices, rather than the opposite, which is assumed by economic theory. This is also in conformity the ‘process’ aspect of consumer decisions, discussed later in Section 7, which describes Business School models of consumer behaviour.

The phenomenon of anchoring demonstrates how values attached to objects are arbitrary, instead of being related to built-in preferences which are exogenous. Ariely (2008, pp.28–29) describes an experiment in which students are asked to write down the last two digits of their social security numbers prior to putting down prices at which they would be willing to buy a list of items. Remarkably, there was a strong correlation between the numbers they write and the prices they offer. The student with high last digits in the range 80–99 offered between 200% to 300% higher prices than the students
with low last digits in the range 00-19. Writing down these arbitrary numbers served as an anchor which unconsciously guided decisions regarding the value of the objects. Furthermore, the students were not aware of this process of anchoring, and did not feel that their writing down these numbers had any influence on the prices they chose.

Savvy marketing experts are aware of the phenomenon of ‘anchoring’ and use it to generate favourable prices for new products. Ariely (2008) lists several striking examples:

- After failure of initial efforts to sell black pearls, marketers displayed them on Fifth Avenue at an outrageously high price, in the company of similarly expensive jewelry. This had the desired effect of creating a high price anchor for the product, and many sales were made at these prices.
- In a classroom exercise, Ariely offered a session of poetry reading to his students. Half the class was asked how much they would pay to attend the session, while the other half was asked how much they would require as payment in order to attend. All members of the first half offered to pay a positive amount, while all members of the second half asked for some positive payment to attend. Based entirely on the arbitrary anchor provided by the question, students evaluated the poetry reading as a ‘good’ or as a ‘bad’ (experience).

These experiments demonstrate that the economists’ model of price setting via supply and demand is seriously in error. Goods do not come with demand curves attached, and demands are generated by contextual references and subject to a very high degree of arbitrariness.

5.2.3 Comparative evaluations

Instead of coming to an evaluation of objects with built in preferences, people evaluate choices they are presented with and create a preference on the basis of contextual clues. One important contextual clue is comparison. If $Y$ clearly dominates $Z$ then $Y$ will be preferred to $Z$. Ariely (2008) documents many experiments of where three choices are offered to prospective consumers: $X$, $Y$, and $Z$. Choice $Z$ is dominated by $Y$. For example, $Y$ is a one year subscription to both print and online versions of *The Economist* for $125, and $Z$ is a one year subscription to only the print version at the same price of $125. In such situations, the presence of $Z$ should have no effect on the option chosen – the customer should eliminate it from consideration and make the choice as if only $X$ and $Y$ are present. Experiments and empirical evidence presented by Ariely show that this is not the case. Because consumers do not have well defined preferences, they focus on the fact that $Y$ is superior to $Z$. No similar information is available about $X$. When $Z$ is present, $Y$ is chosen significantly more often than when only $X$ and $Y$ are present.

Another confirmation and explanation of this phenomenon is given by Schoemaker (2004, pp.352–353). $X$ is a lottery which pays $15 with probability 65%. $Y$ is a lottery which pays $35 with probability 30%. $X$ and $Y$ are not easily comparable. $Z$ is a lottery which pays $14 with probability 65%, which is clearly dominated by $X$. Subjects were divided randomly into two pools, labelled ‘conflict’ and ‘dominance’. Those in the conflict condition were offered a choice between $X$ and $Y$. Those in the dominance condition were offered the (easy) choice between $X$ and $Z$. Both groups were given the option of purchasing a third option $Z$, different from $X$ and $Y$, as an additional choice.
Since the value of X is the same in both conditions, standard economic theory predicts that the conflict group will be LESS ($\leq$) interested in purchasing an outside option – the value of the third option must be superior to both X and Y to be worth purchasing. The dominance group should be MORE ($\geq$) interested since the value of the third option need only be superior to X. Empirical data shows that the opposite is true. The dominance group buys options significantly less often, because they are satisfied that they have made the right choice in X which dominates. The conflict group cannot decide which of X and Y is better and searches for a superior alternative, contrary to predictions of economic theory.

5.3 The just price

It is commonly believed that the ‘just price’ is a medieval doctrine with no relevance to contemporary economics. Modern economists believe and teach that any price to which both parties agree is automatically ‘just’ and hence any theory of the just price is vacuous. Kahneman et al. (1986a, 1986b) summarise the large amount of contradictory empirical evidence:

1. Substantial consensus exists about what are fair and unfair prices. This means that there are well defined social norms which define the just price.

2. These social norms are internalised; that is, people care about being fair to others and being treated fairly.

3. People act to punish unjust actions, and approve of and reward fair actions, even at cost to themselves.

Taken together, these principles mean that the concept of the just price will influence transactions in the economic domain. Thaler (1994, part 4) provides strong empirical evidence, briefly discussed below. The first principle has been established by means of surveys demonstrating consensus about various principles of fair pricing. We will list some examples illustrating the second and third below.

Most people would pay three to four times for a cold drink at a restaurant, but would not pay the same price at a simple shack. This is true even if they are taking the drinks to a picnic elsewhere, so that the origin does not matter. The notion of ‘fair’ price has a strong effect on consumer decisions. In many cases, firms refrain from charging profit maximising prices because it would be unjust, and they fear consumers will retaliate. For instance, at popular games and matches, it is known in advance that tickets will sell out, and will be resold at high prices by scalpers. Why do not stadium owners price the tickets higher to prevent this from happening and capture the excess profits? Because fairness matters even in market-based transactions.

In opposition to the dominant trend, several economists have invoked a notion of fairness in their interpretations of regulation (Zajac, 1978, 1985) and of the market phenomena of price and wage stickiness (Hirschman, 1970; Arrow, 1973; Akerlof, 1979, 1982; Solow, 1980). Okun (1981) offered a notably detailed account of the demands of customers and employees for fair treatment and of the role of perceived unfairness in triggering a search for alternative suppliers. Okun made a strong case that many customer markets resemble labour markets more than they do pure auction models. Like labour markets, customer markets sometimes fail to clear, an observation that Okun explained.
by the hostility of customers to price increases that are not justified by increased costs. The opposition to price rationing as a response to a shortage is easily documented.

A number of economic phenomena can be predicted on the assumption that the rules of fairness have some influence on the behaviour of firms (Kahneman et al., 1986a). The rules of fairness tend to induce stickiness in wages and asymmetric price rigidities. They also favour a much greater use of temporary discounts than of temporary surcharges in price adjustments. Where costs for a category of goods are similar, opposition to price rationing may lead to sellouts for the most desirable items (e.g., the main game on the football calendar or the Christmas week in a ski resort). The sellers are aware that consumers will think it is unfair to charge high market clearing prices and will take revenge (Kahneman et al., 1986a). Standard economic models cannot explain these phenomena.

