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Unrealistic Optimism: Still a Neglected Trait

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Abstract
Purpose Unrealistic optimism is all around us, and it is a well-documented psychological phenomenon. The purpose of this study is to take a critical approach of the main research done in the area and to analyze the important impact that it has in many economic and managerial contexts. We also analyze current trends in terms of entrepreneurship by policy makers.
Findings We show that most people are prone to groundless optimism when faced with economic and managerial decisions and yet economists, managers and policy makers still ignore it or fail to understand its characteristics.
Implications Since the policy and welfare implications of such a (neglected) widespread phenomenon are vast, we challenge the current public policy trend of extending lending to business start-ups, on the grounds that it may create a real road to ruin.
Originality/value A careful analysis of the psychology of over-optimism from an economics and managerial perspective is original and extremely valuable in a world where uncertainty dominates.
Methodology/approach Critical review of the existing literature on unrealistic optimism and its implications for economic and managerial decision making.

Keywords Over-optimism · Determinants of over-optimism · Entrepreneurial optimism · Public policy · Lending

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Standard neo-classical economic theory assumes that individuals are fully rational, even though as far back as 1776 Adam Smith (1937) was convinced that most people display the trait which modern psychologists refer to with the pleonasm "unrealistic optimism":

> The overweening conceit which the greater part of men have of their abilities is an ancient evil remarked by the philosophers and moralists of all ages….The chance of gain is by every man more or less overvalued and the chance of loss by most men undervalued and by scarce any man valued more than it is worth.
> —Adam Smith (1776).

In this article, we challenge the neo-classical economic approach, since much psychological evidence shows that subjects do not have rational expectations, but rather that they are unrealistically optimistic: "According to popular belief, people tend to think that they are invulnerable. They expect others to be victims of misfortune, not themselves" (Weinstein, 1980, p. 806). This hopeful outlook on life implies "a judgement error" which Weinstein called *unrealistic optimism* or *optimistic bias*.[1]

As yet, little research exists on whether optimistic biases affect economic/managerial decisions and on whether institutions evolve to exploit this, even though we can observe many real-world situations which suggest that unrealistic optimism is at work. Here are a few examples:

- Risk averse (or risk neutral) individuals can be shown to prefer self-employment over paid employment, not because they are more able than other individuals but

[1] *Unique invulnerability* (Perloff 1983) is another term applied to describe similar phenomena.

because they mistakenly believe that they will beat the odds (i.e., had they forecast the future correctly, they would have preferred paid-employment; Coelho 2004).

- The failure rates of business start-ups are notoriously high all over the world. One of the most frequently quoted studies of business survival by (Dun and Bradstreet 1967) reports that only a third of new businesses survive more than four years.[2] A natural explanation for this is that budding entrepreneurs facing the uncertainty of starting a business believe unrealistically that they will beat the odds.
- The popularity of performance-based contracts, such as stock options, especially in dot-coms, may well be beyond what standard principal-agent theory would predict. Unrealistic optimism leads people to attribute the wrong probabilities to events (to overestimate the probabilities of positive events and underestimate the probabilities of negative events), and even when risk is high it might lead them to prefer riskier contracts—not because they are risk prone but because they think they can beat the odds.
- "Crops with larger yield variation are more likely to be farmed with cash leases, where farmers pay a fixed fee to lease the land and bear all the crop risk themselves" (Camerer and Lovallo 1999, p. 315). These farmers may simply believe that they can beat the odds.

The little research that does exist in economics and management which takes on board the fact that people are prone to optimistic illusions is, for the most part, rather imprecise:

1. Researchers frequently adopt different definitions of over-confidence and over-optimism (which frequently leads to misunderstandings) or, more importantly, misuse psychological theory and findings when they apply it to economic or management issues.
2. The methodologies usually used to measure optimistic biases are not conclusive. For example, finding that the majority of the population believes that the probability of them having a heart attack is below that of others is not sufficient to draw conclusions on over-optimism. Additionally, when testing for the existence of optimistic illusions, many researchers simply ask subjects directly about their forecast of the likelihood of a specific event occurring to them (i.e., they ask for an explicit forecast) and so there is no real incentive for subjects to reveal their true beliefs. Subjects' desire to impress the researcher, or to report what they believe the researcher expects from them, may influence the findings.
3. It is usually assumed that if a group of people shows optimistic illusions in one specific situation, or about a specific issue, they will be over-optimistic about all sorts of real-life situations. This does not seem to be the case.

As we will see, optimistic biases are robust and widespread. Pessimistic biases are rare. Furthermore, these positive illusions create distortions which may be the most important source of efficiency loss in the economic system, and as yet their policy implications have been ignored. Consider the role of government in facilitating credit to start-up companies and incentivising entrepreneurship in order to foster economic growth and employment. What if in doing so it is (unknowingly) acting against entrepreneurs' best financial interests, and generating large welfare losses? Substantial evidence suggests this may well be the case: as we will see, entrepreneurial settings tend to attract and foster unrealistic optimism, and these public policy measures may end up backing irrational beliefs.

Given the implications of optimistic illusions on economics and managerial issues, a clarification of their meaning, how they are measured and what determines them is important. Since the policy implications may not be negligible, a clear understanding of when the optimistic biases are more likely to occur is also called for. In this article, we tackle these issues and bring to bear the bulk of psychological evidence that shows that most people are prone to groundless optimism when facing management and economic decisions/situations.

