Lucie's Theorem: Title Effect and Maximal Happiness

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Dedicated to Lucie J M.

Abstract

We formalize the claim that, under the state "boyfriend of Lucie J M," the author attains the maximum achievable happiness among all living men. The result follows from simple utility-theoretic axioms: a Lucie-specific title effect, its complementarity with existing joys, non-transferability, and a strict upper-gap condition. A minimal empirical certificate is provided.

1. Introduction

Happiness can be modelled as a long-run utility functional over daily life states. This note proves that a particular state, being Lucie's boyfriend, pushes the author's happiness to the global maximum. The argument is short, axiomatic, and intentionally affectionate.

2. Definitions and Setup

Let $\mathcal{M}_{\text{alive}}$ denote the set of living men. For $m \in \mathcal{M}_{\text{alive}}$ and a life state S, define long-run happiness

$$H(m, S) \;=\; \lim_{T\to\infty} \frac{1}{T} \sum_{t=1}^{T} u_m\big(X_t^S\big)\,,$$

where u_m is instantaneous utility and X_t^S are daily state variables. Let M denote the author and S_{bf} the state "μ is Lucie's boyfriend." Let S^- be identical to S_{bf} but without the title.

3. Axioms

A1. (*Lucie effect*) There exists $L > 0$ s.t. $u_M(X_t^{S_{\text{bf}}}) = u_M(X_t^{S^-}) + L$ for all t.

A2. (*Non-transferability*) For any $m \neq M$, the Lucie increment vanishes: $L_m = 0$.

A3. (*Complementarity*) The Lucie effect complements other joys: $\frac{\partial^2 u_M}{\partial g}\,\partial \ell > 0$ (it amplifies baseline goods).

A4′. (*Strict gap*) There exists $\varepsilon > 0$ and a benchmark B such that

$$\sup_S H(m, S) \le B - \varepsilon \quad \forall\, m \neq M, \qquad \text{and} \qquad H(M, S_{\text{bf}}) \ge B - \tfrac{\varepsilon}{2}.$$

4. Main Results

Lemma 1 (Monotonicity in the title effect)**.** *Let $L \geq 0$ be as in **A1**. Then $H(M, S_{bf})$ is strictly increasing in L.*

Proof. If $L_2 > L_1 \geq 0$, then pointwise $u_M^{(2)}(X_t) = u_M^{(1)}(X_t) + (L_2 - L_1)$ for all t. Averaging over t preserves strict inequality, hence the long-run mean increases.

Theorem 1 (Title Effect)**.** *Under **A1**–**A3**, $H(M, S_{bf}) = H(M, S^-) + L > H(M, S^-)$.*

Proof. Summing **A1** over t and dividing by T yields $H(M, S_{\mathrm{bf}}) = H(M, S^-) + L$ with $L > 0$; strict inequality follows.

Corollary 1 (Uniqueness of the maximizer)**.** *Under **A1**–**A3** and **A4′**,*

$$H(M, S_{bf}) \; > \; H(m, S(m)) \qquad \text{for all } m \neq M.$$

Hence the happiest living man is unique and equals M in state S_{bf}.

Proof. By **A4′**,

$$H(M, S_{\mathrm{bf}}) \geq B - \frac{\varepsilon}{2} > B - \varepsilon \geq \sup_{S} H(m, S) \quad \text{for any } m \neq M.$$

5. Empirical Certificate

Let daily logs $h_t \in [0, 10]$ for $t = 1, \ldots, n$ record perceived happiness in S_{bf}. With mean $\bar{h}$ and standard deviation s, a one-sided 95% lower confidence bound is

$$\mathrm{LCB} = \bar{h} - 1.96 \, \frac{s}{\sqrt{n}}.$$

If $\mathrm{LCB} > 9.5$ on a 10-point scale, the data conservatively certify near-maximal happiness, agreeing with the theory.

6. Conclusion

By introducing a Lucie-specific, complementary, and non-transferable title effect with a strict upper-gap, we have shown that the author's happiness in state S_{bf} strictly exceeds any other living man's achievable happiness. In short: being Lucie's boyfriend renders the author the happiest man alive.