Step 3: PROFIT! A Numerical Analysis of Investment in /r/MemeEconomy

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Abstract

Meme investment is the next frontier of the digital economy. In this paper, we provide a detailed description of a novel approach to human-meme fiscal interaction in the online community /r/MemeEconomy [1] via a fully-functioning meme investment bot. This facilitates investment in memes via a new FIAT (Fictitious Imaginary Asset Type) currency: the **MemeCoin (M¢)**. Applications of this technology range from improved PDMs (Predictive Dankness Models) to **becoming a meme millionaire**.

Concepts

Any meme posted on the MemeEconomy subreddit can be invested in by replying to the automatically-posted comment from the meme investment bot. The user can invest as many MemeCoins as they have or are brave enough to risk. Whilst there is no upper limit, investments do have a minimum buy-in of 100M¢ because meme investing is not for quitters.

The return on a meme investment is determined by two values: the meme's initial upvote count at the time of investment, and the meme's upvote count at maturity four hours later. **The more upvotes a meme earns, the higher the resulting payoff**.

On the other hand, if the meme doesn't gain enough upvotes before maturity, part of the investment is lost. In general, investing in cheap "penny

stocks" (newer memes with very few upvotes) can earn higher returns, but also carries more risk; the upvotes have to grow more in proportion to the initial upvotes before the investment becomes profitable. Meanwhile, investing in stable "blue chip" memes (those with higher initial upvotes) is safer but generally less profitable.

Investment Return Function

Behaviour overview

Our research indicates that the return on a given investment is governed by a logistic function: an S-shaped curve with a slope which increases towards a pseudo-linear region near its midpoint, before levelling off at a maximum value. [2] The precise shape of this function is determined by a set of parameters that vary according to the number of initial upvotes.

Definitions

- v_0: Initial upvote count

- v_f: Final upvote count

- $C(v_0, v_f)$: The investment return formula. A function of initial and final upvote count.

- $S(x, max, mid, stp)$: The standard logistic function. Parameters max, mid, and stp determine the shape of a curve.

  - x: Horizontal distance along the logistic function curve.
  - max: Maximum value of the logistic function.
  - mid: Midpoint of the logistic function: the value of x for which the $S = \frac{max}{2}$.
  - stp: Steepness parameter of the logistic function: governs how sharply the curve rises.

- "Small-cap" meme: A meme with a small v_0. Particularly small values of v_0 are known as "penny stock" memes.

- "Large-cap" meme: A meme with a large v_0. Particularly large values of v_0 are known as "blue chip" memes.

Governing Equations

The return on meme investment is governed by the following set of equations:

$$C(v_0, v_f) = S(gain(v_0, v_f), \ max(v_0), \ stp(v_0))$$

Where:

$$gain(v_0, v_f) = v_f - v_0$$
$$max(v_0) = 1.2 + \frac{1.9}{\frac{v_0}{10} + 1}$$
$$mid(v_0) = \frac{2}{125}v_0 + 100$$
$$stp(v_0) = \frac{0.04}{\frac{v_0}{100} + 1}$$

The maximum value, $max(v_0)$, represents an investment's maximum possible return. This maximum value decreases with the inverse of v_0: the more initial upvotes the meme has, the lower the maximum possible return. In addition, steepness $stp(v_0)$, also decreases with the inverse of v_0, whilst the midpoint, $mid(v_0)$, increases linearly with v_0.

Given a meme investment with initial upvote count v_0, a curve is constructed representing the possible profit that investment might return. This "return curve" is a logistic function S, whose maximum value, midpoint, and steepness are all determined by v_0 in the manner described above.

The result is that:

- The return curve's maximum decreases as v_0 increases. Thus, small-cap investments have **high** maximum potential profit (up to ~210%), while large-cap investments have **low** maximum potential profit (as low as ~20%).

- The return curve's steepness decreases as v_0 increases. Thus, small-cap investments are **riskier** while large-cap investments are **safer**. (If a small-cap investment fails to gain many upvotes, it's likely to lose a significant proportion of its value.)

- The return curve's midpoint increases as v_0 increases. Thus, larger cap investments require a larger gain in upvotes to achive the same return. In tandem with the steepness behaviour, this has the effect of making large-cap investments **slower-growing** and small-cap investments **quicker-growing**.