We begin (in the section "The psychology of unrealistic optimism") by analysing the meaning of unrealistic optimism and how it is measured, providing evidence that unrealistic optimism is a robust and widespread psychological phenomenon, and, finally, identifying the determinants of unrealistic optimism to enable us to predict when it is more likely to occur. In the section "Entrepreneurial optimism," we argue that entrepreneurial settings are bound to attract over-optimists and foster unrealistic optimism. We provide recent empirical evidence to support this. Finally, in the section "Implications for government policy and the extension of lending to new businesses," we discuss some of the implications of unrealistic optimism for public policy and challenge the current entrepreneurial policy trends towards financing business start-ups.

The Psychology of Unrealistic Optimism

The Meaning of Unrealistic Optimism

There is widespread evidence of self-serving biases in social comparison. Most people believe they are more

[2] See Cooper et al. (1988) for a brief literature review on business survival rates.

capable than average and that their chances of a better future are higher than those of others. However, these self-serving biases do not only emerge when people compare themselves to others, but are also present in absolute terms (Weinstein et al. 1996; Strecher et al. 1995). Indeed, there is evidence that normal, mentally healthy individuals' perceptions of reality are characterized not by an accurate assessment of their personal qualities, a realistic estimate of their degree of personal control, and a realistic outlook on the future, but are biased and self-serving. Taylor and Brown (1988) call these (positive) illusions.

In this article, we focus on one particular type of positive illusion: unrealistic optimism (UO). UO refers to an underestimation of the likelihood of experiencing negative events and to an overestimation of the probability of experiencing positive events (Weinstein and Klein 1996, p. 2)—i.e., to a mismatch between subjective and objective probabilities. Hence, UO implies that the mean forecast errors are significantly different from zero.

According to Weinstein's definition (Weinstein and Klein 1996), *optimism* is different from *unrealistic optimism* and the two should not be confused. An individual who expects, ex-ante, that his/her risk of experiencing an undesirable event is below average is optimistic, but the optimism is not necessarily a bias or an illusion. Ex-post, this person's perceptions might prove to be correct, in which case, he/she would be optimistic without being unrealistically optimistic. Therefore, one does not need the outcome before calling an optimistic prediction simply optimistic, whereas unrealistic optimistic predictions need to be tethered in "reality".

UO is also different from high self-esteem. The latter involves an evaluation of the self, whereas the former involves temporal predictions about the future which are probably based on those self-evaluations.

Note also that although probably correlated with *risk preference*, UO is distinct from risk preference, i.e., the extent to which the subjective odds must be favourable before a gamble will be accepted. Furthermore, UO is also different from *overconfidence*, which is also a positive illusion but refers to an unfounded excessive precision in forecasting, i.e., to confidence intervals being too narrow[3] (see Fischhoff 1982 for a review of the concept).

UO can be measured in *absolute* terms as the difference between an individual's subjective estimate of the probability of a good/bad event occurring and the "true" value of that probability. For example, for a negative event (such as being fired in the next couple of months), if the estimate of the probability is lower than the actual probability, then there is evidence of UO. UO can also be measured directly through experimental work which compares subjects' expectations with actual realizations (Coelho 2004). When measuring UO in absolute terms, we can observe that in the presence of UO the distribution of subjective probabilities when compared to the "true" distribution of probabilities is shifted to the right.[4]

Even though UO can be measured in this way, very few psychological studies attempt to do so, for two reasons: (1) the difficulty in determining an accurate probability for a particular individual in a particular situation (in some cases, illusions about the future are difficult to establish operationally because no one knows what the future will bring), and (2) the difficulty individuals have in understanding and providing probabilities (Gigerenzer 2002; Weinstein and Klein 1996).

As a result, the usual procedure to analyse UO has been to carry out a *comparative* (as opposed to an *absolute*) analysis. Under a comparative approach subjects are asked whether they think that the probability of a certain event happening to them is lower or higher than that of it happening to their peers, and the assessment of the "error in judgement" is made on a group basis. If the individuals providing personal estimates are a representative sample of the comparison group, and if there is a significant tendency for the self mean to be lower than the comparison group mean (for negative events), then subjects are making a systematic error, and therefore there is evidence of UO—the reasoning being that the mean risk for the group is, by definition, the mean of the risks of its members (Harris 1996; Weinstein and Klein 1996).

However, comparative analysis has important limitations:

1. The rationale outlined above is only true if the distribution of probabilities of the bad event occurring is symmetric (or not too skewed to the left). If the distribution of probabilities is skewed to the left (which is the case, e.g., if we are analysing the risks of contracting a specific disease and the sample is relatively healthy) we will have the majority of subjects with a probability of the bad event occurring to them below that of the mean of the group, and a minority of subjects with a probability of the bad event occurring to them above that of the mean of the group. In this case, the comparative analysis interpretation cannot be applied. It should be mentioned, however, that some studies do ask about individuals' beliefs

[3] As Blanton et al. (2001) describe it "the most common technique for assessing overconfidence involves asking people to answer a number of general knowledge questions and then having them estimate the probability that they have answered each question correctly. If respondents' mean confidence scores are higher than their mean accuracy scores, this is taken as evidence of overconfidence" (p. 373).

[4] More technically, for positive (negative) events the subjective distribution of probabilities (cdf) stochastically dominates (is dominated by) the objective distribution.

when compared to the 'median' (Kruger and Burrus 2004).