5.4 Mental accounting

People separate categories of income and treat them differently. Money received as a gift, or as an unexpected bonus, might be spent on a luxury item. The same amount of money received from working overtime would not be treated in the same way. Policy implications are easy to find. Thaler (1980, 1985) records several examples of consumer behaviour which are irrational for a utility maximiser, but make sense according to a cognitive model developed to explain this. Our first example is from Thaler (1994, p.25):

Mr. and Mrs. L and Mr. and Mrs. H went on a fishing trip in the Northwest and caught some salmon. They packed the fish and sent them home on an airline, but the fish were lost in transit. They received $300 from the airline. The couples took the money, went out to dinner and spent $225. They had never spent that much at a restaurant before.

Several similar anecdotes illustrate that people mentally separate categories of income and use them for different purposes. This is not a quirk but an established regularity of human behaviour, which violates the single budget constraint and utility maximisation model.14

Rebates are widely used as an incentive to sell consumer goods. Thaler analyses a case where significant rebates were offered on automobile purchases. Both the giving and the taking of rebates incur significant transaction costs which could be avoided by simply reducing the price. There is no way to explain the use and popularity of rebates other than by positing that consumers keep the purchase cost and rebate gain in separate mental accounts. Thaler (1994, p.38) gives an in-depth discussion of why conventional accounts fail to such observations.

6 Savings behaviour

The basic consumer decision is to allocate some portion of his income to consumption; the remainder is automatically saved. Savings behaviour has not received attention within consumer theory, because it is a residual, a consequence of the optimising consumption decision. There are several assumptions which justify this neglect:

1 Competitive markets equalise the average rate of return to savings in all forms – that is, for savings accounts, shares, bonds, etc.
2. Random fluctuations in savings can be smoothed out through nearly frictionless intertemporal borrowing and lending at market rates.

3. Maximisation means setting savings to zero in the long run. Alternatively, there is a rationally planned bequest, based on utility attached to the coming generations.

If these assumptions are approximately valid, then many important real world decisions related to savings do not matter. In fact, as we will show, all of these assumptions are false, and all three impact heavily on consumption decisions.

6.1 The equity premium puzzle

There are many reasons why financial markets offer the most favourable environment for testing theories of rational behaviour. The commodities traded (stocks) have clear, precisely defined and observable market values. They are traded in a market with large numbers of buyers and sellers, and with substantial amount of information available to all. Transaction costs are minimal, and there are no externalities. Suggestions that stock prices could be systematically wrong due to irrational investor behaviour were ignored by mainstream economists until the recent financial made it apparent to all.

Many aspects of stock market behaviour are very difficult to explain under the assumption that all investors are rational. One of the most prominent of these anomalies is called the equity premium puzzle (Mehra and Prescott, 1985, 2003). Over the entire 20th century – from 1900 to 2000 – in every 20 year period, stocks earned a lot more than bonds. On the average, $1,000 invested in bonds would be worth $1350, while stocks would more than triple to $3,370 over a 20 year period [Dimson et al., (2002), pp.45–48]. Despite this huge and virtually risk-free differential in 20 year returns, long-term savings of consumers were mostly held in low earning and safe instruments. Why? That is the equity premium puzzle. Note that since returns to savings differ so drastically, consumption patterns will also heavily depend on the choice of savings instruments, an issue completely ignored by conventional economic theory accounts of the consumption function.

Barberis and Thaler (2003) offer two behavioural explanations for this puzzle. One is that consumers do ‘narrow framing’ – they take their investment decisions one year at a time. For one year intervals, stocks are a lot more risky than bonds – it is only in the long run that these risks are reduced by averaging the good and bad years. The second explanation is ‘ambiguity aversion’ – stock market returns are not just risky, they are uncertain. The difference between risk and uncertainty can be summarised as the difference between roulette, where all outcomes have known probabilities, and a horse race, where probabilities of which horse will win cannot be calculated. Experimental results show that consumers stay away from uncertainty while they tolerate risk. A third possibility is that memories of the Great Depression led people to stay away from stock markets more than objectively justifiable. This would represent the operation of the ‘availability’ heuristic, which systematically distorts probability judgements (Keren and Teigen, 2004).

There is a large number of alternatives explanations, and no clear resolution of the puzzle is currently available. The important point to note here is that according to conventional economic methodology an explanation is acceptable if a model with agents acting rationally replicated observed phenomena. Conformity of actual behaviour with
theoretical models is neither expected nor asked for. Thus, behavioural explanations which conflict with utility maximisation are not considered acceptable. This makes it impossible to find the correct explanations of many observable events, as is now widely realised following the recent financial crisis.

6.2 Intertemporal choice

A large number of theories of development focus on the choice between consumption and savings — consumption today versus consumption tomorrow. If savings can be increased, the rate of investment would increase leading to growth and higher levels of consumption tomorrow. So how people choose to save for the future is of crucial importance to many standard models of growth like Harrod-Domar and Solow. Foreign aid is justified by arguing that savings rates are too low for rapid growth, and so the gap between desired investment levels and existing savings can be filled by foreign aid. The gap between the economic theory of how people choose to save, and the empirical data on this same choice does not receive any attention in conventional growth theory textbooks.

Do people save in a way which approximately corresponds to the assumptions of economic theory? Rooij et al. (2011) summarise evidence that the majority of workers are ignorant about the type of pension plans they have and what kind of retirement income they can expect. Furthermore, this ignorance impacts heavily on their future financial prospects; thus, it is not the case that people magically make the optimal savings decisions without doing any financial planning. In fact, the literature reviewed shows that good financial planning leads to wealth building. This means that our standard growth models do not accurately reflect consumer decisions about savings for the majority of the workforce.

According to standard growth theory models currently in use in economic theory, savings behaviour is a crucial determinant of growth. Actual observed savings behaviour does not match what is assumed in economic theory. In particular, it is very far from maximising lifetime utility, as surveys of large numbers of people who failed to plan adequately for retirement show. Observations provide the following insights and policy implications which are outside the bounds of conventional economic theory.

- **Conflict between current and future self:** The economic model assumes that my interests are identical to those of my future self, and hence we can maximise a common utility function. Empirical research reveals that the opposite is true; Caplin (2003) states that “conflicts of interest are close to universal” and provides references documenting this finding. By saving today, I can enjoy a much better life during retirement. However, most people lack the self-control to curb or reduce today’s consumption in order to save for the future. Forced savings devices which lock money into accounts which cannot be accessed are very popular because they resolve the problem of self-control. When corporations introduce pension plans, the amount of discretionary personal saving should be roughly offset by the increased saving created by the pension plan. Contrary to this prediction of economic theory, Munnell (1976) shows that personal saving is not offset. Similarly, Rooij et al. (2011) provide evidence on the impact of financial planning on wealth accumulation. This variable is not present in economic theory because of the assumptions of
The empirical evidence against neoclassical utility theory

identity (instead of conflict) of interest, as well as the ability to foresee and rationally plan for the future, none of which holds in real life.

