Public Goods and Private Gifts

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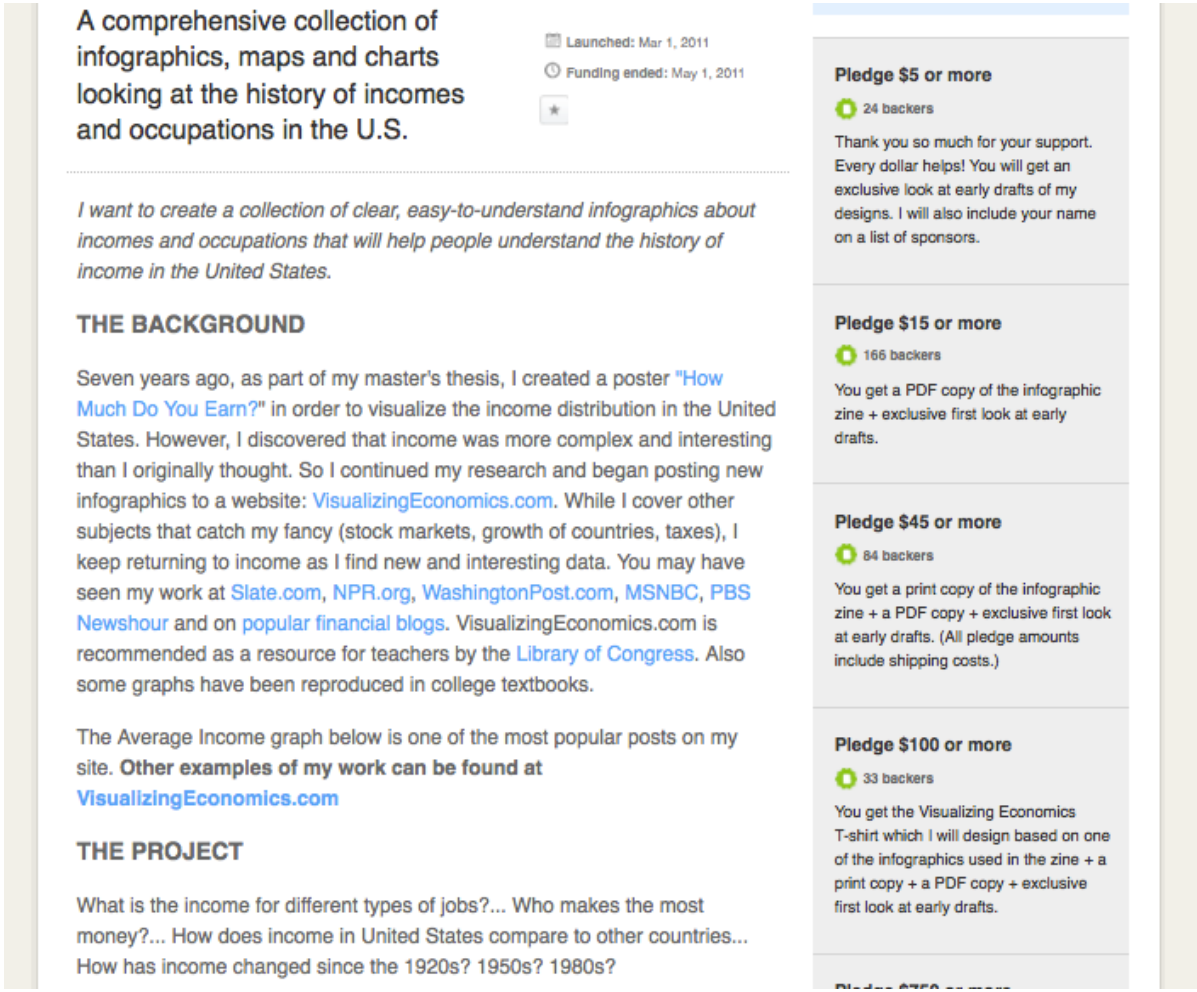
Tying public and private goods

- Public TV
- Charity ball, parties for donors
- Coase and lighthouses
- Kickstarter
  - Web Fonts
  - YouTube channel
- Micropatronage, crowd funding

Example of a Kickstarter project

Kickstarter inducements



A comprehensive collection of infographics, maps and charts looking at the history of incomes and occupations in the U.S.

