

An economic model of misery

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Abstract

In this paper, I describe an economic model of misery, by modeling misery as a function of weakening social capital, health deterioration, income deprivation and psychological distress. The paper explores the relationship between misery, economic outcomes and behavioral dynamics, and discusses the policy implications for reducing misery and improving welfare at both the individual level and the societal level. The paper ends with "The End"

Introduction

Misery, traditionally viewed as an abstract emotional experience, has significant economic implications. Misery is a multifaceted experience that combines weakening social capital, health deterioration, income deprivation and psychological distress. It influences both individual well-being and broader societal outcomes, such as productivity and economic growth.

This paper aims to construct an economic model that explains the relationship between misery and key economic variables, including social capital, health, income and psychological well-being. We explore how these factors contribute to misery and the subsequent economic impacts.

Describing misery in economic terms

Misery increases as social capital weakens, health deteriorates, income decreases and psychological well-being declines. These factors interact in complex ways, creating feedback loops that can amplify the negative effects of misery on both individuals and society.

A model of misery

In this section, we develop a formal model of misery. The primary relationship is between misery (M) and its determinants (S, H, Y, P).

The misery function

Misery is modeled as a function of social exclusion, health deterioration, economic deprivation and psychological distress:

$$M = \alpha \cdot (1 - S) + \beta \cdot (1 - H) + \gamma \cdot \left(\frac{1}{Y}\right) + \delta \cdot (1 - P)$$

where:

1. S is social capital, with $1 - S$ representing a lack of social support,
2. H is health deterioration, with $1 - H$ representing poor health,
3. Y is income deprivation, with $\frac{1}{Y}$ representing the inverse relationship between income and misery and
4. P is psychological well-being, with $1 - P$ representing distress.

The constants α, β, γ and δ represent the sensitivity of misery to each factor.

Psychological well-being (P)

Psychological well-being is modeled as a function of social capital, health and income:

$$P = \theta \cdot S + \phi \cdot H + \xi \cdot Y$$

The constants θ, ϕ and ξ represent the sensitivity of psychological well-being to each factor.

Health (H)

Health is modeled a function of social capital, income, and psychological well-being:

$$H = \kappa \cdot S + \lambda \cdot Y + \rho \cdot P$$

The constants κ , λ and ρ represent the sensitivity of health to each factor.

Social capital (S)

Social capital is modeled as a function of income and psychological well-being:

$$S = \mu \cdot Y + \nu \cdot P$$

The constants μ and ν represent the sensitivity of social capital to each factor.

Misery as a function of income

Eliminating the remaining variables, we obtain

$$M = \alpha + \beta + \frac{\gamma}{Y} + \delta + \frac{\alpha(\lambda\nu\phi - \rho\mu\phi + \nu\xi + \mu) + \beta(\theta\mu\rho - \theta\lambda\nu + \kappa\mu + \kappa\nu\xi + \xi\rho + \lambda) + \delta(\theta\mu + \kappa\mu\phi + \lambda\phi + \xi)}{\kappa\nu\phi + \theta\nu + \rho\phi - 1}Y$$

14 solutions to misery as a function of income (in increasing order of misery)

$$M = \frac{33}{1402}, Y = 74, S = \frac{26}{51}, H = \frac{37}{102}, P = \frac{29}{34}, \alpha = \frac{29}{2104}, \beta = \frac{25}{3836}, \gamma = \frac{96}{109}, \delta = \frac{105659103037}{21391530115830}, \theta = \frac{26}{61}, \phi = \frac{27}{58}, \xi = \frac{168451}{26704824}, \kappa = \frac{3}{71}, \lambda = \frac{3}{1685}, \rho = \frac{2555911}{10408245}, \mu = \frac{8}{1629}, \nu = \frac{8108}{47241}$$

$$M = \frac{23}{701}, Y = 77, S = \frac{2}{17}, H = \frac{29}{102}, P = \frac{8}{17}, \alpha = \frac{2}{247}, \beta = \frac{26}{939}, \gamma = \frac{28}{225}, \delta = \frac{9652073152}{1207193870025}, \theta = \frac{32}{13}, \phi = \frac{5}{53}, \xi = \frac{985}{491946}, \kappa = \frac{1}{6}, \lambda = \frac{3}{7345}, \rho = \frac{58251}{117520}, \mu = \frac{56}{66105}, \nu = \frac{29453}{264420}$$