- Intertemporal borrowing: This idea, assumed in economic theory is so far from reality that it is hardly worth discussing. If we can accurately forecast future income streams, then we can smooth consumption by costlessly borrowing from surplus periods, and spending more in low income periods. The borrowing and lending should be done at prevailing market interest rates. In reality, people cannot frictionlessly borrow and lend at market rates. Contrast these idealisations with the current realities of millions who lost their homes in the recent mortgage crisis; these consumers obviously did not forecast their income streams and expense streams accurately. The reality is that personal discount rates differ dramatically from market rates, and lead to behaviour which is strange by economic theory standards. People do not have enough information and self-control for the type of consumption smoothing assumed by conventional economic models. There is a huge literature documenting these facts; convenient entry points to the literature which provide further references are Ameriks et al. (2003) and Read (2004).

6.3 Intergenerational justice

The empirical evidence shows that we do not even treat our own future self very fairly or justly. By failing to exercise, diet, and save, we deprive our future self of health and money so that we can enjoy our present self more. The problem is far greater when it comes to treating future generations equitably and justly.

Adam Smith used the concept of ‘enlightened’ self-interest, and not the narrowly defined selfishness currently used to model human behaviour by economists. Enlightened self-interest looks beyond current local concerns and notes that being kind to the poor would create a caring society and also provides insurance for myself, should I need it. It would similarly encourage self-control in situations where acting on selfish impulses would bring temporary pleasure but cause damage to society – we all know that society can bite back. Many of the problems with conventional economic theories discussed earlier could be resolved by shifting the paradigm of consumer behaviour from selfishness to enlightened self-interest. However, the problem of intergenerational justice cannot be solved in this way. Our actions will impact on the fates of the unborn generations, even to the extent of preventing them from coming into existence. Distant generations are not sufficiently concrete to be visualised and evoke sympathy; they are not present to negotiate with us, and no market exists for trading with them. Only certain conceptions of morality built into human beings can be invoked to deal with them justly and fairly.

A recent volume of readings on intergenerational equity and sustainability by Roemer and Suzumura (2007) illustrates very well the inadequacy of economic theory in dealing with real world issues. Of the 17 articles in the volume, Takayama (2007) is the only one who deals with a real world issue, namely the problem of funding retirement plans for the aging population of Japan. Among the many practical issues, we focus on three points which are made in this article:

1 Mistakes in demographical calculations and levels of retirement benefits have led to a huge burden of taxes/transfers from the working class to the retired population.
There is substantial consensus about what are fair transfer payments from the young to the old, and consensus that the current burdens are not equitable. Thus, there is a social problem created by older policies devised without sufficient information.

The problem with implementing solutions lies in political issues about how to share the burden of financing the retirement of the old among different classes of workers, with differing amounts of power.

The other 16 papers deal with the mathematical calculations that an omniscient planner would make to ensure that the twin goals of equity and efficiency can be achieved within an overlapping generation model. These mathematical models start out by assuming that none of these three real world problems exist.

- The omniscient planner knows exactly the population growth patterns and the incomes to be earned from now to eternity. In the real world, it is the lack of this knowledge which has created the problem currently being faced in Japan.

- How to define intergenerational justice is one of the major issues which receive substantial importance in Roemer and Suzumara (2007). Different mathematical formulations and arguments are presented and evaluated. None of the authors considers what are the prevailing social norms for fairness and intergenerational equity in the society under discussion. In a different context, behavioural economists Kahneman et al. (1986a) used survey data to find out what people consider fair. These internalised rules play a very important role in proposals made for equitable retirements and their political feasibility. Economic theory proceeds as if such social norms do not exist, and seeks to derive them mathematically from first principles and arguments about ethics, which makes it irrelevant to real world societies.

- There is no omniscient planner in the real world. So any practical plan for intergenerational justice must take into account the political environment. How is the burden of financing retirement shared among different classes, with differing amount of political clout? Political institutions are critical in determining which plans are and are not politically feasible. Economists have nothing to say about these issues.

It is clear that the utility maximisation framework is not well equipped to deal with problems of intergenerational justice. It is widely recognised and agreed that fairness to future generations may require us to restrain ourselves from maximising current utility. We must rely on social norms regarding our obligations to posterity, as well as our older generations who are no longer able to work and earn. These social norms have changed rapidly in the last 50 years and the burden of supporting the old has shifted from families to governments. This has led to proposals to legally force children to care for their elders; see Martin (2010) and BBC News Asia-Pacific (2011). However, Kirby (2010) suggests that laws cannot replace social norms, and it is essential to strengthen family institutions in order to achieve changes of this kind. Current toolkits available to economists are not equipped to even formulate this problem, let alone study it. Change is on the way as Bicchieri (2006) and others have emphasised the effect of social norms on behaviour; and the necessity of taking norms into account in economic theory (Zaman, 2012a). However, taking this into account necessarily requires going beyond the utility maximisation framework.
7 Views from the business school

If anybody knows how consumers behave, it should be the folks in the business schools. Their livelihoods depend on getting it right. It is interesting that there are large number of texts with ‘consumer behaviour/theory’ in their titles which are taught in business schools. Their content has virtually no overlap with what is taught about the same subject in economics departments. Furthermore, students in one department often know nothing about what is being taught in the other. In this section, we go outside discipline boundaries to take a peek at what the folks in business schools have to say about consumer behaviour.

Schiffman and Kanuk (2004, p.550) describe four models of consumer behaviour, starting with ‘an economic view’. They write that the economic model is ‘often rejected as too idealistic and simplistic’; none of the three assumptions required for rational behaviour is valid:

1. consumers have knowledge of the range of options available
2. they are able to rank the alternatives
3. they are able to identify the best one.

They further state that recent research rejects the economic assumption that customers are out to get the best value for their money which is the basis of the model of utility maximisation under a budget constraint. For example, consumers haggle for prices for social reasons of ‘achievement, affiliation, and dominance’ instead of obtaining good value for money.

After flatly rejecting the economic model, Schiffman and Kanuk (2004) go on to formulate more realistic models of how consumers make decisions. A second model is the ‘passive’ model, where the consumer decisions are entirely shaped by advertising and marketers. After rejecting this as well, the textbook develops a complex model of consumer behaviour based on a cognitive/emotional framework, where decision making is broken down into three separate components. Taking these three dimensions of consumer decision making into account would substantially improve and enrich the microeconomic models used in economics, as we discuss below.

7.1 The input – Knowledge of the environment

The ‘input’ is the background environment in which the consumer makes choices. This complex environment replaces the idea that consumers have full knowledge of all available alternatives. The input is shaped by marketers’ efforts, as well as social and cultural influences, none of which play a role in economic theory.