Launched: Mar 1, 2011
Funding ended: May 1, 2011

I want to create a collection of clear, easy-to-understand infographics about incomes and occupations that will help people understand the history of income in the United States.

THE BACKGROUND

Seven years ago, as part of my master's thesis, I created a poster "How Much Do You Earn?" in order to visualize the income distribution in the United States. However, I discovered that income was more complex and interesting than I originally thought. So I continued my research and began posting new infographics to a website: VisualizingEconomics.com. While I cover other subjects that catch my fancy (stock markets, growth of countries, taxes), I keep returning to income as I find new and interesting data. You may have seen my work at Slate.com, NPR.org, WashingtonPost.com, MSNBC, PBS Newshour and on popular financial blogs. VisualizingEconomics.com is recommended as a resource for teachers by the Library of Congress. Also some graphs have been reproduced in college textbooks.

The Average Income graph below is one of the most popular posts on my site. **Other examples of my work can be found at VisualizingEconomics.com**

THE PROJECT

What is the income for different types of jobs?... Who makes the most money?... How does income in United States compare to other countries... How has income changed since the 1920s? 1950s? 1980s?

Pledge $5 or more

24 backers

Thank you so much for your support. Every dollar helps! You will get an exclusive look at early drafts of my designs. I will also include your name on a list of sponsors.

Pledge $15 or more

166 backers

You get a PDF copy of the infographic zine + exclusive first look at early drafts.

Pledge $45 or more

84 backers

You get a print copy of the infographic zine + a PDF copy + exclusive first look at early drafts. (All pledge amounts include shipping costs.)

Pledge $100 or more

33 backers

You get the Visualizing Economics T-shirt which I will design based on one of the infographics used in the zine + a print copy + a PDF copy + exclusive first look at early drafts.

Notation

- g_i = contribution by person i
- $G = \sum_i g_i$ = total contributions
- $U_i(x_i, G, g_i)$ = utility depends on private consumption, public good, donor's contribution (which determines private gift according to size)
- Same as Andreoni's "warm glow"
- But in many cases gifts are discrete: there is a threshold for the "glow"

"Hot or not" model

- Discrete model is of interest due to Bagnoli-Lipman and provision point mechanisms
- Contributions summing to threshold can be a Nash equilibrium
- Obviously equilibrium not unique
- However, it is not a Nash equilibrium for sums to *exceed* threshold
- What about Kickstarter?

Hot or not model with 2 agents

$$
\begin{aligned}
u_i &= \text{value of public good to agent } i \\
r_i &= \text{value of private good to agent } i \\
g_i &= \text{contribution of agent } i \\
G &= g_1 + g_2 = \text{total contributions} \\
\bar{G} &= \text{threshold for total contributions to public good} \\
\bar{g}_i &= \text{threshold for contribution to receive gift}
\end{aligned}
$$

Payoff to agent 2

$$v_2 = \begin{cases} u_2 + r_2 - g_2 & \text{if } g_1 + g_2 \geq \bar{G} \text{ and } g_2 \geq \bar{g}_2 \\ u_2 - g_2 & \text{if } g_1 + g_2 \geq \bar{G} \text{ and } g_2 < \bar{g}_2 \\ 0 & \text{if } g_1 + g_2 < \bar{G} \end{cases}$$