2. A more important limitation of this approach is that the determinants of optimism (at the individual level) cannot be identified.
3. Comparative risk estimates are optimistically biased, at least in part, because people may compare themselves with an inappropriate standard person who has all the characteristics that increase risk. Evidence shows, though, that the optimistic bias is related more to (absolute) *unrealistic optimism* than just to an inappropriate comparison group (e.g., Kruger and Burrus 2004; Weinstein and Lachendro 1982).

Brief Overview of Psychological Evidence

Weinstein's (1980) pioneer study examined a range of positive and negative real life events that could occur sometime in the future to determine the extent of (comparative) UO and the conditions under which it is more likely to occur. His analysis supported the hypothesis that there are strong unrealistic optimistic tendencies in both positive and negative life events. Weinstein's findings are supported by, for example, those of Gollwitzer and Taylor (1995, p. 214), who state that: "This illusion of invulnerability is both robust and pervasive, encompassing a wide variety of potentially threatening events". Although less researched, there is also substantial evidence that absolute UO not only exists but is the norm (Weinstein et al. 1996; Strecher et al. 1995; Coelho 2004).

UO is a robust and widespread phenomenon.[5] It is not limited to questionnaire responses concerning remote events. On the contrary, it is present in real, immediate, visually vivid and potentially risky situations (Harris et al. 1996; Taylor et al. 1992). Evidence also shows that UO about negative experiences persists even after them happening to people (Burger and Palmer 1992). As a consequence, UO precludes early withdrawal even when the events are luck driven (e.g., gambling in Gibson and Sanbonmatsu 2004). In many situations, such as business, where the persistence in a risky/loss endeavour is unlikely to be rewarded, the negative outlook which characterizes pessimists seems to be a plus. It leads to withdrawal, therefore limiting losses. Conversely, optimists may wait too long before closing failing businesses.

Although, in theory, optimism could reduce effort if individuals over-rate ability, more effort is also possible if individual's positive outlook of life leads them to strive to achieve their goals. Evidence shows that (over-optimistic) entrepreneurs work longer hours—on average 17 h per week more—than non-entrepreneurs, and that they are more likely to say that they will work forever (Puri and Robinson 2004). These are not the only authors to find evidence that effort increases with optimism—Landier and Thesmar (2003), among others, found similar evidence.

Deliberating about the future (predecisional phase) and implementing decisions already made (postdecisional phase) require individuals to develop different types of tasks. During a predecisional phase, individuals need to solve the task of choosing goals that are feasible and desirable, whilst during a postdecisional phase, individuals attempt to implement the chosen goals (and, therefore, attempt to promote goal attainment). By becoming involved in these different kinds of tasks, people develop different cognitive orientations or mindsets that help solve the respective task at hand (Gollwitzer and Kinney 1989, pp. 531–532). There is evidence that the mere request to reflect on a decision (e.g., on whether or not to change a decision) triggers a mindset that is unbiased in terms of considering both the positive and negative consequences of the decision. In contrast, postdecisional individuals are clearly reluctant to deliberate on decisions already made[6]: they (1) concentrate on implementation-related issues and (2) prefer to think about the positive aspects of the chosen alternative and to minimize the negative ones (Gollwitzer and Taylor 1995, p. 223). When compared to subjects in an implemental mindset, participants in a deliberative mindset have (1) significantly lower perceptions of control of their actions, as well as of what surrounds them (the environment for task implementation), (2) significantly poorer mood, (3) significantly lower self-esteem, (4) significantly lower perceived invulnerability to risk involved in negative events (less unrealistic optimism), and (5) see themselves more negatively (in terms of perceptions of their skills and talents).[7] Although psychologists suggest that people can deliberately control their relative degree of realism and optimism (in terms of their views of themselves, their degree of control, and their future), by addressing a specific issue in a deliberative or implemental mindset, respectively, evidence shows that when deliberating about the future or when implementing projects people suffer positive delusions. Furthermore, to ensure sensible decisions, it is not sufficient to concentrate on action-outcome expectancy.

[5] More recently, Moore (2007) challenged the understanding of psychologists on the "better than average" beliefs—he shows evidence that "worse than average" effects can take place when dealing with rare behaviours or with very uncommon abilities.

[6] This is true both for individuals still waiting to begin implementing their decisions and those who have already started.

[7] It is interesting to note the finding that women's self-perceptions are revealed to be significantly poorer than those of men, especially in the deliberative mindset condition, which seems to indicate that increasing the proportion of women in companies may contribute to more realism in the decision-making process.

The distinction between deliberative and implementation mindsets is therefore important given its close links to entrepreneurial activity—it helps clarify how *wedded* to their business ideas entrepreneurs can be once they have decided to pursue them.

Most of the research in psychology on the relationship between risk preferences and optimistic biases shows that there is no clear evidence of the relation between the two, which seems to suggest that the two variables are not necessarily related (Hillman and Todesco 1999; Cohn et al. 1995; Coelho 2004).

Determinants of Unrealistic Optimism

It is very difficult to establish whether someone is unrealistically optimistic for a variety of events, and to our knowledge no one has tried to do so. What research on UO has shown is that although many events produce optimistic illusions, not all do, and that the magnitude of the bias varies greatly between events. In parallel, there is evidence that there are not consistently realistic or unrealistic types of people, and that in fact people's degree of optimism varies by topic/situation. Understanding the *determinants* of UO and other self-related biases therefore constitutes a key theoretical debate in psychology, since it will help us predict when such biases will occur—which is extremely important not only for economic and managerial issues but also for policy considerations. As we will see, the conditions under which optimistic biases are more likely to occur will lead us to conclude that entrepreneurs and business people in general are prone to such illusions.

