Social Status and Risk–Taking in a Model of Occupational Choice

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Abstract

This paper is concerned with occupational choice under risk, where agents care about their social status. It is motivated by recent developments in the *'New Economy'*, which indicate that status preferences possibly provide an explanation for the observed shift towards entrepreneurial risk–taking. We find a positive tradeoff between status, risk and the attitude towards risk in a risk–averse society, where a higher proportion of agents chooses the entrepreneur class, compared to a status–neutral economy. We derive conditions for an optimal degree of individual status valuation. Although the population shares of laborers and entrepreneurs, and expected incomes converge towards the efficient values of the risk–neutral economy, when preferences for status increase, this is not true for expected utility, which asymptotically falls back to the equilibrium value of the status–neutral society. A second–best welfare maximum corresponds to an inefficient distribution of agents over the two types of occupations.

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1 Introduction

What motivates people to invest in a risky project and operate a firm? This question has bothered economists for some time, and Kihlstrom and Laffont (1979) list a number of factors, such as entrepreneurial ability, labor skills, access to capital markets and the individual attitude towards risk, which might explain, why an agent chooses to be an entrepreneur. We think that this list has to be extended by another motive: the preference for social status.

Consider for example the expansion of the *'New Economy'* throughout the last years and the recent developments in this sector. Especially in Europe and in the United States, there has been an immense increase in the number of start–up firms, which perhaps was only made possible by a combination of two factors: the adequate supply of capital on the one hand, for instance, by easy access to venture capital, and, on the other hand, by the presence of agents, who were willing to bear the risk of being an entrepreneur.

What made people invest in a risky start–up project? If we look for instance at Germany with its extensive social security system and its (maybe) comparably risk–averse population, it seems hard to believe that the increasing number of start–up firms and the rise in stock market activities can be explained with an overall shift of preferences towards a lower degree of risk aversion or even risk–loving attitudes. Especially the recent crisis of the *'New Economy'* indicates that perhaps the degree of risk aversion had not had changed over the time, since many of the former entrepreneurs and their employees gladly returned to the fold of trade unions, wage agreements and fixed weekly hours of the *'Old Economy'*.

We think it more plausible to explain these developments with a preference for social status, which possibly stands in a tradeoff relationship with the individual degree of risk aversion and the risk itself. We argue that agents were attracted by the utility gain associated with the entrepreneurial status and associated high expected incomes during the rise of the *'New Economy'* and switched back to labor as the riskiness of projects increased during the crisis.

Although this line of argument describes an essentially dynamic process, we will illustrate our idea within a static general equilibrium framework. The idea that risk and attitudes towards risk may turn out to be key factors for occupational choice is not new and can be traced back to Kihlstrom and Laffont (1979) and a series of contributions of Kanbur (1979*a*,*b*, 1980, 1982). There, an agent's utility is determined entirely by his own economic activities within a competitive market structure. Our model differs to those approaches to the important respect, that also the relative income position in the economy will be relevant for the determination of individual welfare. By assuming this, we follow the argument of Cole *et al.* (1992), who postulated, that people care not only about their own wealth, but also about their relative standing in the wealth distribution.

The idea that status concerns help in the explanation of certain aspects of human behavior has gained an increased attraction in the economic discipline throughout the last years; see the surveys by Postlewaite (1998); Weiss and Fershtman (1998); Young (1998), the applications of Robson (1992) and Cole *et al.* (1992, 1998) or the series of contributions of Corneo and Jeanne (1997, 1998, 2001).

We are especially interested in the interaction of attitudes towards risk and status concerns and postulate a tradeoff relation between those variables, which is supported by our findings. Especially in the more likely case of risk aversion, the presence of status needs causes the agents to switch away from safe wage income towards risky profits. Regarding efficiency, our results coincide to a certain degree with the ones derived by Kihlstrom and Laffont (1979), and Kanbur (1979*b*). Efficient outcomes are obtained in a risk–neutral society, which is also status–neutral in our model. With an increase in status valuation, the economic variables converge towards their efficient values, except for expected utility, which — after reaching a maximum — falls back to the inefficient level of a non–risk–neutral but status–neutral society.

In short, status preferences can correct the allocative distortion in the equilibrium distribution between the two occupational classes stemming from non–zero risk aversion, but this does not yield maximum utility. Instead, a second–best welfare optimum is characterized by an inefficient distribution of agents between the entrepreneur and the labor class.

The paper is organized as follows: In the following section 2, we develop the model and derive the equilibrium conditions. Section 3 is devoted to a comparative static analysis. We examine the impact of change in the degree of risk aversion as well as in the individual status valuation on the equilibrium economic relationships and on expected utility. The implications for an optimal degree of status valuation are discussed. Section 4 concludes.