Taking this aspect into account would involve making a deeper study of the background assumptions which are used by consumers in making decisions. Advertising is a major determinant of consumer behaviour. Social norms determined by what is and is not approved or admired in the relevant community is another major determinant. These interact to determine the framework and background knowledge which the consumer has in evaluating the range of products on the market and their attributes. Crucial issues not sufficiently explored are: the extent to which advertising provides information, and the extent to which it shapes and moulds tastes. If advertising works by creating desires, and
making unnecessary object appear essential and attractive, then it creates disutility for large portions of the population who feel deprived because they cannot have the object advertised. Any realistic theory of consumer behaviour must take this into account.

7.2  The process

Given knowledge of the alternatives and their attributes, how do consumers select a best one?

The ‘process’ is used by consumers to arrive at a decision. This involves gathering information about what products are available (searching for knowledge); defining and recognising one's needs (the utility function), and then evaluating and selecting a particular product (the maximisation). All three parts require effort by the consumer, and are mediated by social influences as well as complex motivations which drive consumption decisions. Experience is gained during this process which becomes the basis of future decisions.

A large literature exists on the heuristics that people use to make decisions. These differ dramatically from the process envisaged in microeconomic textbooks. Our homo economicus knows the entire range of alternatives available, and can clearly rank the choices and pick the best one. In the real world, information processing, evaluation of alternatives, and making decisions, all involve complexities not envisioned in economics. The heuristic literature provides guidance on human behaviour in one of these dimensions. How this impacts on economic theory is discussed by Gigerenzer (2000).

7.3  The output

Evaluation of the results of decision making is done, and stored in memory for use in later decision making.

The ‘output’ is the end result of this decision making activity. Some product is selected, and then evaluated. But the evaluation, or the utility derived from the product, is not just the consumption of the product, but the entire experience involved in the purchase and consumption, contrary to economic theory. Ariely (2008) gives the example of how Starbucks sells coffee at five times the price of comparables because it markets the consumption experience and not just the coffee.

Consumers evaluate the experience and record successes and failures, which are used as inputs in subsequent decisions. After sequences of successes, the consumers encode the methodology into routines which self-activate. This is of great benefit in reducing decision making costs, but it leads to habit formation, and a failure to respond adequately to changes in environments. There are many illustrations of how these types of issues impact on economies, instead of being inessential quirks of consumer behaviour. Haucap and Heimeshoff (2011) find that consumers overestimate the savings resulting from their tariff choices in telecommunications. Barth and Graf (2011) provide experimental evidence how consumers stick to calling plans (tariffs) of mobile phone networks that are not always cost-minimising.

The point here is that realistic models of consumer decision making differ in very significant ways from the economic ones. Of course, at some level, this is well known to everyone. The economists regard these as inessential complexities which distract from seeing the big picture. Stripping these away allows us to get to the heart of the matter: a simplified model which captures the essence of consumer behaviour. In fact, as we have
demonstrated through a wide range of examples, the simplifications of the economic models throw out the baby with the bath water.

8 The Polanyi critique: land, labour, money

In his landmark study *The Great Transformation*, Polanyi (1944) offers a deep critique of modern economic theory. This is based on the history of the emergence of economics as a discipline, and how this was affected by particular historical circumstances in England. It describes the great transformation that took place as markets, which were originally peripheral to society, became central institutions. It is not possible for us to treat these deep and complex issues in the present essay. We only take up one aspect of the Polanyi critique which impacts on consumer behaviour in market societies.

Polanyi defines a market society as one where an ‘unregulated market’ is central to the functioning of the society. A good way to understand the concept of a market society is to contrast it with its polar opposite: a self-sufficient community, or a collection of nearly self-sufficient communities. Within such communities, production, acquisition, and distribution of goods could be organised in ways radically different from those of market societies. Trading across communities would be a peripheral function, not a central one, as in market societies.

Polanyi makes the following three relevant points about market societies:

1. Because of the global dominance of market societies, we have come to think of them as natural and inevitable ways of organising economic affairs; it is hard for us to imagine alternatives. History teaches the opposite: other than our present civilisation, none of the past cultures/societies have been market societies.

2. Market societies organise economies in ways which violently conflict with natural social tendencies of human beings. They come into being by replacing and suppressing (rather than adding to) other modes of organising economic affairs. Markets come to dominate society rather than the other way around.

3. Market societies promote greed, indifference to poor and other characteristics universally condemned. It is the triumph of markets over society which answers Hirschman’s question (1977): “How did commercial banking, and similar money-making pursuits become honorable at some point in the modern age after having stood condemned or despised as greed, love of lucre, and avarice for centuries past?”

Polanyi says that labour, land, money are not standard commodities like others traded in markets. A market society must force them to become marketable commodities, but they resist. There is a tension between the requirements of market society, and certain natural tendencies of social behaviour. This tension leads to failure of economic theory to operate in these dimensions. We now document these failures.

8.1 The labour market

It is now a widely accepted social norm that human beings are not commodities and cannot be bought or sold in markets. Our children cannot be treated as our private property, even though there is substantial logical justification to allow this. Even more,
we cannot even sell our own self voluntarily to another. The logic of the labour market is in conflict with this ethic. If I can sell 8 hours of my time, I can also sell 12 or even 24 hours of my time. This is a clear illustration of how market-based values conflict with social values as Polanyi argues. This conflict is clearly illustrated in many labour market phenomena which do not square with economic theories, as we show below.

8.1.1 Excess supply of labour can persist

Large and persistent unemployment during the Great Depression demonstrated that the forces of supply and demand fail to achieve equilibrium in the labour market. Keynesian economics was developed to show that government must intervene to bring about full employment, since market forces would not do so, contrary to classical economic theory. The problem Keynes struggled with was: why do not wages fall to eliminate unemployment, as predicted by the theory of supply and demand?

Among competing explanations, one with strong empirical support is the following. People refuse to be treated as marketable commodities; commodities are not insulted by price cuts and do not feel honoured if the price rises. On the other hand, wage cuts are seen as hostile actions, and people lower their efforts causing more damage to the firms than the savings in wages. A wage offer above equilibrium is considered a gift, and workers return the favour by putting in more effort. For both reasons, labour markets do not work according to the standard supply and demand theory.

A fascinating series of carefully controlled experiments described by Fehr and Gächter (2000) show that reciprocity provides a far better explanation of observed behaviour than conventional economic theory. Experimental employers offer higher than equilibrium wages, and experimental employees respond by putting in additional effort, even though it is costly to do so, and they would incur no loss from not doing so. The lessons are striking: humans do not obey the laws of supply and demand, and modelling them as *homo economicus* who obey the laws prevents us from understanding major economic events like the Great Depression or the recent crisis.

8.1.2 Social norms govern labour market

Several studies have established the following anomaly: labourers with identical skills earn significantly different wages in different industries. According to standard economic theory, wages should equalise across industries. More labourers would go to higher paying industries, reducing wages, bringing about equilibrium. Strong empirical support is available for the proposition that industries which are more profitable are expected to share their profits with the labourers. Unlike marketable commodities, human beings have conceptions of fairness, and try to achieve goals in accordance with these conceptions.