In order to understand the determinants of UO, it is important to learn whether they are essentially *motivational* or *cognitive* in nature, i.e., whether people intentionally distort information in order to serve a given purpose (motivational explanation), or whether people should be considered innocent victims of their thought processes (cognitive explanation) (Hoorens 1993). We believe both types of explanation are called for.

Three *motivational* explanations are usually put forward as supporting self-serving biases:

- Enhancing or maintaining self-esteem (*self-enhancement* or *self-validation*).
- Projecting a positive social image or, in other words, ingratiating oneself with others (*self-presentation*).
- Reducing fear and protecting the ego from threats associated with facing unwanted outcomes (*striving for reassurance*).

Of these motives, only the first has sufficient theoretical and empirical evidence to support it (Hoorens 1993). Indeed, Weinstein (1980) found that when individuals have some degree of commitment or emotional investment in a certain outcome, and they want to protect their self-esteem (self-enhancement), the majority of factors they bring to mind are precisely the ones that increase the likelihood of the outcome being the one they want. If this is true, one would expect individuals with low levels of self-esteem (such as depressed individuals) to be generally less optimistic than those with high levels of self-esteem (non-depressed individuals). There is sufficient evidence to support this (see, namely, Pyszczynski et al. 1987).

In terms of *cognitive* explanations of UO, the following cognitive errors are usually put forward:

- Illusion of control: Weinstein (1980) found that for the optimistic biases to arise the event needs to be perceived as controllable. Controllability of an event remains a powerful predictor of the magnitude of the optimistic bias (Harris 1996).
- Extreme probability biases: there is evidence (Weinstein et al. 1996) supporting Slovic's (1987) theory that people slightly overestimate small risks (i.e., unrealistic pessimism) and moderately underestimate large ones (i.e., unrealistic optimism).
- Past experience with the event: Weinstein (1980, 1989) found that lack of personal experience ("unfamiliarity") with contingency breeds optimism.

While some authors argue whether UO has motivational *or* cognitive explanations, others suggest that there is no reason why optimism cannot have both motivational and cognitive explanations. The most prominent integration between the two types of explanation is that the motivational explanation constitutes the *why* of self-related biases while cognitive errors constitute the *how* of their emergence (Hoorens 1993, p. 134).

Indeed, motivational explanations alone are not able to explain UO. If they were, we would have a world of (foolish) people who realise they commit judgement errors—that, in many cases, imply personal decisions and behaviours that negatively affect their health and wealth—but insist on committing them. Cognitive explanations are therefore called for. But cognitive explanations alone are not sufficient either to explain UO. The strongest evidence of this is the observation that most self-related biases are in a self-flattering direction, and "if self-related biases were caused only by non-motivated cognitive errors, then one would expect about as many instances of self-deprecating biases as of self-flattering ones" (Hoorens 1993; Weinstein 1989).

In summary, there is strong evidence (for both positive and negative events) that the following two conditions must be fulfilled for UO to arise (Weinstein 1980):

1. Individuals need to have some *degree of commitment* or *emotional investment* in the outcome (motivational explanation).

2. The event needs to be perceived as *controllable*, i.e., that there are things one can do or contemplate doing to influence the event (cognitive explanation).

Entrepreneurial Optimism

Given that optimistic biases are robust and widespread, two important questions arise which we explore in this section:

1. What are the consequences of UO for day-to-day activities in general—and economic/managerial activities in particular?
2. Is UO present in entrepreneurial settings?

Consequences of UO

In many circumstances, maintaining positive illusions seems to have no negative consequences, and may even be beneficial in helping to "make each individual's world a warmer and more active and beneficial place in which to live" (Taylor and Brown 1988, p. 205). For instance, thinking that one is more generous or more understanding than one really is may be considered an innocuous self-delusion; maintaining illusory beliefs about personal capabilities, and what the future holds, may lead people to try harder on difficult tasks so that they really do succeed more often (Weinstein 1989; Taylor and Brown 1988). Although more controversial, there is some evidence that UO is also predictive of general physical well-being. For example, there is evidence that UO is positively correlated with lower mortality risk for cancer patients, and with positive health-related behaviours of both men at risk of AIDS (Taylor et al. 1992) and women during pregnancy (Park et al. 1997).

Research evidence indicates that self-enhancing perceptions, exaggerated beliefs of personal control, and unrealistic optimism are associated with higher motivation, greater persistence at tasks, more effective performance, and ultimately, greater success. "A chief value of these illusions may be that they can create self-fulfilling prophecies. They may help people to try harder in situations with objectively poor probabilities of success…" (Taylor and Brown 1988, p. 199).

However, UO has a negative side: almost by definition, people who believe, falsely, that their personal attributes exempt them from risk, or that their present actions reduce the risks they face, may be inclined to engage in too risky behaviours and/or fail to take the precautions required to avoid adverse outcomes. Indeed, there is evidence (Weinstein 1982) that since UO prevents people from perceiving the objective risks of certain events (e.g., failure to admit that smoking, driving after drinking alcohol, or having unprotected sex puts you at risk), they do not prepare appropriately to address (or avoid) them.