Classical case: no private gift

Direct utility of agent 2 is

$$\max\{u_2 - g_2, 0\} \tag{1}$$

Since $g_1 + g_2 = \bar{G}$, indirect utility of agent 2 is

$$v_2(g_1) = \max\{u_2 - \bar{G} + g_1, 0\} \tag{2}$$

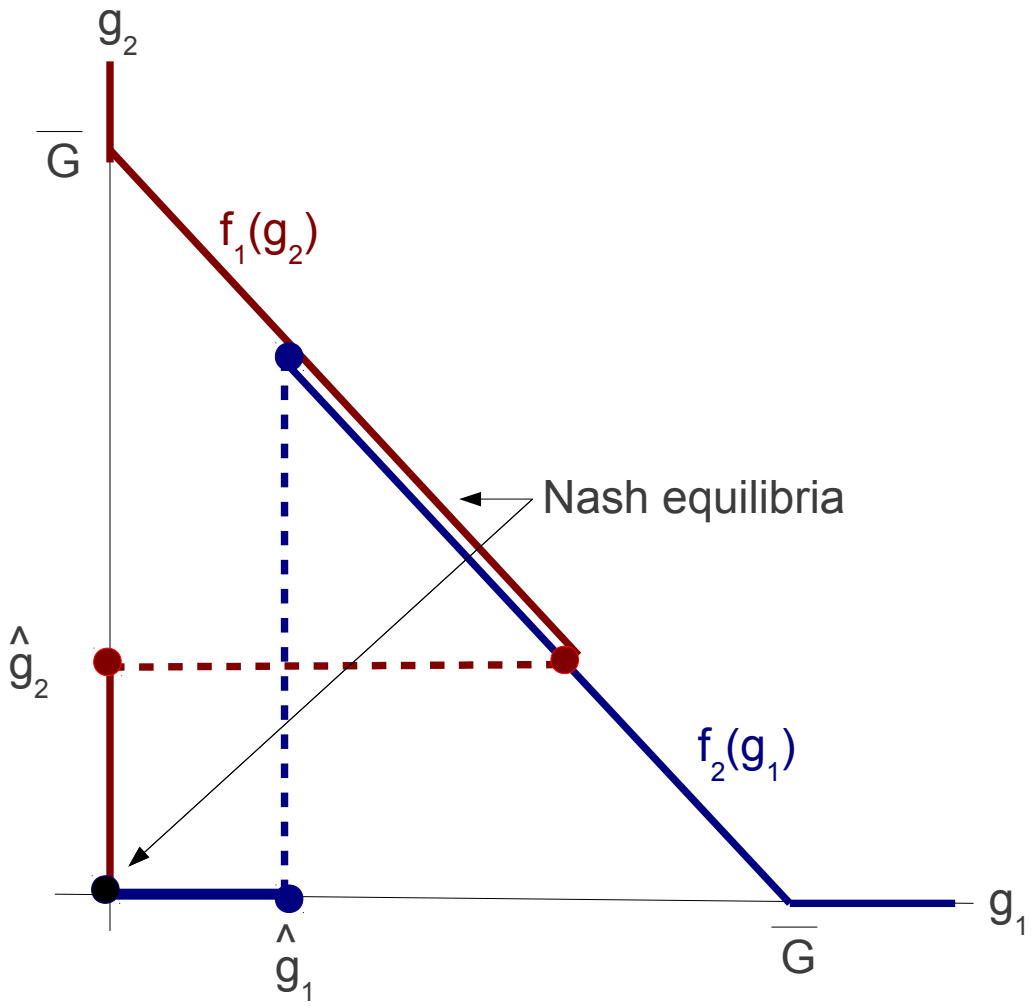
Agent 2 is indifferent between contributing or not at

$$\hat{g}_1 = \bar{G} - u_2.$$

Reaction function for agent 2:

$$g_2(g_1) = \begin{cases} \bar{G} - g_1 & \text{if } g_1 \geq \hat{g}_1 = \bar{G} - u_2 \\ 0 & \text{otherwise} \end{cases} \tag{3}$$

Classical Nash equilibrium



Hot or not model

$$v_2(g_1) = \begin{cases} u_2 + r_2 - g_2 & \text{if } g_1 + g_2 \geq \bar{G} \text{ and } g_2 \geq \bar{g}_2 \\ u_2 - g_2 & \text{if } g_1 + g_2 \geq \bar{G} \text{ and } g_2 < \bar{g}_2 \\ 0 & \text{if } g_1 + g_2 < \bar{G} \end{cases} \quad (4)$$

Assumption 1. It is efficient to jointly fund the public good: $u_1 + u_2 > G$ but $u_1 < G$ and $u_2 < G$.

