

## **Title**

Know Thyself: A Decision-Theoretic Model of Over-Education and Educated Unemployment

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## **Short Abstract**

The phenomenon of ‘educated unemployment’, and the related idea of ‘over-education’, has been a virtually constant cause of concern over the last half-century, for policy makers and planners throughout the developing world. While various explanations, ranging from labour market rigidities to education subsidies to the raising of aspirations, have been put forward, these rarely take the form of rigorous analysis micro-founded in economic theory. This paper suggests an alternative explanation for these anomalies, which has not been previously examined in the literature. By contrast to the existing literature, we approach these issues from a decision-theoretic perspective, building on recently developed insights from psychological studies. Specifically, we consider whether allowing for judgment errors or ‘misperceptions’ can exacerbate the level of unemployment among educated workers. Importantly, we make no assumption that the errors in judgment are systematically biased – thus, our argument is not based on a model of ‘overconfidence’. Indeed, since this effect can go in either direction, hence there will be a proportion of agents who *under*-invest in education. Remarkably, we are still able to derive conditions under which educated unemployed emerges as an equilibrium phenomenon.

## **Extended Abstract**

The phenomenon of ‘educated unemployment’, and the related idea of ‘over-education’, has been a virtually constant cause of concern over the last half-century, for policy makers and planners throughout the developing world. Indeed, a recent analysis of the causes of the Arab Spring (Campante and Chor (2012), *Journal of Economic Perspectives*) singles out “the lack of adequate economic opportunities for an increasingly educated populace” caused by “an expansion in schooling coupled with weak labour market conditions”. Thus, the potential implications of educated unemployment for social welfare are arguably even more severe than generalised unemployment – not only does the (persistent, long-term and substantial) unemployment of (over-)educated youth represent severe underutilisation of scarce human capital, but its political salience can also increase the likelihood of political and social unrest. Not least, it also underscores the wasteful investment of economic resources – apart from the private costs implicit in the individual over-education decisions, government spending on education, especially higher education, has in general not yielded high returns in developing countries.

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At the risk of over-simplification, the recent evidence on the trends of educated unemployment can be summarized in the form of a number of apparent paradoxes:

(i) The unemployment rate among the educated is not only high but often even surpasses the rate of uneducated or low-skilled unemployment. (ii) This is in contrast to the evidence from OECD countries, where the education-unemployment profile has been consistently shifting in favour of educated workers. Yet, (iii) demand for higher education in developing countries continues to grow despite an obvious surplus in educated workers. Even when the extent of the educated unemployment is apparent, and even when the return to acquiring increasing amounts of education is low, there is very little evidence that individual expectations are adjusting.

### *Previous literature*

The vast existing literature on the topic has mostly focused on describing and estimating the magnitude of the problem in specific countries. While various explanations, ranging from labour market rigidities to education subsidies to the raising of aspirations, have been put forward, these rarely take the form of rigorous analysis micro-founded in economic theory. Moreover, these explanations have often been based on a view of unemployment as arising out of search behaviour, with rational individuals choosing to endure (a spell of) unemployment while waiting for better opportunities.

### *A Model of Over-education and Educated Unemployment*

This paper suggests an alternative explanation for these anomalies, which has not been previously examined in the literature. By contrast to the existing literature, we approach these issues from a decision-theoretic perspective, building on recently developed insights from psychological studies. Specifically, we consider whether allowing for judgment errors or ‘misperceptions’ can exacerbate the level of unemployment among educated workers. Importantly, we make no assumption that the errors in judgment are systematically biased – thus, our argument is not based on a model of ‘overconfidence’.

We present a simple education decision model where there are two sectors of employment, and agents have a continuum of ability types. Each agent can incur a fixed cost to acquire higher education, which would give them a chance to obtain a high wage job in the ‘modern sector’. The probability of obtaining a modern sector job is increasing in the agent's true type. Alternatively, an agent can obtain a job with certainty in the low wage traditional sector. The agents that acquire education and yet do not find a job in the modern sector are defined as the ‘educated unemployed’. Thus, when the agents know their own true type, only agents above a certain ‘ability threshold’ acquire education.

The objective of the paper is to examine how systematic mistakes in perceiving one’s own type can lead to a proportion of agents remaining educated and unemployed. To explore this, we assume that agents do not know their own true type and make mistakes in perceiving their own type. The agent's ‘perceived ability’ is symmetrically distributed around their own true type, so that an agent’s decision-making about investing in education may be skewed by their misperceptions about their own ability – significantly, this effect can go in either direction, so that there will be a proportion of agents who *under*-invest in education. Remarkably, we are still able to derive conditions under which educated unemployed emerges as an equilibrium phenomenon.

While it is relatively straightforward to see that generalised overconfidence might lead to an inflated demand for education, our results are striking in that we consider the less strong and more plausible assumption of each individual having an equal probability of ‘overconfidence’ and ‘under-confidence’. In other words, even when (mis)perceptions of ability are *symmetric*, we suggest that the equilibrium outcome may be biased in an upward direction – that too many low-ability but over-confident individuals invest in higher education, and this outweighs the mass of high-ability but under-confident individuals who make the opposite error.

Further, we show that this over-investment in education, and the resultant educated unemployment, is more likely to occur if the fixed cost of acquiring education is low and the modern sector wage premium is high. The model posits this as an explanation for the observation that educated unemployment is predominantly a developing country phenomenon, and allows us to derive some recommendations for labour market policies and educational reforms.