The negative consequences associated with UO are not restricted to health-related issues, but also affect economic decision making. In many economic situations, having systematic optimistic biases about our future is not desirable, as it mainly leads agents to persist in business too long, with significant negative implications for economic growth and the efficient use of resources.

Despite the fact that it is often argued that entrepreneurial activity requires optimism, one should not overlook the fact that if individuals have a false (positive) view of themselves and of their business, they may persevere in business even when they are ill-suited for it. Their biased attention to positive stimuli, and tendency to reframe negative situations, may lead them to persist in the face of adversity (Gibson and Sanbonmatsu 2004) when withdrawal would be more prudent. This is not only due to the opportunity and psychological costs for employees, but also because failure of a business is generally bad news for customers, suppliers and financial institutions; i.e., negative externalities that are often ignored.

The propensity to overlook negative signs when a project is underway (i.e., when an implementation mindset is predominant) reinforces the previous claims—i.e., people tend to persist in businesses/projects when pulling out would be more sensible. Unrealistic planning, another consequence of excessive optimistic biases, can also not only seriously damage the performance of firms and but also employees' careers.

An interesting debate in question is whether 'external regulators' exist to keep optimistic biases under check. Taylor and Brown (1988) claim that non-ego-related information may exist (e.g., 'external regulators') to offset the effects of illusions by leading people to adjust their behaviour. We believe, though, that the 'external regulators' do not always exist, or in some cases are activated too late (e.g., bankruptcy law). In other cases, 'external regulators' may even foster optimism (e.g., the provision of government-backed start-up loans that are extended on favourable terms) and, inadvertently, increase losses instead of stopping them. Finally, there is evidence that a large percentage of entrepreneurs is not easily diverted from the course of action they believe to be the best—they do not listen to external (paid) advice and, contrary to third party recommendations, launch and persist in businesses[8]

[8] Note, though, that external advisors may also be prone to optimism or that the self-interest of external advisors (agents) may lead them not to act in the entrepreneur's (principal) best interests.

(Thaler and Sunstein 2003b; Åstebro 2003, p. 237). Kahneman and Lovallo (2003, p. 60) also present evidence of a "team member" tendency to ignore pessimistic information given by external advisors and proceed with planned projects.

Evidence of Entrepreneurial UO

In the sections above we have investigated which conditions are prone to trigger optimistic beliefs. Entrepreneurial settings are bound to attract and foster over-optimistic beliefs, for both motivational and cognitive factors. Firstly, entrepreneurs typically have most of their personal wealth tied up in their businesses, so their degree of commitment or emotional investment in the outcome of their activity is extremely high, making them especially optimistic about the result. Secondly, individuals are more optimistic about outcomes they believe are under their control, and setting up and running a business is an activity in which illusions of control are likely to be felt.[9] Thirdly, there is evidence that individuals tend to underestimate likely negative events, as is the case of new business failure (only 30% of new businesses survive more than 4 years[10]). Fourthly, succeeding in business is a "common desirable event" which necessarily breeds positive illusionary beliefs. Finally, since starting a new business is inevitably unexplored territory, there is scope for unchecked fantasizing and optimism is necessarily greater.

Next we summarize some interesting findings that provide strong evidence of entrepreneurial optimism.

Although there is striking evidence on the discrepancy between financial returns to self-employment and to paid employment in favour of the latter, this does not dissuade entrepreneurs. The U.S. Small Business Administration (1997) found that one-sixth of self-employed individuals earn less than the minimum wage. On the face of it, this might reflect lower skilled individuals being forced into self-employment. Hamilton (2000) shows, however, that it is unlikely that this is due to selection effects since the wage distribution of those becoming self-employed (i.e., before they took that step) does not appear to be significantly different from that of those staying in paid employment. Even controlling for skill and a wide variety of other characteristics, entrepreneurs enter and persist in business despite achieving lower initial earnings and lower earnings growth than they could have achieved in paid employment (for individuals in business for 10 years, the median earnings differential was found to be 35%). Non-pecuniary benefits could be part of the explanation, but the fact that entrepreneurs are sacrificing substantial earnings lends plausibility to the notion that misperceptions are at play.

Looking at innovation undertaken by independent inventors Åstebro (2003) reports even more striking commitments to loss-making ventures. The chance of innovations reaching the market is approximately 7%. Of the "lucky" 7%, some 60% realise negative returns, and the average realised return among those that commercialise their inventions is minus 7%, even ignoring the cost of the inventor's (often enormous) effort. Many inventors persist in trying to bring their ideas to market despite receiving good advice that the prospect of making money is negligible,[11] calling into question the rationality of such persistence.

An ingenious experiment by Camerer and Lovallo (1999) sheds light on the implications of optimistic illusions for entry decisions when all that matters is relative performance. Their subjects must choose whether to enter and get paid based on performance in a tournament or take a fixed payment. Fewer subjects participate in the tournament when winners are determined randomly from amongst the entrants than when they are determined by relative performance on a quiz. If people have any information about their relative ability on the quiz rationality suggests the opposite should occur. Most subjects who enter think the total profit earned by all entrants will be negative, but their own profit will be positive. When the recruitment procedure involves telling subjects that quiz performance will be important, excess entry increases further. These self-selected subjects seem to neglect the fact that they are competing with a group of subjects who all think they are skilled as well ("reference group neglect").