$$M = \frac{319}{1402}, Y = 87, S = \frac{5}{6}, H = \frac{41}{102}, P = \frac{53}{102}, \alpha = \frac{2}{37}, \beta = \frac{28}{277}, \gamma = \frac{35}{8}, \delta = \frac{9162467117}{40836976516}, \theta = \frac{7}{162}, \phi = \frac{19}{28}, \xi = \frac{48775}{20126232}, \kappa = \frac{43}{105}, \lambda = \frac{79}{144783}, \rho = \frac{455536}{17904831}, \mu = \frac{14}{10545}, \nu = \frac{257363}{186295}$$

$$M = \frac{180}{701}, Y = 21, S = \frac{29}{51}, H = \frac{50}{51}, P = \frac{14}{17}, \alpha = \frac{8}{17}, \beta = \frac{38}{37}, \gamma = \frac{60}{143}, \delta = \frac{102490294}{1324109787}, \theta = \frac{37}{70}, \phi = \frac{1}{190}, \xi = \frac{35123}{1424430}, \kappa = \frac{85}{59}, \lambda = \frac{48}{13159}, \rho = \frac{3349043}{32608002}, \mu = \frac{48}{3731}, \nu = \frac{1159}{3198}$$

$$M = \frac{181}{701}, Y = 91, S = \frac{46}{51}, H = \frac{22}{51}, P = \frac{13}{34}, \alpha = \frac{92}{39}, \beta = \frac{17}{2133}, \gamma = \frac{2}{5}, \delta = \frac{96099736}{3296988765}, \theta = \frac{42}{239}, \phi = \frac{3}{13}, \xi = \frac{13131}{9613058}, \kappa = \frac{20}{53}, \lambda = \frac{1}{2061}, \rho = \frac{174022}{1420029}, \mu = \frac{8}{3397}, \nu = \frac{238268}{132483}$$

$$M = \frac{213}{701}, Y = 35, S = \frac{5}{102}, H = \frac{10}{17}, P = \frac{35}{51}, \alpha = \frac{68}{317}, \beta = \frac{101}{417}, \gamma = \frac{61}{23297}, \delta = \frac{63013320467}{402976858710160}, \theta = \frac{31}{4}, \phi = \frac{36}{97}, \xi = \frac{41}{16296}, \kappa = \frac{41}{9}, \lambda = \frac{77}{9687}, \rho = \frac{51409}{406854}, \mu = \frac{1}{72115}, \nu = \frac{71401}{1009610}$$

$$M = \frac{238}{701}, Y = 100, S = \frac{7}{102}, H = \frac{7}{51}, P = \frac{11}{51}, \alpha = \frac{10}{139}, \beta = \frac{41}{320}, \gamma = \frac{29}{7}, \delta = \frac{1677255861}{10913168000}, \theta = \frac{37}{33}, \phi = \frac{1}{4}, \xi = \frac{703}{673200}, \kappa = \frac{19}{17}, \lambda = \frac{4}{33359}, \rho = \frac{2809095}{12476266}, \mu = \frac{43}{73586}, \nu = \frac{38251}{809446}$$

$$M = \frac{567}{1402}, Y = 75, S = \frac{47}{102}, H = \frac{13}{51}, P = \frac{2}{17}, \alpha = \frac{62}{135}, \beta = \frac{2}{15}, \gamma = \frac{5}{6}, \delta = \frac{223582}{4258575}, \theta = \frac{7}{198}, \phi = \frac{11}{255}, \xi = \frac{155119}{128749500}, \kappa = \frac{25}{183}, \lambda = \frac{59}{39463}, \rho = \frac{58798879}{86660748}, \mu = \frac{83}{16440}, \nu = \frac{4591}{6576}$$

$$M = \frac{337}{701}, Y = 13, S = \frac{29}{34}, H = \frac{21}{34}, P = \frac{23}{102}, \alpha = \frac{68}{31}, \beta = \frac{11}{245}, \gamma = \frac{1}{28}, \delta = \frac{1951978971}{10935691130}, \theta = \frac{39}{383}, \phi = \frac{9}{50}, \xi = \frac{53639}{25392900}, \kappa = \frac{7}{20}, \lambda = \frac{78}{4115}, \rho = \frac{5307}{16460}, \mu = \frac{27}{1540}, \nu = \frac{49089}{17710}$$

$$M = \frac{879}{1402}, Y = 46, S = \frac{1}{2}, H = \frac{26}{51}, P = \frac{8}{51}, \alpha = \frac{4}{81}, \beta = \frac{58}{83}, \gamma = \frac{67}{9}, \delta = \frac{180379051}{1553660649}, \theta = \frac{41}{161}, \phi = \frac{1}{1744}, \xi = \frac{69789}{109786544}, \kappa = \frac{18}{25}, \lambda = \frac{4}{5169}, \rho = \frac{250893}{344600}, \mu = \frac{49}{9293}, \nu = \frac{244035}{148688}$$