2 Risk, Occupational Choice, and Preferences for Social Status

The Model Our model is closely related to the setup formulated by Kanbur (1979*b*). We consider a single–period general equilibrium framework with a continuum $[0,1]$ of agents. The identical firms hire labor inputs L to produce a homogeneous good according to the short–run production function

$$F(L,\theta) = \theta L^{\alpha}, \qquad \alpha \in (0,1),\ \theta \sim \Lambda\left(\bar{\theta},\sigma^2\right). \tag{1}$$

The productivity parameter θ represents an idiosyncratic (firm specific) technology shock, which is assumed to be non–diversifiable, uncorrelated and lognormally distributed, with mean $\mathrm{E}[\ln\theta] = \overline{\theta}$, variance $\mathrm{Var}[\ln\theta] = \sigma^2$, and density $f(\theta)$.

The identical agents choose between two alternative occupations. Each individual can either become an employee, in which case he offers one unit of labor and receives a riskless wage income y_w. Or the agent decides to be an entrepreneur, who receives a random profit income $y_{\pi(\theta)} = \theta L^{\alpha} - wL$ and bears all the production risk.[1] The corresponding population shares of the two groups are denoted with $1-\lambda$ and λ and will be determined endogenously in equilibrium. Under these conditions, the mean income of the economy is given by

$$\mathrm{E}Y = \lambda \mathrm{E}y_{\pi(\theta)} + (1-\lambda) y_w, \tag{2}$$

where E denotes the expectation operator.

Due to the static nature of the model, income equals consumption. The agents maximize expected utility and, without loss of generality, we can assume that the agents derive utility from their individual incomes. Additionally, they display a preference for *'social status'*, which is measured by expected relative income, i. e. the ratio of expected individual to mean aggregate income. The larger this ratio, the more the individual income exceeds the average income and the more utility will be derived from status. In general, expected utility is assumed to be of the isoelastic (CRRA) form

$$\mathrm{E}U[y_i] = \frac{1}{1-\rho}\mathrm{E}\left[\left(y_i\left[\frac{\mathrm{E}y_i}{\mathrm{E}Y}\right]^{\delta}\right)^{1-\rho}\right] \quad \delta \geqslant 0, i \in \{w, \pi(\theta)\}, \tag{3}$$

and $\mathrm{E}U[y_i] = \ln y_i + \delta(\ln \mathrm{E}[y_i] - \ln \mathrm{E}[Y])$ for $\rho = 1$. The parameter ρ denotes the Arrow/Pratt measure of relative risk aversion and is assumed to be constant and identical for all agents of the economy. The sign of ρ reflects different attitudes towards risk. While positive values are related to risk aversion, negative values imply risk loving behavior, and a zero value characterizes risk–neutrality. The parameter δ measures the intensity of status preferences. The case of $\delta = 0$ corresponds to Kanbur's (1979*b*) model of a status–neutral economy.

General Equilibrium The idiosyncratic productivity shock θ is the single source of uncertainty in the economy. We assume that the agents have

[1] Similar to Kanbur (1979*b*), we will assume that entrepreneurs hire labor after the draw of nature has occurred, and that the costs of changing occupations are high enough to prevent switching between both groups.

'common knowledge' with respect to preferences, the functional form of technology, market structures and individual strategies. The labor market is characterized by perfect competition. The equilibrium wage rate can then be derived by the usual marginal productivity condition of the firm problem $\max_L \, y_{\pi(\theta)} = \theta L^{\alpha} - wL$. The labor demand of the individual firm can be determined as $L(\theta) = (\theta\alpha/w)^{\frac{1}{1-\alpha}}$, and hence expected aggregate demand is given by

$$\lambda \, \mathrm{E} L(\theta) = \lambda \int_0^{\infty} L(\theta) f(\theta) \, d\theta. \tag{4}$$

The economywide labor supply equals the population share $1-\lambda$ of agents who choose to be an employee, each of them offering a single unit of labor. The market clearing condition can be obtained by integrating (4)

$$1-\lambda = \lambda \left(\frac{\alpha}{w}\right)^{\frac{1}{1-\alpha}} \exp\left\{\frac{1}{1-\alpha}\left(\bar{\theta} + \frac{\sigma^2}{2(1-\alpha)}\right)\right\}. \tag{5}$$