Another anomaly reported by Card and Krueger (1995) is that higher minimum wage requirement does not create unemployment, in conflict with the dicta of labour theory. Why? One possibility is the efficiency wage explanation, which reverses the traditional causality between marginal productivity of labour and wages. In an interview with Clement (2006), Card stated that the simple supply and demand analysis does not hold in labour markets.
8.1.3 Man does not live by bread alone

Economists believe that we can get people to work more and/or harder by paying more. Experimental evidence shows that this is not true. Over a broad range of circumstances, money is not a strong motivational factor for labour. People respond much more strongly to being appreciated, trusted, challenged, as we would expect from human beings. In many cases non-monetary incentives perform better than monetary incentives in improving performance (Ariely, 2008).

This experimental evidence also undermines the principal agent literature. Explicit contracts which monitor employee effort and punish shirking and reward additional effort are inefficient and costly relative to the reciprocity mechanism. The solutions offered by principal agent theory are radically different from those used by practical managers who argue “that workers have so many opportunities to take advantage of employers that it is not wise to depend on coercion and financial incentives alone as motivators ... Employers believe that other motivators are necessary, which are best thought of as having to do with generosity” [Bewley, (1995), p.252].

As the empirical literature shows, the wisdom of economic theory in form of the principal agent theory designed to solve problems of motivation, turns out to be folly in the field of actual behaviour. Carefully designed contracts which monitor employee performance reward merit, and punish slacking, fail to have the desired effect because employees do not like the implied lack of trust. The idea of trusting employees to repay generosity and concern by loyalty and effort seems foolish from the point of view of economic theory. However, wise employers use precisely this strategy, and experiments confirm its superiority (see Fehr and Gächter, 2000). Gneezy et al. (2011) collect empirical evidences that monetary incentives may not work to find solutions to principle-agent problems for desired outcomes, but crowd-out or promote just the opposite behaviours. They find that extrinsic incentives (monetary) may conflict with other intrinsic motivations such as being ‘good’ or ‘trustworthy’ or ‘useful’. Titmuss (1970) for example, argued that paying people to donate blood would result in a reduction of people who wish to donate. Mellström and Johaneson (2008) support this argument in a field study. The theory of economic incentives should take the conflicts between external benefits and internal values into account, as empirical evidence show that these values can be more important for humans. An incentive to work harder may signal the agent that the principal does not believe that he has the necessary intrinsic motivation to his best.

8.2 The market for land

The phrase ‘Mother Earth’ captures the natural relations between humans and the land and water on the Earth. We respect nature and tread lightly on the planet, and it nurtures us and provides us with all the resources necessary for human life. Polanyi (1944, p.73) predicted accurately that treating natural resources as a marketable commodity would lead to disaster: “rivers polluted, military safety jeopardized, the power to produce food and raw materials destroyed.” Land, as a metaphor for the resources provided by the planet Earth, has many unique characteristics which make it unsuitable for treatment as a standard marketable commodity.
Land and natural resources are not manufactured. We cannot re-create exhaustible resources. Extraction costs are not the same as production costs (which may be infinite).

Natural resources have varying degrees of renewability or exhaustibility; they are not necessarily used up in the process of consumption.

In a functioning market economy, prices reflect values, and utility maximisation leads to efficiency. However, for exhaustible resources like oil, the extraction cost does not reflect the production cost – these resources cannot be produced once exhausted. This discrepancy means that the market prices are too low, and utility maximisation would lead to an overuse of the resources from the point of view of society.

Use of the wrong prices for exhaustible and renewable resources also leads to an illusion of growth. Rapid growth in the 20th century has been purchased at the cost of extinct species, unique environments like coral reefs and rainforests which are destroyed and can never be re-created at any price. Schoemaker (2004), Douthwaite (1999) argued that once these costs are taken into account, growth has actually been negative. The ruthless exploitation of Earth for current profits is encouraged by standard economic theory which prizes growth as a means to utility maximisation, which cannot be sustained in the long run. What will our posterity inherit after our destruction of rain forests and the ozone layer, pollution of rivers and atmosphere, building up of greenhouse gases, depletion of coal and oil reserves, destruction of myriad species of plants and animals? ‘Sustainable development’ and environmental economics have emerged to answer these questions which are not easily handled by conventional economic theory.

Land is not used up by consumption; this leads to the concept of stewardship of the land for future generations. The environment is automatically a public good, which benefits (or harms) everyone. Renewable resources require sharing rules. None of these is well suited to being treated as private consumer good. This illustrates a central theme of Polanyi that a market society creates markets in goods which are better handled via social norms. Kogl (2005) provides historical details of how the notion of private property emerged in England, and how it replaced social norms governing the use of the ‘commons’. This resulted in drastic reductions of consumption streams of the poor. Land and natural resources are consumed by all, but have characteristics radically different from manufactured goods. Taking these characteristics into account would require substantial revisions in the microeconomic framework of consumer theory.

8.3 Money: marketing trust

The third artificial commodity which market societies create is money. Polanyi (1944) argues that commodity monies like gold and silver cannot satisfy the needs of a market economy. Market economies continuously produce surplus and expand, and a fixed or narrow gold base would require deflation in prices, which is intolerable in a market economy. Hence, the innovation of a paper currency comes into existence, which is flexible enough to expand with needs. Market expansion puts stress on the relation between the paper and the real assets (gold) it represents. Unless paper is issued freely in response to needs of the market, without necessarily having sufficient backing, deflation will again result. This is the inexorable logic behind the eventual emergence of floating unbacked paper currencies currently in universal use. However, an unbacked paper currency serves none of the four traditional functions of money:
1 Unit of account: The worth of the unit (paper money) itself is indeterminate, not being linked to any real asset.

2 Medium of exchange: This holds true by social convention, or by government fiat. An individual market transaction is a highly unequal exchange of a piece of paper for a real good. This makes sense only because society has agreed to accept the paper universally.

3 Store of value. Again paper itself does not carry value, and cannot store it. The value is stored in an invisible place – the level of trust placed by the society in the issuer of the currency.

4 Standard of deferred payments. If one could rely on stable value of money, this would hold. But over a hundred monetary crises in the last century testify otherwise.

To understand the nature of money, we must unlearn ways of thinking imposed upon us by the needs of a market society. In social exchange, when someone takes something from another, this generates an implicit or explicit claim. Trust is the basis of social exchange, and people can rely on to fulfil commitments on the basis of social norms. Paper currency is an attempt to market this trust, and make it anonymous. Thus, the paper is a generalised obligation of the society as a whole (or that of the government). This is the fundamental point of difference between heterodox theories of money and conventional ones. Many such theories are surveyed in Arestis and Sawyer (2006). After reviewing the difficulties of formal economic theories in explaining money’s existence, and assigning it an essential role, Ingham (1996) suggests that these can be resolved by conceptualising it as a ‘structure of social relations’.