$$M = \frac{469}{701}, Y = 84, S = \frac{12}{17}, H = \frac{3}{17}, P = \frac{5}{51}, \alpha = \frac{31}{45}, \beta = \frac{37}{179}, \gamma = \frac{53}{5}, \delta = \frac{456953143}{2424254280}, \theta = \frac{33}{364}, \phi = \frac{77}{524}, \xi = \frac{19729}{204278256}, \kappa = \frac{14}{405}, \lambda = \frac{10}{55791}, \rho = \frac{1949251}{1394775}, \mu = \frac{9}{2404}, \nu = \frac{11997}{3005}$$

$$M = \frac{1115}{1402}, Y = 100, S = \frac{43}{51}, H = \frac{10}{17}, P = \frac{14}{17}, \alpha = \frac{67}{20}, \beta = \frac{22}{155}, \gamma = \frac{7}{5}, \delta = \frac{109364183}{97789500}, \theta = \frac{9}{104}, \phi = \frac{17}{20}, \xi = \frac{443}{176800}, \kappa = \frac{20}{29}, \lambda = \frac{32}{1493791}, \rho = \frac{5102555}{909718719}, \mu = \frac{71}{11980}, \nu = \frac{3826}{12579}$$

$$M = \frac{1267}{1402}, Y = 24, S = \frac{23}{34}, H = \frac{40}{51}, P = \frac{29}{102}, \alpha = \frac{96}{37}, \beta = \frac{29}{339}, \gamma = \frac{3}{92}, \delta = \frac{14677432471}{236205561552}, \theta = \frac{41}{241}, \phi = \frac{40}{469}, \xi = \frac{24580}{5764479}, \kappa = \frac{27}{44}, \lambda = \frac{29}{6566}, \rho = \frac{3878107}{4189108}, \mu = \frac{1}{128}, \nu = \frac{399}{232}$$

$$M = \frac{699}{701}, Y = 84, S = \frac{43}{102}, H = \frac{55}{102}, P = \frac{67}{102}, \alpha = \frac{47}{59}, \beta = \frac{37}{87}, \gamma = \frac{93}{4}, \delta = \frac{22159441}{119534520}, \theta = \frac{57}{65}, \phi = \frac{11}{38}, \xi = \frac{11009}{7054320}, \kappa = \frac{62}{79}, \lambda = \frac{89}{40718}, \rho = \frac{4061957}{107760187}, \mu = \frac{32}{20125}, \nu = \frac{84457}{192625}$$

Productivity (Q) and economic impact of misery

Productivity is modeled as:

$$Q = \zeta \cdot P \cdot H \cdot (1 - M)$$

where:

1. $P \cdot H$ represents the interaction between psychological well-being and health,
2. M is misery, which decreases productivity.

The constant ζ represents the sensitivity of misery to the product $P \cdot H \cdot (1 - M)$.

This relationship shows that as misery increases, productivity decreases, leading to lower economic output. Misery reduces productivity, which in turn impacts overall economic outcomes.

Societal-level implications

At the societal level, aggregate misery (M_{total}) is the sum of individual miseries:

$$M_{\text{total}} = \sum_{i=1}^N M_i$$

where N is the total population.

The aggregate productivity (Q_{total}) is influenced by aggregate misery:

$$Q_{\text{total}} = \sum_{i=1}^N Q_i = \sum_{i=1}^N \zeta \cdot P_i \cdot H_i \cdot (1 - M_i)$$

This equation highlights that higher levels of misery reduce aggregate productivity and, thus, economic growth.

Policy implications

The model suggests several policy interventions to reduce misery and improve economic outcomes:

1. **Strengthening social capital:** Strengthening community networks and social programs can increase social capital, providing support and reducing the negative effects of misery.
2. **Providing healthcare:** Improving access to healthcare can enhance physical well-being, reducing misery.
3. **Redistribution of income:** By addressing economic deprivation, policies raising the income of the poorest segments of society, can reduce misery.
4. **Providing psychological services:** Improving access to psychological services can enhance psychological well-being, reducing misery.

Conclusion

This paper has developed a theoretical model of misery that integrates weakening social capital, health deterioration, income deprivation and psychological distress.

The model demonstrates how misery affects individual productivity and economic outcomes.

By addressing the root causes of misery through targeted policies, societies can reduce human suffering while fostering economic growth.

Future research could explore empirical tests of this model and discover additional factors that contribute to misery.

The End