From the assumptions on labor supply follows that the equilibrium wage rate equals individual riskless labor income y_w. Rearranging (5) leads to

$$w^* = \alpha \left(\frac{\lambda}{1-\lambda}\right)^{1-\alpha} \exp\left\{\bar{\theta} + \frac{\sigma^2}{2(1-\alpha)}\right\}. \tag{6}$$

Expected profits can be determined residually by employing the firm problem, taking expectations and substituting (6) for the wage rate

$$\mathrm{E}\pi(\theta)^* = \mathrm{E} y_{\pi(\theta)} = (1-\alpha)\left(\frac{\lambda}{1-\lambda}\right)^{-\alpha} \exp\left\{\bar{\theta} + \frac{\sigma^2}{2(1-\alpha)}\right\}. \tag{7}$$

Finally, mean aggregate income and the equilibrium value of expected relative income from the respective occupation can be derived as follows

$$\mathrm{E}Y = \lambda^{1-\alpha}(1-\lambda)^{\alpha} \exp\left\{\bar{\theta} + \frac{\sigma^2}{2(1-\alpha)}\right\}, \tag{8}$$

$$\frac{\mathrm{E}\pi(\theta)}{\mathrm{E}Y} = \frac{1-\alpha}{\lambda}, \quad \text{and} \quad \frac{w}{\mathrm{E}Y} = \frac{\alpha}{1-\lambda}. \tag{9}$$

Due to the assumption of common knowledge, each of the agents knows that expected relative income will be constant in equilibrium. By substitution of (6) and (8) into (3), utility from riskless wage income is determined quite easily

$$U(w) = \frac{1}{1-\rho}\left(\frac{\alpha^{1+\delta}}{(1-\lambda)^{\delta}}\left(\frac{\lambda}{1-\lambda}\right)^{1-\alpha} \exp\left\{\bar{\theta} + \frac{\sigma^2}{2(1-\alpha)}\right\}\right)^{1-\rho}. \tag{10}$$

Expected utility from risky profits is given by (3), (7), (8), and (9)

$$\begin{aligned}
\mathrm{E}U[\pi(\theta)] &= \int_0^\infty \frac{1}{1-\rho}\left(\pi(\theta)\,[(1-\alpha)/\lambda]^\delta\right)^{1-\rho} f(\theta)\,d\theta \\
&= \frac{1}{1-\rho}\left((1-\alpha)\left(\frac{1-\lambda}{\lambda}\right)^{\alpha+\delta}\exp\left\{-\frac{\alpha}{1-\alpha}\left(\bar{\theta}+\frac{\sigma^2}{2(1-\alpha)}\right)\right\}\right)^{1-\rho}\times \\
&\quad\times\int_0^\infty \theta^{\frac{1-\rho}{1-\alpha}} f(\theta)\,d\theta \\
&= \frac{1}{1-\rho}\left(\frac{(1-\alpha)^{1+\delta}}{\lambda^\delta}\left(\frac{1-\lambda}{\lambda}\right)^{\alpha}\exp\left\{\bar{\theta}+\frac{\sigma^2(1-\rho-\alpha)}{2(1-\alpha)^2}\right\}\right)^{1-\rho}
\end{aligned} \tag{11}$$

Although we assumed identical agents and a uniform degree of risk aversion at the outset, we want to give a short remark on the implications of heterogeneous attitudes towards risk for occupational choice. In general, even a risk–averse agent will choose to be an entrepreneur as long as the expected utility from profits exceeds the utility derived from riskless wage incomes. Kanbur (1979*b*) demonstrated that this decision is linked to the measure of risk aversion. By following his analysis and for given market incomes, we find

$$\mathrm{E}U[\pi(\theta)] \gtreqless U(w) \quad\Longleftrightarrow\quad \rho^* \lesseqgtr \frac{2(1-\alpha)^2}{\sigma^2}(1+\delta)\ln\left(\frac{1-\alpha}{\alpha}\cdot\frac{1-\lambda}{\lambda}\right).$$

An equilibrium distribution of homogeneous agents between the two occupations is characterized by a situation, where the pivotal agent's marginal utility gain from switching from one occupation to the other is zero, or in short, if $U(w) = \mathrm{E}U[\pi(\theta)] \equiv \mathrm{E}U^*$. By equating (10) and (11), we can solve for the equilibrium population share of entrepreneurs

$$\lambda^* = \frac{1-\alpha}{1-\alpha+\alpha\exp\left\{\frac{\rho\sigma^2}{2(1+\delta)(1-\alpha)^2}\right\}}, \tag{12}$$

and $1-\lambda^*$ residually. The population shares are constant in equilibrium and depend on the structural parameters of the model. We find $0<\lambda^*<1$, $\forall\alpha,\delta,\rho$. Note that λ^* is independent of the mean $\bar{\theta}$ of the productivity shock. This result can be ascribed to the assumption of CRRA preferences, where the degree of risk aversion is independent of the income level.