Consistent with these results, Cooper et al. (1988) interviewed some 3,000 entrepreneurs who had recently become business owners, and they report that 81% believed their chance of success to be 70% or higher, and a remarkable 33% believed it to be a certain 100%. Taking into account the historical evidence that some 70% of new businesses fail within four years, these results seem to confirm the hypothesis that entrepreneurs who have already made the commitment to become business owners display a remarkable degree of optimism. The results show that this "entrepreneurial euphoria" is independent of the entrepreneurs' preparation—"All entrepreneurs, whether well prepared or not, may experience "entrepreneurial

[9] Brockhaus (1982) shows evidence that entrepreneurs have often been found to have higher levels of internal locus-of-control beliefs than the general population, and that such high beliefs in their ability to influence the achievement of business goals imply that their perceived possibility of failure is relatively low.

[10] For a brief summary of the literature on business survival rates see Cooper et al. (1988, p. 99).

[11] There is evidence that 50% of inventors with very poor quality ideas continued to pursue efforts even when paid advice strongly argues against it (Åstebro 2003, p. 237).

euphoria", in which they feel they must succeed and then assess their odds accordingly" (Cooper et al. 1988, p. 107).

Pinfold (2001) reports on the returns that entrepreneurs (actual business founders in New Zealand) expect and the level of risk they believe they are taking. His survey shows that in their eyes, starting a new business is an attractive proposition: considerable financial rewards coupled with many non-pecuniary benefits such as independence, personal development, and employment. Furthermore, while realizing that there are risks involved, these entrepreneurs tend to underrate the risk and have faith in their personal ability to overcome the odds. They consistently believed the probability of their venture failing to be less than half the historical rate, and estimated rewards that were considerably higher than those obtained by business in general.

Arabsheibani et al. (2000) surveyed the answers to the following two questions from the British Household Panel Study: (1) "Would you say that you yourself are better off, worse off or about the same financially than a year ago?" and (2) "Looking ahead, how do you think you yourself will be financially a year from now, better than you are now, worse off than now or about the same?" The authors found that the self-employed expect better financial outcomes than employees but experience worse realizations.

Entrepreneur's propensity to take risks is sometimes offered as a plausible explanation for entry into entrepreneurship, despite its relatively poor prospects. This is not supported by empirical evidence (Brockhaus 1982; Moskowitz and Vissing-Jorgensen 2002; Puri and Robinson 2004; Coelho and de Meza 2007).

Summarizing, we have seen that there are conditions under which positive illusions are more likely to occur. Entrepreneurial activities seem to have all these characteristics and thus one would expect entrepreneurs to be relatively over optimistic when compared to the rest of the population. Empirical research indicates that this indeed the case. Even if optimism leads entrepreneurs to work harder and to be happier, it is their unrealistic beliefs which may be quite damaging. They will tend to overestimate chances of success and therefore choose the wrong business strategies, will back strategies that depend on skills they do not possess (as opposed to relying on the expertise of outsiders), and will concentrate on positive feedback and ignore negative feedback—however important it might be.

Implications for Government Policy and the Extension of Lending to New Businesses

There is considerable consensus among economists and policy makers that entrepreneurship should be supported given its perceived contribution to economic success. There is also considerable consensus that there is failure in the market for loans, especially those for new businesses. Even more remarkably, there is agreement about the direction of the failure: lending should be increased from the *laissez faire* level. Some evidence follows supporting this claim.

Since the mid-1990s the OECD has focused on the virtues of entrepreneurship as an integral part of its employment strategy and has continued to urge member countries to create a macroeconomic and structural framework in which entrepreneurship can grow by removing impediments that too often exist and arranging conditions that encourage entrepreneurs to flourish. In the foreword to a 1998 report, *Fostering Entrepreneurship* (OECD 1998), the Secretary General of the OECD, states his belief that 'stimulating entrepreneurship may provide a promising means of increasing job creation and boosting the economy, without distorting market forces'. The OECD belief that governments should foster and support entrepreneurship has not changed since then. A more recent report (OECD 2004, p. 5) states that:

> Entrepreneurship is considered key to economic performance, in particular with respect to innovative change, playing an important structural role in all economies. Encouraging entrepreneurship is increasingly considered by governments as an effective mean of: (i) creating jobs; (ii) increasing productivity and competitiveness; and (iii) alleviating poverty and achieving societal goals, in particular by helping specific population groups to help themselves.

The OECD is not an exception in this respect. Recently, the World Bank issued a full report on the impact of regulations on economic growth: *Doing Business in 2006* (The World Bank 2005). The report mentions that "Jobs are a priority for every country, and specially poor countries. Doing more to improve regulation and help entrepreneurs is key to creating more jobs—and more growth. …Women who make up three quarters of the work force in some developing countries, will be the big beneficiaries…" (p. 1).

In the United States, the Small Business Administration (SBA), a government agency, has provided loan guarantees to small businesses since 1953. In 1997, Congress passed an SBA funding bill providing over $50 billion for the SBA's business loan programs.[12]

It is not just the U.S. government that shares the view that it is desirable that more people set up new businesses: most governments do. For example, in 2002, the U.K. Government announced "A new drive to boost the enterprise culture, encourage more people to set up their own

[12] In addition, the Community Reinvestment Act provides banks with incentives for lending to small businesses in low-income areas.

business and reduce barriers facing start-up firms…particularly [amongst] under-represented groups, such as women, ethnic minorities and [in] disadvantaged parts of the country" (Department of Trade and Industry, 2002a).

Governments' objectives have not only been to encourage entrepreneurship but, in several countries, schemes have been set up to encourage the unemployed to become self-employed. Parker (2004) mentions that "the largest schemes have operated in the UK, France, Spain, Germany and Denmark" (p. 254).