Conventional economic models of consumers, firms, and financial markets are defective because they do not have a realistic theory of money. Consumers theoretically decide on their purchases by maximising utility subject to a budget constraint. This budget is given in nominal terms, and the value of goods is converted to a nominal value by multiplying by prices. Thus, the budget constraint states that the (money) value of all the goods purchased must be less than or equal to the value of money income or wealth in my possession. How do we learn what is the value of money? According to conventional theory, money is just a unit of account, with no intrinsic value. Its real value is settled by dividing by a price index. However, the prices are determined partly by the demand functions which come out of this utility maximisation. Problems created by this circular logic for basic supply and demand theory of equilibrium price determination are highlighted in Saglam and Zaman (2012).

In general, the value of commodities is determined by consumer preferences. However, money itself does not generate utility according to conventional models, which do not take into account the utility that misers derive from the hoarding of gold. Thus, money is considered purely as a unit of account which has no real effects on the economy. In fact the value of money is crucially determined by trust, a variable that has only recently started receiving attention in economics. The level of trust can vary without any change in any of the variables considered relevant in conventional economic theory. The role of trust and its relation to monetary crises has been highlighted by Eichengreen (2004), who discusses two mechanisms relevant to crises. Government guarantees of bank deposits can prevent runs on the banks, since runs are cause by loss of trust. At the
same time, government guarantees can cause a crisis if institutions take unnecessary risks, since they are secure from the possibility of loss.

A proper understanding of money requires moving back from the theory of markets to social theories about how trust is created and maintained in society. A currency is just what it says on the face of the note: ‘a promise to pay’. Promises are not marketable commodities like others. Analysis of how much promises are worth requires studying real human beings and societies and not *homo economicus*.

## 9 Happiness and welfare

Ultimately, the subject of economics is (or ought to be) about how material resources can be used for the benefit of human beings. So the question of what constitutes welfare is (or ought to be) central to the study of economics. For nearly a century, a methodology based on the flawed philosophy of logical positivism has side-stepped these questions by assuming that:

1. People know what is good for their own welfare, and this is the only valid criteria – we have no external ways to assess welfare.
2. People make choices in accordance with this knowledge.

Both of these assumptions are very easy to refute. Divorces reflect errors of judgement which inflict heavy personal and social costs, showing that one of the two decisions was taken without adequate knowledge. Interviews of people near life’s end in hospices show widespread consensus that careers and materials were wrongly prized over social relations (Ware, 2011). Thus, people acted in ways which conflicted with their long-term welfare. Some empirical evidence against the economist’s views of welfare is collected below.

### 9.1 Bounded self-control

Thaler and Sunstein (2008) give examples of how people are vulnerable to temptation in their daily lives. One person may decide to exercise in the morning instead of watching a game on afternoon. However, in many cases, when the game starts, he may decide to watch the game. Preferences can be inconsistent in a dynamic time span. People may prefer A to B initially, but later they may choose B to A. Such examples give solid evidence against the theoretical propositions of positive economics which regard people as always making the best choices. Similar problems arise in daily decisions on health (smoking vs. non-smoking, exercising vs. watching TV, and dieting), on financial welfare (savings vs. spending) and career (working vs. leisure), that the decisions are not for the best alternatives.

Ariely (2008) presents an experiment to understand how the performances of students are affected when they are allowed to make their decisions. In this experiment, students in three different classes are asked to complete three projects in one term. The students in the first class were dictated three deadlines for three projects. The second
class were not given deadlines, and allowed to finish at the end of semester. However, they could turn the papers in early, but there was no benefit to doing so. In a way, they were given complete flexibility and freedom of choice. The students in the third class were allowed to fix deadlines for each project. However, once the deadlines were set by students, they were not allowed to change, and late papers would be penalised at the rate 1% off the grade for each day. The rational behaviour for a student in this class would be to set a deadline at the end of the semester, since there was no benefit of handing the projects early, but punishment for handing them out after the fixed deadline.

These experiment shows that self-control is not easy and people do not make choices that maximise their utilities, (grades in this case). The objective evaluation of the papers shows that the first class got the best grades; the second class with complete flexibility without any deadlines were the least successful. One interesting point of this study is that although the third class had the opportunity to choose the latest deadline, end of semester, most of them did not, and scheduled their deadlines earlier. This behaviour shows that people are willing to self-impose meaningful (i.e., costly) deadlines to overcome the problems of procrastination and they understand that inconsistent preferences can occur as time evolves. Another point is that, given the opportunity to evaluate their future behaviour, people are too optimistic or over-confident about the future, which leads to higher risk taking behaviour as seen in this example. Thaler and Sunstein (2008) show numerous examples (drug addiction, saving, spending, education) on self-control problems. Due to the psychological facts that people can be short-sighted, or may have inertia and have unrealistic optimism, combined with the heuristics explained above, the choices of people can result in sub-optimal welfare levels.

9.2 The Easterlin Paradox

In Easterlin’s (1974) seminal paper, he finds that within any one country, in cross sectional studies, there was a strong correlation between income and happiness. One would easily conclude that money can buy happiness. However, looking at a cross section of countries, one comes to a different conclusion. Figure 3 is taken from the Easterlin article.

For 10 of the 14 countries surveyed, the happiness ranking is about the same, even though the income per capita changes by a factor of 30 from $140 to $2,000. There are a few outliers, but these also confirm this finding. Cuba and USA have similar levels of happiness even though the GNP per capita is six times greater in the USA. The Dominican Republic is extremely unhappy relative to India despite having twice as much GNP per capita.

The finding of strong correlation between income and happiness disappears when comparisons are made across countries. Similarly, there is no correlation between happiness and income in the long run within a single country. For example, between 1962 and 1996, the real income of Japan quadrupled, but there was no change in the level of happiness. Similarly, Easterlin (2001) cites several studies which show that, despite tremendous increases in GNP per capita, the level of happiness in European and Latin American has remained virtually constant over decades.
The startling implication of these empirical findings is that the stress being placed on economic growth is entirely misplaced. Growth has no clear relation to happiness. The profession of economics, as well as policy makers all over the world are directly threatened by these findings, which suggest radical changes in how to organise economic affairs. There have been three counterarguments made in the literature, which we now discuss:

1. The first and most common one is to ignore these findings. Economists have objective measures of progress. People have refrigerators, cars, washing machines, and a tremendous number of consumer goods that they did not have before. Life expectancies have increased. We cannot ignore all this objective evidence just because people say that they do not feel happier. Perhaps the surveys are not conducted properly; perhaps feelings vary with moods and are too unstable and unreliable as an instrument to measure welfare. Easterlin et al. (2010) has given a detailed examination of these critiques and shown that surveys give robust and reliable measures of happiness. To ignore these is equivalent to saying that economists as outsiders are better able to measure life satisfaction using objective criteria than the individuals themselves can feel and articulate – an extremely paternalistic attitude.