Equation (12) shows the tradeoff between status concerns and risk aversion on the one hand, and between status and risk on the other. It can be stated more formally, with $d\lambda^* = 0$ if

$$\frac{d\rho}{d\delta} = \frac{\rho}{1+\delta} > 0 \quad \text{and} \tag{13}$$

$$\frac{d\sigma^2}{d\delta} = \frac{\sigma^2}{1+\delta} > 0. \tag{14}$$

A rise in the variance of the technology shock, or in the degree of risk aversion respectively, c. p. reduces the population share of entrepreneurs, as agent switch from risky profits to safe labor incomes. This decline in members of the entrepreneur class can be compensated by an equivalent rise in preferences for social status.

The riskless wage income can be regarded as the certainty equivalent to risky profit income. It is possible to express the relationship between the wage rate and expected profits in terms of the expected risk premium $\mathscr{P}(\theta) = \mathrm{E}\pi(\theta) - w$ with the corresponding equilibrium value

$$\begin{aligned}\mathscr{P}(\theta) = \alpha^{\alpha}(1-\alpha)^{1-\alpha} \exp\left\{\bar{\theta} + \frac{\sigma^2}{2(1-\alpha)}\left(1 - \frac{\rho}{1+\delta}\right)\right\} \times \\ \times \left[\exp\left\{\frac{\rho\sigma^2}{2(1+\delta)(1-\alpha)^2}\right\} - 1\right].\end{aligned} \tag{15}$$

Expected profits exceed wage incomes in case of risk aversion, i. e. $\rho > 0$. Here, the entrepreneurs demand a positive risk premium as a compensation for bearing the production risk. The expected risk premium is negative for risk lovers, and $\mathscr{P}(\theta) = 0$ in case of risk–neutrality.

3 Comparative Statics

We now turn to the question of how preference and technological parameters influence the equilibrium relationships derived in the previous section. Besides the aspect of risk aversion, our interest is especially directed towards the effects stemming from status preferences as measured by the parameter δ. We will compare the equilibrium relationships of the economy with status concerns ($\delta > 0$) to the corresponding values of a status–neutral economy ($\delta = 0$).

For reasons, which will become obvious later, it is convenient to begin with the following results for an economy of risk–neutral agents.

Proposition 1 (Risk–neutrality and status preferences) *Status needs do not affect the equilibrium allocation of a risk–neutral economy, if status utility is derived from expected relative income.*

Proof: Equation (12) implies $\lambda^*|_{\rho=0} \equiv \lambda_{\rho=0} = 1-\alpha$. From (6), (7), and (8) follows that $w^* = \mathrm{E}\pi(\theta)^* = \mathrm{E}Y^*$, and by (9) that $w^*/\mathrm{E}Y^* = \mathrm{E}\pi(\theta)^*/\mathrm{E}Y^* = 1$.

Substituting this result into (3) yields $\mathrm{E}U^*|_{\rho=0} = \mathrm{E}Y^*$ which is independent of δ. $\square$

Due to the assumption of common knowledge, the agents know that the risk premium will be zero in equilibrium, and hence that incomes from both occupations will equal mean national income. Consequently, no additional utility can be derived from positional status.

Risk Aversion We will now ask whether the introduction of status preferences significantly alters the comparative static results derived by Kanbur (1979*b*) and Kihlstrom and Laffont (1979) for variations in the attitude towards risk. In what follows the assumption of homogeneous agents is maintained. The equilibrium relationships (6) (7), (8), and (12) respond to changes in the index of risk aversion in the following manner

$$\begin{gathered} \frac{\partial \lambda^*}{\partial \rho} < 0, \quad \frac{\partial w^*}{\partial \rho} < 0, \quad \frac{\partial \mathrm{E}\pi(\theta)^*}{\partial \rho} > 0, \\ \frac{\partial \mathrm{E}Y^*}{\partial \rho} \gtreqqless 0 \quad \text{for} \quad \lambda^* \lesseqqgtr 1-\alpha, \quad \text{and} \quad \left.\frac{\partial^2 \mathrm{E}Y^*}{\partial \rho^2}\right|_{\lambda=1-\alpha} < 0, \end{gathered} \tag{16}$$

and coincide with the corresponding results of Kanbur (1979*b*). Since the introduction of status concerns does not alter the competitive structure of markets, this outcome could have been expected. Figure 1 displays the results. The black graphs represent the variables of the economy with status preferences, while the dark grey graphs depict the corresponding relationships for $\delta = 0$. The light grey graphs show the equilibrium values of a risk–neutral society as a benchmark.[2]

