Entrepreneurship and Relative Wealth Concerns

Manoj Atolia
Florida State University

Kislaya Prasad
University of Maryland

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Incorporating Status and Relative Wealth Concerns

Pros and Cons

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“The pervasive assumption in current economic models that people are not concerned with relative wealth stems not from a belief in its descriptive accuracy, but rather from methodological considerations . . . The force of the rational agent assumption in economic models comes from the concurrent restrictions on the utility function.”
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- A widespread belief is that allowing utility functions to be affected by such things as a desire for social status would result in models that have no predictive power.
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Relative wealth concerns as a feature of preference:
- utility function increasing in the rank in the income distribution (e.g. Robson, 1992)
- utility depends on a “status good” (as in Becker, Murphy and Werning, 2005).

More traditional approach where concern is “instrumental”:
- induced by the fact that relative wealth affects consumption of standard commodities (Cole et. al., 1992, 2001 and DeMarzo et. al., 2004).
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Models of both kind give rise to distinct and interesting phenomena, but those of the latter kind are more conservative in their departure from conventional models.
Motivation

- One of the more interesting margins on which status preference has been shown to make a difference is the propensity to bear risk.
  - A conclusion of the literature being that the desire for rank leads to an increased preference for risk.

- So relative wealth concerns, if they exist, are likely to influence the choice of professions and amount of entrepreneurship in an economy.
One of the more interesting margins on which status preference has been shown to make a difference is the propensity to bear risk. A conclusion of the literature being that the desire for rank leads to an increased preference for risk.

So relative wealth concerns, if they exist, are likely to influence the choice of professions and amount of entrepreneurship in an economy. Accordingly,

In this paper, we develop a model of occupational choice and entrepreneurship in which relative wealth concerns play a central role. In particular, we adopt the instrumental approach of Cole et al. The key decision that an agent faces is whether to take up wage employment or to become an entrepreneur. In the context of a general equilibrium model of entrepreneurial choice, we show how a concern for relative standing can arise.
We show relative wealth concerns lead to increased entrepreneurship. As the nature of risk changes from idiosyncratic to aggregate
1 in our model, there is an increase in entrepreneurship; whereas
2 in a model with complete markets, there is a decrease.
With more risk aversion, there is a larger switch to entrepreneurship.
A Preview of Results

- We show relative wealth concerns lead to increased entrepreneurship.
  - As the nature of risk changes from idiosyncratic to aggregate
    1 in our model, there is an **increase** in entrepreneurship; whereas
    2 in a model with complete markets, there is a **decrease**.
  - With **more** risk aversion, there is a **larger** switch to entrepreneurship.
- In the model, entrepreneurial risk is non-diversifiable and, there is less entrepreneurship than in complete markets case:
  - Relative wealth concerns are shown to mitigate this difficulty.
  - They do not, however, ensure efficient levels of entrepreneurship.
  - Market incompleteness has important distributional consequences.
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  - Relative wealth concerns are shown to mitigate this difficulty.
  - They do not, however, ensure efficient levels of entrepreneurship.
  - Market incompleteness has important distributional consequences.

- Relative wealth concerns are shown to be especially plausible when there is uncertainty about economic policy, such as the implementation of market-based reforms. This uncertainty
  - induces greater entrepreneurship.
  - creates larger fluctuations in aggregate wealth and price volatility but improves overall welfare in the economy.
  - has important distributional consequences.
The Model: The Structure of the Economy

- Two-date model with two goods (labeled 0 and 1).
- One factor of production (labor).
- A continuum of agents that differ in their degree of risk-aversion ($\gamma$).
- Entrepreneurial activity takes place in the sector producing good 0.
  - Good 0 is the ‘entrepreneurial’ good.
- Good 1 is produced in a traditional sector.
  - Good 1 is the ‘traditional’ good.
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**Technology:**