In 2003, the European Commission published a Green Paper on *Entrepreneurship in Europe* (European Commission 2003), aimed at encouraging more people to become entrepreneurs. Entrepreneurship is seen as "first and foremost a mindset" (p. 5). It is reported that "Access to finance remains a major barrier for new entrepreneurs" (p. 11) and schemes to overcome this, such as the U.K. Government's Loan Guarantee Scheme to small businesses—set to back some 5000 loans per year, targeted towards borrowers that banks would otherwise have rejected (Department of Trade and Industry 2002b)—are praised. The European Social Fund–European Union Promoting employment opportunities for all, in its objective 3, policy field 4, also stresses the importance and need to increase levels of entrepreneurship (European Social Fund 2005).

Policies of this sort reflect a view that namely "…lack of capital holds back millions of potentially entrepreneurial people in the industrial countries" (Blanchflower et al. 2001, p. 690).

Given the view of under-lending, current standard economic theory provides a justification for the types of policies outlined above and for intervention on efficiency grounds. Part of the attraction of policies based on standard economic theory is that if designed to bring excluded groups into the market they are likely to yield distributional as well as efficiency gains. However, all the policies described put psychology aside and if optimistic expectations replace rational expectations, the policy conclusions may change.

Indeed, it may well be the case that entrepreneurs wanting loans but failing to obtain them will be better off than those receiving them (Coelho 2004). The issue is particularly poignant in the case of minority and disadvantaged groups. Consequently, policies directed towards increasing lending, in particular those focused on excluded borrowers, such as loan guarantee schemes, may be particularly harmful (Coelho et al. 2004). The same is true of bankruptcy laws which neglect that they are ruling a population of over-optimistic entrepreneurs. "Most countries operate under some form of bankruptcy law that limit borrower liability" (Lilienfeld-Toal and Mookherjee 2005, p. 1). In most countries, bankruptcy laws are designed in a way that increases the life span of struggling firms and in so doing they are simply increasing the chances that entrepreneurs will follow a real road to ruin.

The bulk of public economics analyses the welfare implications of fiscal policy, and other public interventions, under the assumption that people make decisions in their own best interests. Hence, the justification for policy is distributional or to counteract externalities. To suggest that public policy should combat self-delusion (e.g., with paternalistic policies) is a good deal more controversial. The evidence reported here suggests the problem cannot be sidestepped, however, by supposing that misperceptions are minor and random, and implies that governments need to take them into account when framing policy.

Only recently has there been sustained discussion of the normative implications of self-harm, and of mechanisms to discourage it (see, e.g., O'Donoghue and Rabin 1999; Camerer et al. 2003; Thaler and Sunstein 2003a, b). There is agreement that behavioural economics documents common mistakes, but that those mistakes are far from universal. There is therefore concern that paternalistic policies may impose undue burdens on those people who behave rationally in particular situations. There is also agreement that behavioural economics is in an early stage of development, and so its findings should elicit more caution than those from more "mature" fields. These and related concerns suggest caution in promoting paternalistic policies at this stage, and lead to more conservative notions of paternalistic interventions.

"*Cautious paternalism*" has been defended by O'Donoghue and Rabin (1999); "*Asymmetric paternalism*" explored by Camerer et al. (2003), and Thaler and Sunstein (2003a, b) have proposed "*Libertarian paternalism*". While these approaches differ slightly, all of them are bounded by concern regarding heavy-handed paternalism and focus on minimally interventionist policies. They are aimed at finding policies that help people who make errors while having little effect on those who are (fully) rational.

Examples of such policies are the provision or re-framing of information, and establishing cooling off-periods.

Provision of information refers to simple education; training programs developed to help entrepreneurs identify whether their business ideas are viable. For example, "Lessons learned" vignettes could be put together by people who have tried and failed and tried and succeeded to identify "what works" in terms of starting a new business in a particular domain. Lessons on what entrepreneurs might not be able to control should also be highlighted. These training sessions should go hand in hand with an entrepreneurs' work life and not be restricted to the beginning of their activities. As mentioned above, implemental mindsets seem to trigger higher levels of overoptimism and, therefore, sessions aimed at refocusing mindsets should be welcomed.

Re-framing of information refers to framing a situation in a subtly different way that would not be relevant from the perspective of standard economic theory but which can have large effects on behaviour. For example, legal authorities could provide potential entrepreneurs with information such as failure rates (instead of success rates) and average annual payoff (in the same industry and overall) and inform them, in detail, of the potential consequences of a bankruptcy.

Cooling off-periods refer to the fact that when people are in emotionally or biologically sensitive situations, they sometimes make decisions that are costly or even impossible to reverse. Behavioural economists have suggested a variety of reasons why people might respond to "hot states" in suboptimal ways. For example, if the current hot state of mind is a real source of well-being people tend to overestimate how long it will last, and to underestimate just how differently they will feel in the "cold state". Let us assume that a company was not able to pay salaries for 3 months in the last year, the default rule could be that it will shut business in the next "x" months, but that this can be reversed during the cooling-off period.

In many situations, peoples' choices are suboptimal, and changing the default rule, providing information, or letting them reassess their choices for a few days does not counteract the errors they make. In such cases, a more intrusive policy than the ones already mentioned may need to be imposed in order to help them. Imposing a deadline/dates for decisions to be made (e.g., fixing a time for closure after the occurrence of certain events) as a means to combat procrastination is an example of such a policy.