2. The second objection comes from failure to understand the nature of Easterlin’s paradox, which comes under the heading of ‘fallacy of composition’. It is true, and can be easily proven using a wide variety of evidence, that individuals become happier with more money. However, what is true for each individual is not true for the group as a whole. If we double the wealth of every single person in the society, then happiness levels will not change in the long run, because happiness is governed by relative income, and not absolute income [Easterlin, (1973), p.4; Easterlin, (1974), pp.113–116; Clark et al., 2008].
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3 The third objection is based on short-term studies which find a correlation between income and happiness. Just like there is a strong correlation between the two in cross section studies, a good correlation exists in short time periods. As income increases, everybody becomes happier in the short run, because it takes a while to realise that average income has increased. Easterlin et al. (2010) says that over a period of ten years or more, these income changes become incorporated into our benchmarks for comparison and correlations between income and happiness decline to zero. He shows how some studies came to the wrong conclusion because they used short run data.

The implicit proposition of utility theory that the sole route to happiness is maximisation of consumption contradicts with the empirical evidence: this proposition is true only in the short run. This short run validity creates a dangerous illusion of long run validity; understanding this has dramatic policy implications. If happiness is determined by relative comparisons, then one can achieve greater happiness by reducing inequalities, and also by reducing the standards of living for everyone. This will lower the benchmark and make it easier for everyone on the planet to be happy in comparison with this benchmark.

9.3 Other routes to happiness

If utility maximisation is not the route to happiness, then what is? The seminal paper of Easterlin (1974) launched the field of ‘Happiness studies’ which has been engaged in researching this question over the past several decades. Many important insights have emerged which have an important bearing on consumer theory. We summarise some of the key findings below.

9.3.1 The utility of work

Standard economic theory treats work as having disutility, while leisure provides utility. As discussed earlier in the Polanyi critique, human lives are valuable, and when we invest a lot of time in an activity (like work) it acquires depth and meaning in our lives. There is a huge variation in types of work and the match between labourers and work, which means that wide ranging generalisations are not possible.

Summarising numerous studies, Fagin and Little (1984) list seven major functions of work. Of these, we mention a few relevant to our current concerns:

1 Work as a source of identity – the work people do classifies them in terms of class status and influence and established hierarchies and groupings from which people demand a sense of security, recognition, belonging and understanding. Work identity may be transferred to children or other family members but may be lost on retirement or unemployment.

2 Work as a source of relationships outside the nuclear family. Work allows emotional outlets in family relationships as well as enriching the scope of interpersonal relationships which in turn benefits family life.

3 Work as an opportunity to develop skills and creativity – although work can satisfy sensual and aggressive instincts, as well as allay fears or anxieties, it can allow for the mastery, control or altering of the environment. There is considerable satisfaction
in the integrating and coordinating of intellectual and motor functions which lead, over time, to the development of skills.

4 Work as a sense of purpose – at best work prevents classic signs of alienation such as feelings of powerlessness, self-estrangement, isolation and meaninglessness; while at best work ensures interdependence with others which helps in the development and achieving of life goals.

5 Work is a source of income and control – work means putting oneself in the hands of employers during working hours so long as it provides sufficient money to assure oneself of independence and free choice of leisure and future outside the work place.

There is strong evidence that both work and leisure provide us utility, although there is substantial variation in the levels provided. Given that motives of work are diverse, as listed above, the neoclassical theory of the labour market fails to explain labour-leisure choice. If work can provide utility, we can increase levels of human happiness by providing better quality jobs, in ways that go outside dimensions considered in economic theory. In addition, failing to consider these aspects lead economists to underestimate the effects of unemployment. Thus, the recommendation to allow an industry to collapse because it is no longer competitive would not take into account the full cost of the transitional unemployment created.

9.3.2 Action, not consumption, leads to happiness

One of the most critical findings of several decades of research on happiness has been termed the ‘Hedonic Treadmill’ (Brickman and Campbell, 1971). One quickly gets accustomed to a given level of consumption – now called a ‘set point’. Then happiness results only from further increases beyond the setpoint, meaning that increases in consumption only raise happiness temporarily. In the long run, such increases can be harmful because the increased setpoint means one must work harder and consume more to achieve the same level of happiness that was previously available at a lower level.

Since consumption only leads to short-term and temporary increases in happiness, with negative long run consequences from habituation, researchers have focussed on what can increase long run happiness levels. Sheldon and Lyubomirsky (2005) document three studies showing that sustained increases in the level of happiness can be brought about by “practicing certain virtues, such as gratitude, forgiveness, and thoughtful self-reflection.” This is opposed to changed circumstances, including increased consumption levels, which result in short-term and temporary increases. In a later study, Boehm and Lyubomirsky (2010) documents several controlled experiments showing that “committing acts of kindness, expressing gratitude or optimism, and savoring joyful life events, represent the most promising route to sustaining enhanced happiness.” Still other studies shows what everyone knows, but economists have neglected – ‘Life goals matter to happiness’ is the title of one such study by Headey (2008).

Exactly the opposite of the economist’s model, real world studies show that generosity and other virtuous actions create sustained happiness in the long run. Furthermore, human behaviour is not genetically determined but depends a lot on received education. Mitchell et al. (2008) show the influence of college majors on attitudes towards careers and family. Marvell and Ames (1981) and Ariely (2008) report that in public good experiments, economics majors are prone to free-riding significantly
more than others. By suggesting that selfishness is natural and rational, students are encouraged to develop these traits.

9.4 Bounded wisdom

Since Simon’s (1957) formulation of ‘bounded rationality’ showed the limits of human capacity to reason, many additional failings of real human beings in comparison with homo economicus have been recorded. These can be categorised under ‘bounded selfishness’ and ‘bounded willpower’ – showing that people act for motives other than selfishness, and also that they cannot always implement plans which they know would be good for them. In this section, we argue that people often do not know what is good for them.

Economists assume, without discussion, that everyone automatically knows what is best for them. But there is no reflection on the enormity of this assumption: how do people know what is best for them? It is universally agreed that children do not start out knowing what is good for them, and parents must train them to distinguish good from evil. Is it true that all parents automatically know what is right and wrong, and that their training is always effective? Since this is obviously not so, with a massive amount of corroborative evidence, it follows immediately that some/many children never learn what is best for them. Therefore, the choices they make do not reflect the choices they would make if they were wiser.

Statistics show that about 93% of road accidents are due to driver error, showing that people make fatal mistakes quite frequently. This is as clear a demonstration of non-maximising choices as any. Studies show that most drivers are overconfident – more than 90% feel they are better than average. Experience actually feeds this overconfidence – a close escape is attributed to superior driving skill rather than luck.

Thaler and Sunstein (2008) have argued for the ‘nudge theory’ of libertarian paternalism – steering a course between the Scylla of paternalism, and the Charybdis of complete non-interference required by libertarianism. People often make choices without giving much thought to what is best; therefore, it is possible to push them in the right direction in a non-interfering way. For example, a current debate raging in the UK is about organ donations. Many people die for want of a suitable donor. People who are dying must fill out a card indicating that they want their organs donated. Thaler and Sunstein (2008) suggest that we change the default option. It is assumed that everybody wants their organs donated unless they say otherwise. According to maximisation theories, this would make no difference. People would automatically choose the option that they prefer. However, this is not the case in reality. There is strong empirical evidence that change of the default option would lead to substantially greater organs being available. Few people would go to the trouble of explicitly forbidding transplants, just as currently few people go to the trouble of explicitly allowing transplants.