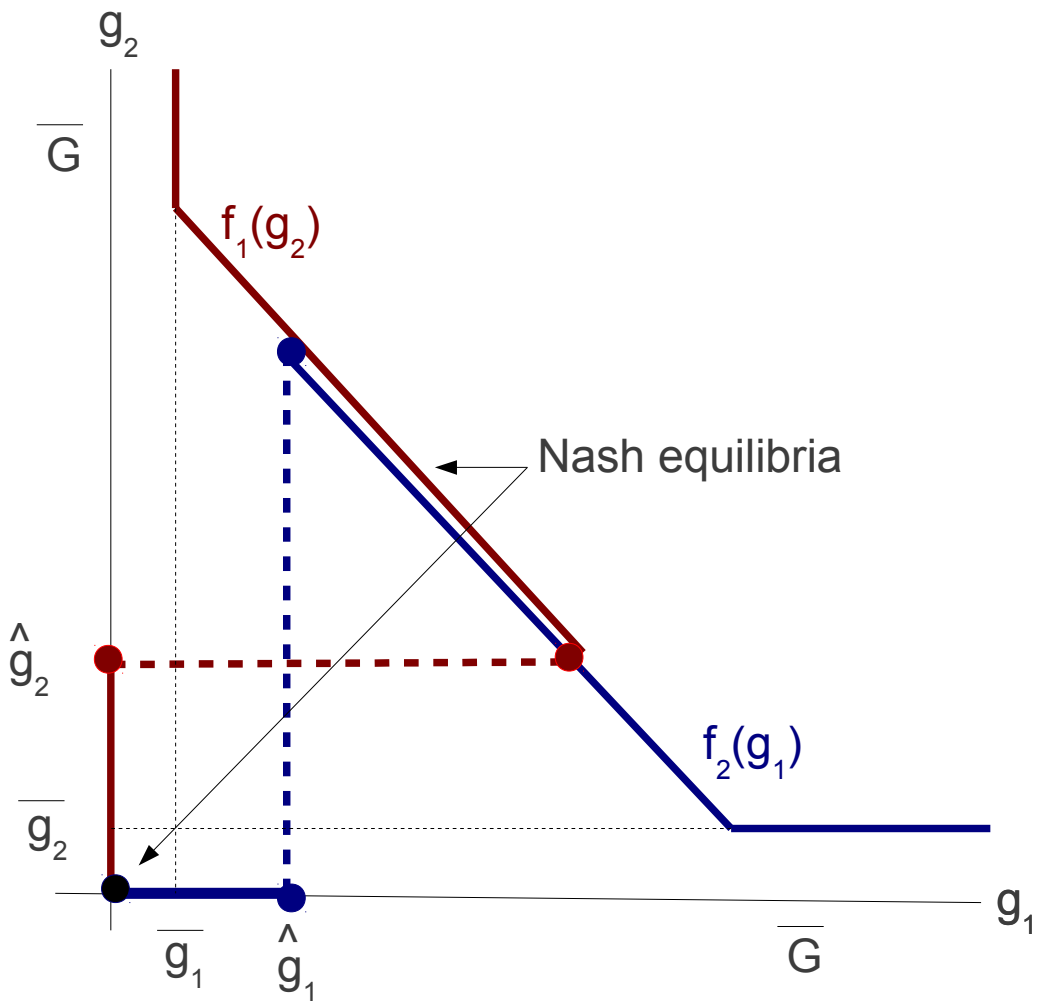
Assumption 2. Threshold for private gift is small. $u_i + r_i > \bar{g}_i$ for $i = 1, 2$.