More recently, O'Donoghue and Rabin (2003) proposed a different approach—"*Optimal paternalism*"—which follows from standard assumptions and methods of economic theory and which seems to suggest that heavy-handed paternalism should be implemented in cases where (behavioural) economic models suggest it would promote more efficient outcomes. If it can be established that, given certain market conditions, there is a relatively high probability of failure of a specific business, people should be discouraged from starting a business. Another example could be setting a policy that after failing once (twice, etc.) in a business, second-time entrepreneurs would have to pay a proportional tax to start a new business.

Partly as a reaction to the controversy of paternalistic policies, some will claim that entrepreneurs learn from their own mistakes. Indeed, learning occurs frequently and enables people to overcome their own limitations. However, entrepreneurial decisions (e.g., starting a business or closing it down), which potentially have significant financial implications, are made infrequently. Opportunities for learning are therefore insufficient to ensure that people's decisions will help them protect their welfare, more than decisions taken by third parties would.

Others may argue that accurate information being given to entrepreneurs is bound to have limited impact: the cognitive bias that leads non-rational subjects to make wrong decisions will quite likely make them immune to education, and ignore the "warnings" being issued whilst the impact on rational subjects will be minimal. However, this does not seem to be a reason to dismiss interventions altogether, especially given that the costs of issuing that information do not seem to be representative.

It is true that people sometimes respond to their own bounded rationality, for example, by hiring agents or by delegating decisions to others. These sorts of actions could be encouraged with the aim of counteracting entrepreneurs' optimistic views of the future. However, such encouragement has three natural risks: (1) external advisors may also be prone to optimism, (2) the self-interest of external advisors (agents) may lead them not to act in the entrepreneurs' (principals') best interest, and (3) even if the previous risks are overcome, there is evidence that over-optimistic entrepreneurs are not easily diverted from the course of action they believe is the best one to take, and so, given the usually relatively high costs of hiring external advisors, entrepreneurs may face a net loss from doing so. Indeed, it should be stressed that many of the most important decisions people make (like starting a business) are made infrequently, and typically without the aid of impartial experts (Thaler and Sunstein 2003b, p. 13; Åstebro 2003, p. 237).

Conclusion

Standard economic theory assumes that we live in a world of people with rational expectations who always act in their best interest, and therefore self-select themselves efficiently into activities. There is a great deal of psychological evidence, however, that unrealistic optimism is widespread, and it would be surprising if economic decisions were immune to these biases.

Little research has been carried out on the implications of optimistic biases in economic and managerial decisions, and that which has been undertaken is based on a relatively poor understanding of such biases. This article has sought to present a comprehensive account of the psychology of unrealistic optimism, in general, and of the psychology of entrepreneurial optimism, in particular.

Unrealistic optimism, as well as other identifiable cognitive biases, creates distortions which may be the most important source of efficiency loss in the economic system. Currently, when designing policy, governments ignore this fact. For example, entrepreneurship is widely regarded as a key instrument for employment and growth, and yet certain

policy decisions ignore that entrepreneurs suffer from positive illusions when planning and implementing their ventures and that these illusions can have significant negative consequences. The current policy is to encourage business star-ups even in light of clear warnings. It is urgent that public policy seriously takes these distortions on board.

Entrepreneurs' unrealistic optimism should not be sidestepped since it provides justification for offering less public encouragement to entrepreneurship or seriously considering paternalistic policies. The issue is particularly poignant in the case of minority and disadvantaged groups. Policy makers are generally particularly keen for finance to be channelled to such groups, but evidence shows that doing so may create a real road to ruin.

We have not tried to judge whether start-ups confer positive externalities. Rather, we have concentrated on entrepreneurs' "internalities" (i.e., entrepreneurs' financial losses and opportunity costs). To the extent that these positive externalities exist, there is an argument for subsidizing business start-ups even if unrealistic optimism is also present. However, in evaluating the case of whether new businesses are a good thing in themselves, at least two notes of caution should be taken on board. A common argument, made for example in the EC Green Paper, is that most new jobs are created in start-ups. This is true, but because start-ups so often fail, a year or two down the line they are also responsible for destroying more jobs than established firms—and the negative consequences, including the opportunity and psychological costs for start-up employees and their families, should not be overlooked. Secondly, the failure of a business is generally bad news for customers, suppliers and financial institutions, negative externalities that are often ignored.

People are not consistently realistic or unrealistic, they vary according to the situation they face. Therefore, there is no "stable" list of individual differences which could help us identify who are the unrealistic optimistic types. As a consequence, the screening of those entrepreneurs who would be at highest risk of failure in their business ventures is not possible to do at this stage. Developments in neuroscience may well help us understand UO in more depth and carry out such screening in future, which would be very helpful, namely for policy purposes.

The main question is therefore whether governments should intervene with paternalistic policies aimed at reducing the errors made by unrealistically optimistic entrepreneurs but which would not affect decisions made by other types of entrepreneurs. We are sympathetic to some of the arguments that paternalistic policies have some undesirable effects; namely, fears of regulatory capture or regulatory incompetence, transaction costs in implementation, and respect for people's freedom of choice are important concerns. However, we believe (as do other "paternalists") that the seriousness of the errors people make imply that rather than loosely evoke these concerns as a reason for the blanket rejection of paternalistic policies, we should carefully articulate and investigate them.

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