In general, an increase in the degree of risk aversion induces a decline in the population share of entrepreneurs; see Figure 1(a). The agents switch away from uncertain profit to safe wage income. The increase in labor supply is accompanied by a reduction in the marginal productivity of labor and leads to a decline in the equilibrium wage rate, while expected profits rise. The solid lines in figure 1(d) show the change in wage incomes, while the dashed lines depict expected profits. The equilibrium risk premium rises, because otherwise the increasingly risk–averse agents would not be willing to bear the production risk. The economywide expected income attains its largest value in an economy with risk–neutral agents, where, according to Proposition 1, status considerations are not relevant for the equilibrium allocation; see Figure 1(d).

Let us now turn towards the size effects from status needs. Next, we will compare the equilibrium values of the economic variables for the two cases $\delta > 0$ and $\delta = 0$. The results can be summarized as follows:

[2]The parameter values were set as follows: $\alpha = 0.7, \delta = 1, \sigma = 0.8, \bar{\theta} = 1$.

Proposition 2 (Attitude towards risk and status preferences) *Preferences for social status affect the equilibrium levels of the economic variables according to*

(i) *for* $\rho \gtrless 0$: $\lambda_{\rho=0} \gtrless \lambda^* \gtrless \lambda_{\delta=0}$, $E\pi(\theta)_{\rho=0} \lessgtr E\pi(\theta)^* \lessgtr E\pi(\theta)_{\delta=0}$, $w_{\rho=0} \gtrless w^* \gtrless w_{\delta=0}$

(ii) *for* $\rho \neq 0$: $EY_{\rho=0} > EY^* > EY_{\delta=0}$, $EU^* > EU_{\delta=0}$

(iii) *for* $\rho = 0$: *see Proposition 1.*

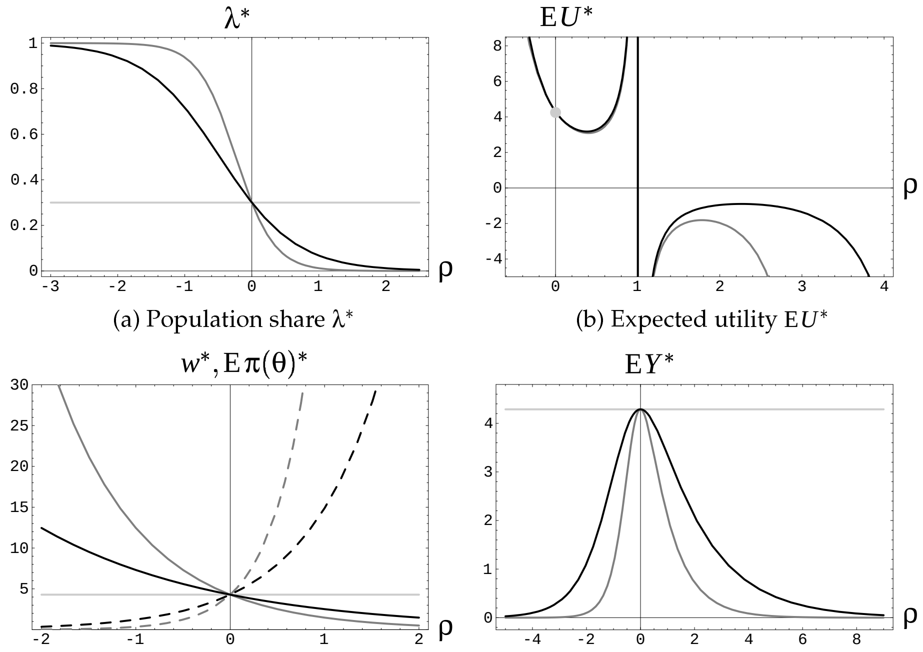
Preferences for social status mitigate the effects from a change in the attitude towards risk.

Consider, for instance, a given positive degree of risk aversion. Proposition 2 then implies that the equilibrium population share of entrepreneurs in the economy with status preferences will be larger than in the status–neutral economy. According to the tradeoff relationship (13), the presence of status needs mitigates the effect from risk aversion and attracts more agents into the entrepreneurial class. This leads to a decline in labor supply and consequently induces a rise in wage incomes. This explains why the equilibrium wage rate in the economy with status concerns is above the one of the economy without, and why expected profits fall below for all positive degrees of risk aversion. The opposite argument applies for the risk loving society, that is the case of $\rho < 0$.