Thaler and Sunstein (2008) show that financial planning for retirement leads to substantially better outcomes. Credit card counselling shows that people get deep into debt without realising it, and face severe consequences as a result. Patients near life’s end in hospices show uniform regrets at choosing careers over families (Ware, 2011).

All of this demonstrates that planning and maximising does not come naturally to people, as assumed by economists. Providing information about important choices in life, and especially providing information about experiences of those who have made these
choices and their long-term consequences can be extremely helpful to make good decisions.

Life goals are chosen, and then all things are evaluated with respect to these. Studies show that different types of goals are different with respect to their influence on welfare and happiness. How much consumption is done, and how it relates to life goals is crucial to building a correct theory of consumer behaviour. Clearly, consumer theory for the Amish community will be different from that for Manhattan. Ignoring this, as conventional microeconomics does, is to ignore the most important factors relating to consumer behaviour.

10 Conclusions

In this paper, we criticised utility maximisation theory in many grounds. The defenders of this theory argue that, even based on false assumptions, utility theory predicts human behaviour well. However, the empirical evidences prove the opposite. Richardson et al. (2012) note that these false assumptions deflect the attention from the real behaviours which motivate individuals and society, and has a negative impact on economics as a discipline. For example, the success of micro credit mechanisms, and particularly the Grameen Bank, is mostly explained by its capabilities to solve collective action problems by trust, and by building social capital in small communities (Dowla, 2006). Social capital and trust are two major factors on social progress that have been neglected in economic theory, as *homo economicus* trusts no one, and does not socialise.

There is no doubt that Aristotle was among the brightest men who have walked this planet; and even though more 2400 years old, his books continue to be studied and discussed at leading universities today. Yet, he stated that “heavier stones fall faster than lighter ones”, and that “women have fewer teeth then men” without bothering to verify these theories by observations. Why, when this would have been so easy? The early methodology of science was axiomatic and deductive, borrowed from geometry. Starting from self-evident propositions, logic was used to deduce sound conclusions. Because they were logically valid, there was no need to check them empirically – we do not try to check whether or not two parallels to a straight line can be drawn through a given point. Observed regularities in nature were suspect because they could be accidental; so empirical observation was not a good path to knowledge. Giving primacy to observations and induction is the basis of the scientific method which revolutionised the world of knowledge. It is worth noting that the Greeks were right about induction – it cannot lead to certain knowledge, as has been forcefully stated by Popper (1959). But it turns out that this uncertainty is the price we have to pay for advances in knowledge. The axiomatic deductive framework is suitable for mathematics, but not well adapted to real world science. As Kuhn (1962) has argued in *The Structure of Scientific Revolutions*, spectacular scientific advances of the past few centuries can be traced to attempts to explain observations in conflict with widely accepted theories.

The methodology of modern economics is firmly set in the mould described by Robbins (1932) “The propositions of economic theory, like all scientific theory, are obviously deductions from a series of postulates. And the chief of these postulates are all assumptions involving in some way simple and indisputable facts of experience...” This is a precise description of the pre-scientific methodology of Greeks. Commitment to this methodology led to serious errors by very intelligent people. Today’s economists do not
bother to check whether their theories are actually aligned with real world behaviour. All conventional economic textbooks use the axiomatic method to derive theoretical results which are never cross-checked against observations of the real world. The straitjacket of a wrong, pre-scientific, methodology can lead even the best minds to theories grossly in conflict with observations. Most of the current efforts at reform do not go far enough in challenging methodology. They seek to achieve conformity with observations while retaining existing economic methodology. We feel is that this is not sufficient. Radical methodological changes are required for progress. The world of economics awaits its Copernicus.

References


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Ware, B. (2011) The Top Five Regrets of the Dying: A Life Transformed by the Dearly Departing, Balboa Press, Bloomington, IN.


Notes

1 Soman (2004, p.135) writes that initial research has firmly established failure of utility maximisation, and attention has now shifted to developing theories and description of actual behaviour.

2 Gintis et al. (2003, p.157) find that “in ultimatum games proposers usually offer a large amount to respondents (the mode value is generally 50% of the total) and respondents frequently reject offers below 30%”.

3 ‘Paradigm shift’ in the conceptualisation and perception of altruism is documented in Piliavin and Charng’s (1990) survey of the growing empirical literature. They show that ‘true altruism’ exists and it is part of human nature. More information on the biological and social explanations of altruism can be found in Wilson (1975), Hoffman (1981), Dovidio (1984), Krebs (1987), Mook (1991), and Oliner and Oliner (1988). Economic implications of ‘undeniable’ existence of altruistic behaviour are discussed in Margolis (1982) and Rose-Ackerman (1997).

4 For a detailed discussion see Batson (1992, 2011).

5 The analogue to ‘methodological individualism’ in social sciences, does not hold in physical sciences. In chemistry for instance, the behaviour of organic compounds cannot be understood in terms of the properties of atoms and molecules.

6 See, for example, Clayton and Davies (2006).

7 We also need to assume that Temptation + Sucker < 2High. If this inequality is violated, then the social optimum becomes one where two players take turns betraying each other. We do not discuss this case to avoid distracting from the main theme.

8 See Camerer (2003, pp.45–46), and Kagel and Roth (1995) for summary of results and further references.

9 Gigerenzer and Todd (1999) is a convenient reference for heuristics used by people to make decisions.
In an interview with Clement (2006), Card stated that: “I’ve subsequently stayed away from the minimum wage literature for a number of reasons. First, it cost me a lot of friends. People that I had known for many years, for instance, some of the ones I met at my first job at the University of Chicago, became very angry or disappointed. They thought that in publishing our work we were being traitors to the cause of economics as a whole.”

Russian roulette is a potentially lethal game of chance in which participants place a single round in a revolver, spin the cylinder, place the muzzle against their head and pull the trigger.

When asked in a 1996 interview by CBS reporter Leslie Stahl if the killing of half a million Iraqi children was worth the US policy objectives, US Ambassador to the UN, Madeleine Albright said yes, the price was worth it.

See Bicchieri and Muldoon (2011) for a discussion on the internalisation of norms.

Note that this phenomenon is not explained by differentiating between permanent and transient income, since the two types of income are used in different ways.

See Friedman’s (1953, 1957) famous justification for the “as-if” methodology.

See Zaman and Abbas (2005) for evidence and further references.

The details of actual experiments which confirm the broad picture painted above are too complex to describe here. The interested reader is referred to Fehr and Gächter (2000), and Camerer et al. (2004) for a guide to the literature.