- Traditional good is standard with DRS
  \[ Y_1 = A_1 \ell_1^\beta, \quad 0 < \beta \leq 1. \]
- The entrepreneurial good technology has fixed proportions
  \[ y_0 = A_0 \min \left[ e, \frac{l_0}{k} \right] = A_0 \min \left[ 1, \frac{l_0}{k} \right] = A_0, \]
  where $e$ is entrepreneurial input.
The Model: Preferences

- The distribution of $\gamma, g(\gamma), \gamma \in [\gamma_*, \gamma^*]$ is exogenous.
- Utility function is CRRA
  \[ u^\gamma(c(\gamma)) = \frac{1}{1-\gamma}[(c(\gamma))^{1-\gamma} - 1]. \]
- $c(\gamma)$ is the CES aggregator of consumption
  \[ c(\gamma) = \left[ (1-\alpha)^{\frac{1}{\kappa}} c_0(\gamma)^{\kappa-1} + \alpha^\frac{1}{\kappa} (c_1(\gamma))^{\kappa-1} \right]^{\frac{\kappa}{\kappa-1}}. \]
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- The ex-ante utility function takes expected utility form.
- The exact consumption based price index is

$$P(p_1) \equiv \left[ 1 - \alpha + \alpha p_1^{1-\kappa} \right]^{\frac{1}{1-\kappa}}.$$

Given income $I(\gamma)$ of agent $\gamma$, we have $c(\gamma) = I(\gamma) / P$, so that the indirect utility function is

$$v^\gamma(P(p_1), I(\gamma)) = \frac{1}{1-\gamma} \left[ (I(\gamma) / P(p_1))^{1-\gamma} - 1 \right].$$
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- If the latter, it is costless to change their labor endowment into the entrepreneurial input.
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Production and consumption takes place at date $t_2 > t_1$.

- The uncertainty about the output from (or productivity of) entrepreneurial projects is resolved at the beginning of date $t_2$.
- After resolution of uncertainty, spot markets for labor each open where firms hire labor. There are no long-term labor contracts.
- After production, each good is traded in spot markets. Again, there are no forward markets for the delivery of the two goods.
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There as no assets traded. In particular, entrepreneurs cannot diversify the risk arising from entrepreneurial projects.
Consider a large number of agents of risk-averse agent. Suppose that all but one agent face identical lotteries

- with two equally likely states $s_1$ and $s_2$; and
- higher wealth ($x^h$) in $s_1$ and lower wealth ($x^l$) in $s_2$.

There is one good $y$ in fixed supply.

- Since aggregate wealth is high in $s_1$, the price of $y$ is high in $s_1$. 

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Entrepreneurship & Relative Wealth

Atolia and Prasad ()
Consider a large number of agents of risk-averse agent. Suppose that *all but one* agent face identical lotteries
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Suppose that the lone remaining individual has a choice between
- the same lottery as everyone else, or
- a lottery that pays $x^l$ in $s_1$ and $x^h$ in $s_2$.

While same in physical good terms, (1) provides a better hedge
- It provides more wealth precisely when the price of $y$ is high.
- This agent would correlate distribution of her wealth with community’s.

Relative wealth concerns arise with usual preferences due to the price volatility induced by the aggregate wealth volatility and limited supply.
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When others in economy choose to be entrepreneurs, the volatility of aggregate wealth is rises which, at margin, attracts new entrepreneurs.
To illustrate results, we consider the following baseline set up.

- Two states of individual project output low ($l$) and high ($h$) with outputs of 1 and 2.
- The risk aversion among agents is uniform and so is the endowment of the shares of the firm of the traditional sector.
  
  \[
g(\gamma) = \frac{1}{\gamma^* - \gamma}, \quad \gamma \in [\gamma^*_*, \gamma^*_*] = [.5, 2.5]; \text{ and} \\
\bar{\theta}_1(\gamma) = 1, \quad \gamma \in [\gamma^*_*, \gamma^*_*].\]

Further parametrization:

\[
k = 1; \\
A_1 = 1; \\
\alpha = .5; \\
\beta = .5; \\
\kappa = 1.5. \]

$\kappa > 1$ implies the fluctuations in labor income due to volatility in prices (aggregate wealth) are less than that in entrepreneurial income. Thus, the less risk averse agents choose to become entrepreneurs.
Idiosyncratic Risk and Occupational Choice

The Set Up

To illustrate results, we consider the following baseline set up.