λ^* lies closer to the equilibrium population share of the risk–neutral economy $\lambda_{\rho=0} = 1 - \alpha$, independent of the degree of risk aversion. The same argument applies for expected profits and riskless wage incomes. For this reason, the expected national income of the economy with status needs always exceeds its counterpart of the economy without status concerns, and consequently, expected utility will be higher.

Figure 1 illustrates the results from Proposition 2, where the black graphs denote the economic variables of the economy with status preferences while the dark grey ones depict the case of $\delta = 0$. Especially a comparison between Figures 1(a) and 1(c) visualizes the correlation between changes in the equilibrium distribution of classes and changes in the corresponding market returns. Moreover, by comparing the slopes of the functions, the figures can give a intuitive understanding of the mitigating effect from status preferences.

Status Preferences We will now discuss the response of the equilibrium values of the economic variables to an increase in the preferences for status. If we recur to one on the main results of the preceding section, namely, that status concerns partially compensate risk preferences and move the equilibrium closer towards the risk–neutral allocation, we would expect an equiv-



(a) Population share λ^* (b) Expected utility $\mathrm{E}U^*$

(c) Wage w^* and expected profit $\mathrm{E}\pi(\theta)^*$ (d) Mean income $\mathrm{E}Y^*$

Figure 1: *Equilibrium response to changes in the attitude towards risk,* ρ

alent result for a change in the status parameter, while the degree of risk aversion is held fixed.

The derivatives of the economic variables with respect to a change in δ are given as follows

$$
\begin{aligned}
&(i) \quad \text{for} \quad \rho \gtreqless 0: \qquad \frac{\partial \lambda^*}{\partial \delta} \gtreqless 0, \quad \frac{\partial w^*}{\partial \delta} \gtreqless 0, \quad \frac{\partial \mathrm{E}\pi(\theta)^*}{\partial \delta} \lesseqgtr 0, \quad \frac{\partial \left[\frac{\mathrm{E}y_i^*}{\mathrm{E}Y^*}\right]}{\partial \delta} \lesseqgtr 0 \\
&(ii) \quad \text{for} \quad \rho \neq 0: \qquad \frac{\partial \mathrm{E}Y^*}{\partial \delta} > 0.
\end{aligned}
\tag{17}
$$

Independent of the sign of the measure of risk aversion, we can state the following results:

Proposition 3 (Asymptotic Results) *The population shares* $\lambda^*, 1-\lambda^*$, *mean national income* $\mathrm{E}Y^*$, *expected profits* $\mathrm{E}\pi(\theta)^*$ *and wage incomes* w^* *converge towards the corresponding equilibrium values of the risk–neutral society, as the preference for status increases*

$$
\begin{aligned}
&\lim_{\delta\to\infty} \lambda^* = \lambda_{\rho=0}, \qquad \lim_{\delta\to\infty} \mathrm{E}Y^* = \mathrm{E}Y^*_{\rho=0}, \qquad \lim_{\delta\to\infty} \frac{\mathrm{E}y_i^*}{\mathrm{E}Y^*} = 1 \\
&\lim_{\delta\to\infty} w^* = w_{\rho=0}, \qquad \lim_{\delta\to\infty} \mathrm{E}\pi(\theta)^* = \mathrm{E}\pi(\theta)^*_{\rho=0}.
\end{aligned}
\tag{18}
$$

Proof: The asymptotic result for λ^* follows immediately from (12). Since $E\pi(\theta)^*, w^*$ and EY^* are only implicitly determined by δ, all asymptotic results are directly related to the change in λ^*. □

Figures 2(a), 2(c), and 2(d) illustrate the results from Proposition 3 for the case of a risk–averse society ($\rho > 0$), which — regarding empirical evidence on attitudes towards risk — is the more realistic case; see Epstein and Zin (1991). With an increase in status needs in the economy, δ more and more compensates the negative shift effect away from risky profits towards riskless wage incomes, which originally stems from a positive degree of risk aversion. The increase in the population share of entrepreneurs is accompanied by a decrease in labor supply. As the marginal productivity of labor increases, the wage rate rises and expected profits decline. The argument holds with opposite sign, if we consider an risk–loving society.

Because we do not discuss the case of disutility from status, i. e. $\delta < 0$, which might perhaps be relevant in an society of hermits, the figures start in $\delta = 0$. The corresponding dark grey horizontal line represents the case of a status–neutral economy. Expected national income, expected profits and wage incomes converge monotonically towards the equilibrium values of the risk–neutral society (light grey) at a declining rate.