Example 1: A penny stock investment

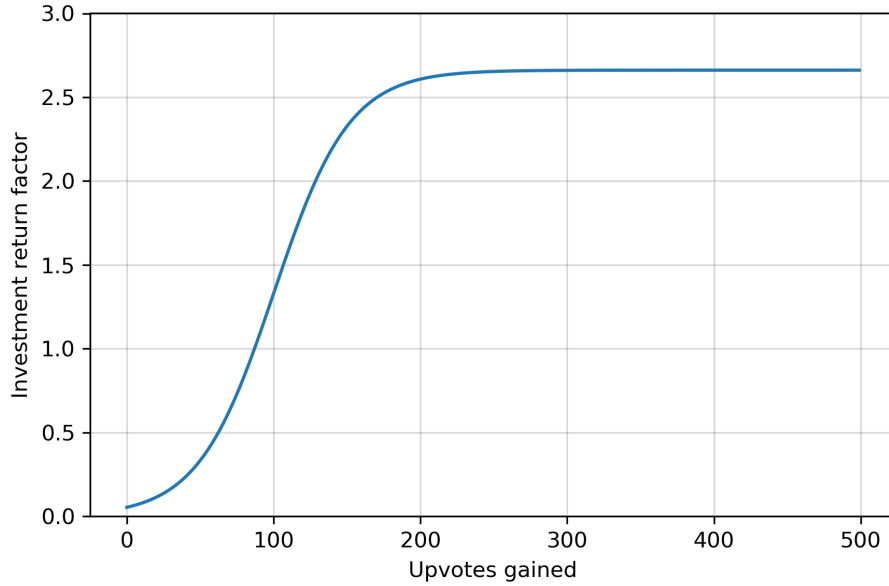Figure 1 shows the return curve for a meme with $v_0 = 3$ initial upvotes.

Figure 1:   Investment return curve for $v_0 = 3$

If you invest in a meme that has 3 initial upvotes, it needs to earn approximately 90 additional upvotes before maturity for you to break even. If it gains approximately 132 upvotes before maturity, you'll double your money. If it gains at least 200, your profit will be $\sim 160\%$.

Example 2: A blue chip investment

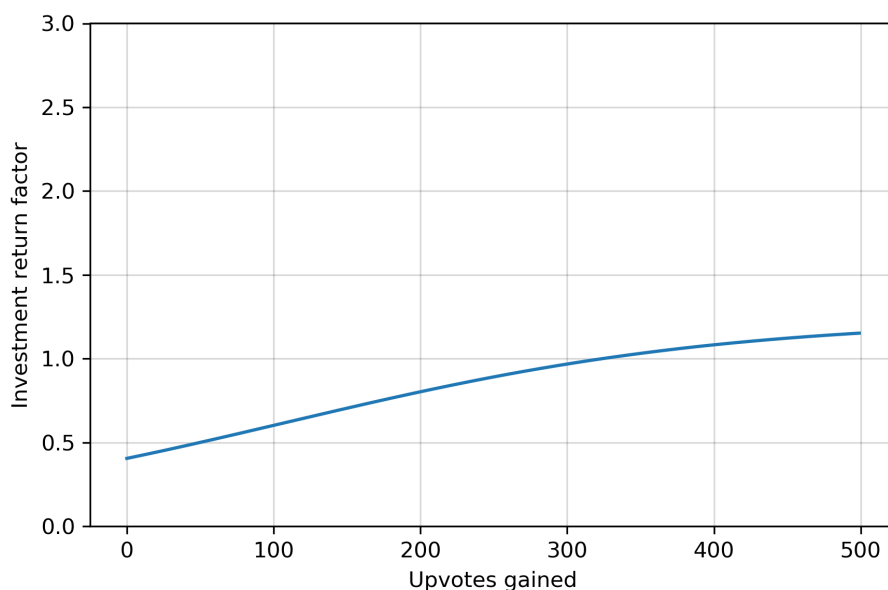Figure 2 shows the return curve for a blue-chip meme with $v_0 = 500$ initial upvotes.

Figure 2: Investment return curve for $v_0 = 500$

If you invest in a meme that has 500 initial upvotes, it needs to earn approximately 324 additional upvotes before maturity for you to break even, but the loss if you fail to do so is less than with the penny stock. If the meme gains approximately 500 upvotes or more, the profit will be $\sim$15%. Beyond this, the profit caps out at $\sim$23% for roughly 900 upvotes gained.

Conclusions

Though we have quantified here the economic patterns underlying meme investments, the social and fiscal implications of memes as a growing economic powerhouse have yet to be fully explored. Future work should address the relationship between dankness and price, the long-term impact of normification, and the influence of the regulatory environment that underlies the memes of production.

References

[1] "Official memeeconomy subreddit." `https://reddit.com/r/MemeEconomy`.

[2] "Logistic function." https://en.wikipedia.org/wiki/Logistic_function.