- Two states of individual project output low \((l)\) and high \((h)\) with outputs of 1 and 2.
- The risk aversion among agents is uniform and so is the endowment of the shares of the firm of the traditional sector.
  - \(g(\gamma) = \frac{1}{\gamma - \gamma^*}, \quad \gamma \in [\gamma^*, \gamma^*] = [.5, 2.5]; \) and
  - \(\bar{\theta}_1(\gamma) = 1, \quad \gamma \in [\gamma^*, \gamma^*].\)

Further parametrization:

\[
k = 1; \quad A_1 = \frac{1}{\beta}; \quad \alpha = .5; \quad \beta = .5; \quad \kappa = 1.5.
\]

- \(\kappa > 1\) implies the fluctuations in labor income due to volatility in prices (aggregate wealth) are less than that in entrepreneurial income.
  - Thus, the less risk averse agents choose to become entrepreneurs.
To determine the equilibrium we need to solve for $\gamma_c$, $l_1$, $w$, and $p_1$.

The numerical computation yields

$$\gamma_c = 1.054; \quad l_1 = .446; \quad w = .688; \quad p_1 = .459;$$
$$l^h_e = 1.619; \quad l^l_e = .619; \quad l_w = 0.995.$$
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$\gamma_c = 1.054$; $l_1 = .446$; $w = .688$; $p_1 = .459$; $l^h = 1.619$; $l^l = .619$; $l_w = 0.995$

As $\gamma_c = 1.054$, 27.70% of agents choose to become entrepreneurs.

The expected income of entrepreneur is 1.119 which is greater than the sure income of .995 for the worker.
Now we change nature of project risk from idiosyncratic to aggregate.

- Project returns are perfectly correlated \( \implies S = \{L, H\} \)
- We need to solve for \( \gamma_c, l_1, w^L, w^H, p_1^L, \) and \( p_1^H \). In particular, we get

\[
\gamma_c = 1.074.
\]
Aggregate Risk and Relative Wealth Concerns

Aggregate Risk versus Idiosyncratic Risk

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  - Project returns are perfectly correlated \( \implies S = \{L, H\} \)
  - We need to solve for \( \gamma_c, l_1, w^L, w^H, p_1^L, \) and \( p_1^H \). In particular, we get
    \[
    \gamma_c = 1.074.
    \]

Relative Wealth Concerns and Entrepreneurship:

- First thing to note: the marginal entrepreneur is now more risk-averse.
  - Thus, aggregate wealth uncertainty, due to correlation of risk across agents, encourages entrepreneurial activity.
  - 28.70% of agents choose to become entrepreneurs—a 3.61% increase.

- The result that an increase in aggregate uncertainty raises entrepreneurial activity will be seen to stand in sharp contrast to the complete markets case.
The effect of aggregate risk on occupational choice seems to be weak. The reason: the extent to which agents respond to price volatility (aggregate wealth fluctuations) by correlating their wealth to the aggregate wealth depends on the concavity of the utility function ($\gamma$). In preceding case, risk aversion is not very high as $\gamma^* = 2.5$, and the risk aversion of the marginal entrepreneur ($\gamma_c$) is even lower. Thus, marginal agent is not very responsive to price fluctuations.
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To allow for higher degree of risk aversion (more risk-averse people in economy), consider risk aversion to be still uniformly distributed but let

$$\gamma^* = 10.5.$$  

Although, it seems counterintuitive at first, aggregate risk leads to a larger increase in entrepreneurial activity in an economy with higher risk aversion.
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Although, it seems counterintuitive at first, aggregate risk leads to a larger increase in entrepreneurial activity in an economy with higher risk aversion.