This result raises the question, as to whether convergence of the income variables also implies that expected utility EU^* will converge towards its risk–neutral level, as the preferences for social status increase. By substituting for the equilibrium value λ^* from (12) in (10) or (11) respectively, we obtain the following expression for expected utility

$$EU^* = \frac{1}{1-\rho}\left((1-\alpha)\left(\frac{\alpha}{1-\alpha}\right)^{\alpha}\left(1-\alpha+\alpha\exp\left\{\frac{\rho\sigma^2}{2(1+\delta)(1-\alpha)^2}\right\}\right)^{\delta} \times \right.$$
$$\left. \times \exp\left\{\bar{\theta} + \frac{\sigma^2\left[(1-\alpha)(1+\delta)-\rho(1-\alpha-\delta)\right]}{2(1+\delta)(1-\alpha)^2}\right\}\right)^{1-\rho} \tag{19}$$

Proposition 4 (Optimal degree of status and asymptotic properties of EU^*)

(i) Expected utility is maximized for a degree of status δ^{max}, if the following conditions hold:

$$\frac{\rho\sigma^2}{2(1+\delta)^2(1-\alpha)} + \ln\alpha - \frac{\partial\lambda^*}{\partial\delta}\ln(1-\lambda^*) = 0 \quad \textit{and} \quad \left.\frac{\partial^2 EU^*}{\partial\delta^2}\right|_{\delta=\delta^{max}} < 0. \tag{20}$$

(ii) *Status preferences have a positive size effect on expected utility*

$$\mathrm{E}U^* > \mathrm{E}U^*_{\delta=0} \quad \forall \delta < \infty. \tag{21}$$

(iii) *The equilibrium value of expected utility of the society with preferences for social status asymptotically converges towards expected utility of the status–neutral society*

$$\lim_{\delta\to\infty} \mathrm{E}U^* = \mathrm{E}U_{\delta=0} = \frac{1}{1-\rho}\left((1-\alpha)\left(\frac{\alpha}{1-\alpha}\right)^{\alpha}\exp\left\{\bar{\theta}+\frac{(1-\rho)\,\sigma^2}{2(1-\alpha)}\right\}\right)^{1-\rho}. \tag{22}$$

Proof:

ad (i) In general, the derivative of expected utility $\mathrm{E}U^*$ with respect to the status parameter δ is given by

$$\begin{aligned}\frac{\partial \mathrm{E}U^*}{\partial\delta} = &\left(\frac{\alpha^{1+\delta}}{(1-\lambda^*)^{\delta}}\left(\frac{\lambda^*}{1-\lambda^*}\right)^{1-\alpha}\exp\left\{\bar{\theta}+\frac{\sigma^2}{2(1-\alpha)}\right\}\right)^{1-\rho}\times\\ &\times\left[\frac{\rho\sigma^2}{2(1+\delta)^2(1-\alpha)}+\ln\alpha-\frac{\partial\lambda^*}{\partial\delta}\ln(1-\lambda^*)\right].\end{aligned} \tag{23}$$

The first term on the RHS of (23) is positive. Expected utility reaches an optimum if the second term on the RHS of (23) equals zero. By (17), $\frac{\partial\lambda^*}{\partial\delta} \gtreqless 0$ for $\rho \gtreqless 0$. Hence, the first and the last term of the optimality condition (20) always are of opposite sign.

ad (ii) By direct comparison of (19) and (22).