In this case, the aggregate risk generates a much larger switch from employment to entrepreneurship—a 9.65% increase in compared to a modest increase of 3.61% for $\gamma^* = 2.5$. 

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Let us consider the case with $\gamma^* = 10.5$.

In this case, $\gamma_c$ falls from 3.410 to 3.326 implying a 2.97% decrease in the entrepreneurial activity.

This contrasts with our earlier result for change in risk from idiosyncratic to aggregate with incomplete markets. In that case, more agents became entrepreneurs to correlate their wealth with aggregate outcome and the entrepreneurial activity increased by 9.65%.
Comparison to Complete Markets
Occupational Choice and Efficiency

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How big is the inefficiency generated by the absence of complete markets?

- Quantifying the inefficiency
  - calculate percent change in consumption required (in incomplete markets equilibrium) to obtain same utility as with complete markets.
  - aggregate the extra (absolute) consumption requirement over all agents

Idiosyncratic risk: the absence of asset markets implies an loss of efficiency of 5.37%.

Aggregate risk: the loss is much smaller at .63% when the aggregate state is $H$ and .67% when it is $L$. 
Comparison to Complete Markets
Distributional Implications of Market Incompleteness

Utility Profile with Idiosyncratic Risk

- Incomplete Markets
- Complete Markets

Idiosyncratic Risk: Extra % Consumption
Going from Incomplete to Complete Markets

Utility Profile with Aggregate Risk

- Incomplete Markets
- Complete Markets

Aggregate Risk: Extra % Consumption
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Normative Analysis: Are complete markets efficient?

As we know, efficiency of market outcomes requires 3 conditions to hold:

1. The MRS in consumption should be equalized across all agents
2. The economy should produce on its PPF; and
3. MRT should equal the common MRS.

With incomplete markets condition (3) fails:
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Economic Reforms and Aggregate Risk

- One reason for change in nature of risk in economy is govt. policies.
- We examine the effect of two aspects of policies associated with economic reforms—uncertainty and effectiveness—on entrepreneurship via relative wealth concerns.
  - Uncertainty is about the probability of implementation (Rodrik, 1991).
  - Greater effectiveness corresponds to a larger proportion of entrepreneurs being successful.

- Policy uncertainty is often identified as a problem for reforms (Rodrik, 1991). When entrepreneurs are uncertain about the success of reforms they may hold back investments. Thus, relative wealth concerns may be mitigating factor.

- Even though aggregate volatility rises, there is an aggregate consumption gain of 0.71%.

- However, the policy has important distributional effects.
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  - Uncertainty is about the probability of implementation (Rodrik, 1991).
  - Greater effectiveness corresponds to a larger proportion of entrepreneurs being successful.
- The uncertainty and the effectiveness combine to induce correlation between project outcomes and increase aggregate risk.
  - This increases entrepreneurship via relative wealth concerns. Policy uncertainty is often identified as a problem for reforms (Rodrik, 1991). When entrepreneurs are uncertain about the success of reforms they may hold back investments. Thus, relative wealth concerns may be mitigating factor.
  - Even though aggregate volatility rises, there is an aggregate consumption gain of .71%.
  - However, the policy has important distributional effects.
Summary and Conclusion

- We show that due to relative wealth concerns:
  1. in our model, there is an **increase** in entrepreneurship; whereas
  2. in a model with complete markets, there is a **decrease**.
  3. With **more** risk aversion, there is a **larger** switch to entrepreneurship.

- In the model, entrepreneurial risk is non-diversifiable and, there is less entrepreneurship than in complete markets case:
  - Relative wealth concerns are shown to mitigate this difficulty but does not ensure efficient levels of entrepreneurship.
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- Relative wealth concerns are shown to be especially plausible when there is uncertainty about economic policy which
  - induces greater entrepreneurship.
  - creates larger fluctuations in aggregate wealth and price volatility but **improves** overall welfare in the economy.
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