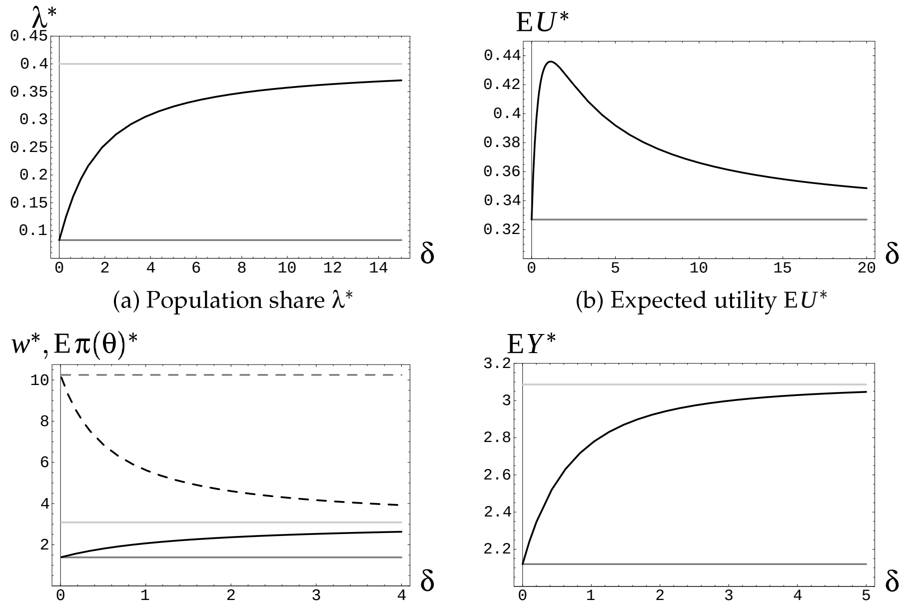
ad (iii) We find

$$\lim_{\delta\to\infty}\left(1-\alpha+\alpha\exp\left\{\frac{\rho\sigma^2}{2(1+\delta)(1-\alpha)^2}\right\}\right)^{\delta} = 1,$$

$$\lim_{\delta\to\infty}\exp\left\{\frac{\sigma^2\left[(1-\alpha)(1+\delta)-\rho\,(1-\alpha-\delta)\right]}{2(1+\delta)(1-\alpha)^2}\right\} = \exp\left\{\frac{(1-\rho)\,\sigma^2}{2(1-\alpha)}\right\}$$

by application of L'Hôpital's rule. □

By taking account of the fact that λ^* as well as the derivative $\frac{\partial\lambda^*}{\partial\delta}$ are functions of δ, it becomes obvious from (20) that the optimality condition is a nonlinear polynomial in δ and cannot be solved analytically. In order to give an intuitive understanding of the results of Proposition 4, figure 2(b) displays the change of expected utility $\mathrm{E}U^*$ for an increase in the individual valuation of status, as measured by δ. The dark grey line of figure 2(b) represents expected utility of the risk–averse–status–neutral economy.



(a) Population share λ^* (b) Expected utility $\mathrm{E}U^*$

(c) Wage w^* and expected profit $\mathrm{E}\pi(\theta)^*$ (d) Mean income $\mathrm{E}Y^*$

Figure 2: *Equilibrium response to changes status preferences*, δ, $\rho > 0$

The corresponding equilibrium expected utility value of the efficient risk–neutral economy is not displayed in figure 2(b). Because of $\mathrm{E}U^*_{\rho=0} = \mathrm{E}Y^*$, it can be taken from figure 2(d) and exceeds the expected utilities of the two risk–averse economies by lengths.

Expected utility of the status preferring economy is maximized in δ^*, where all income types remain below their efficient values. As δ increases further, utility falls back to the equilibrium value of the status–neutral society. This result can be explained by the corresponding change in expected relative income, which declines and converges towards unity as δ increases; see (17) and (18). The utility enhancing effect from status vanishes with an increase in its esteem.

4 Conclusion

This paper analyzed the influence of status preference on occupational choice under risk. Status utility is derived from expected relative income. The agents of the model have the choice between either joining the labor class by working for a safe wage, or becoming an entrepreneur thereby bearing all the production risk. We found, that in a risk–averse status preferring society, a higher proportion of agents chooses the entrepreneur class than in a status neutral economy. Status preferences do not affect the equilibrium class distribution of a risk–neutral society, and the well–known result is maintained that efficient outcomes are only obtained in risk–neutral economies.

In general, there is a positive tradeoff between status and risk, as well as between status and the attitude towards risk. The equilibrium distribution between the two classes remains constant with a change in the degree of risk aversion, if there is a compensating change in status preferences.

Mean income in an economy of status lovers is always higher than in a status–neutral but non risk–neutral society. This positive effect extends to expected utility, which is also higher in a society with preferences for social status. We determined a condition for the optimal degree of status preferences, which can be regarded as a second–best optimum, since it still falls below the equilibrium level of expected utility in the efficient economy.

The comparative static analysis also demonstrated that the equilibrium values of income types asymptotically converge towards their corresponding efficient levels of the risk–neutral economy as the valuation for status increases. Yet, this result cannot be generalized with respect to expected utility. Because the expected relative income converges towards unity, no extra utility gain can be derived from status. Since the society remains non–indifferent towards risk, expected utility of the status–preferring economy asymptotically converges towards the equilibrium of the status–neutral society.

While status preferences are able to correct for the inefficiencies regarding the equilibrium distribution of agents between the two occupations which stem from non–zero risk aversion, they cannot close the welfare gap. Instead, a second–best welfare maximum is derived for a inefficient distribution between laborers and entrepreneurs.

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