Now agent 2 just begins to contribute when $\hat{g}_1 = \bar{G} - u_2 - r_2$, which by assumption is sufficient to trigger the private gift. Region of contribution is larger.

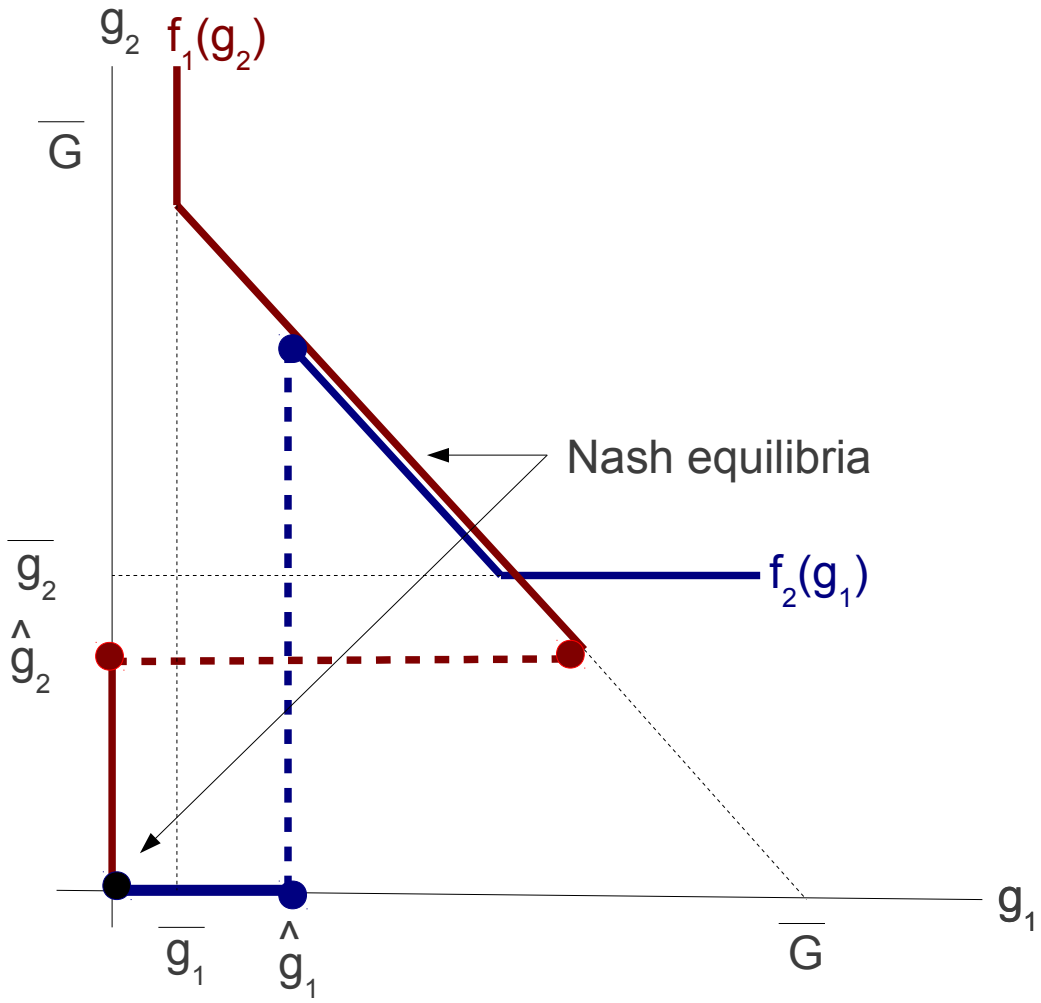
Reaction function for agent 2

$$g_2(g_1) = \begin{cases} 0 & \text{if } g_1 < \hat{g}_1 \\ \bar{G} - g_1 & \text{if } \bar{G} - \bar{g}_2 \geq g_1 \geq \hat{g}_1 \\ \bar{g}_2 & \text{if } g_1 > \bar{G} - \bar{g}_2 \end{cases} \tag{5}$$

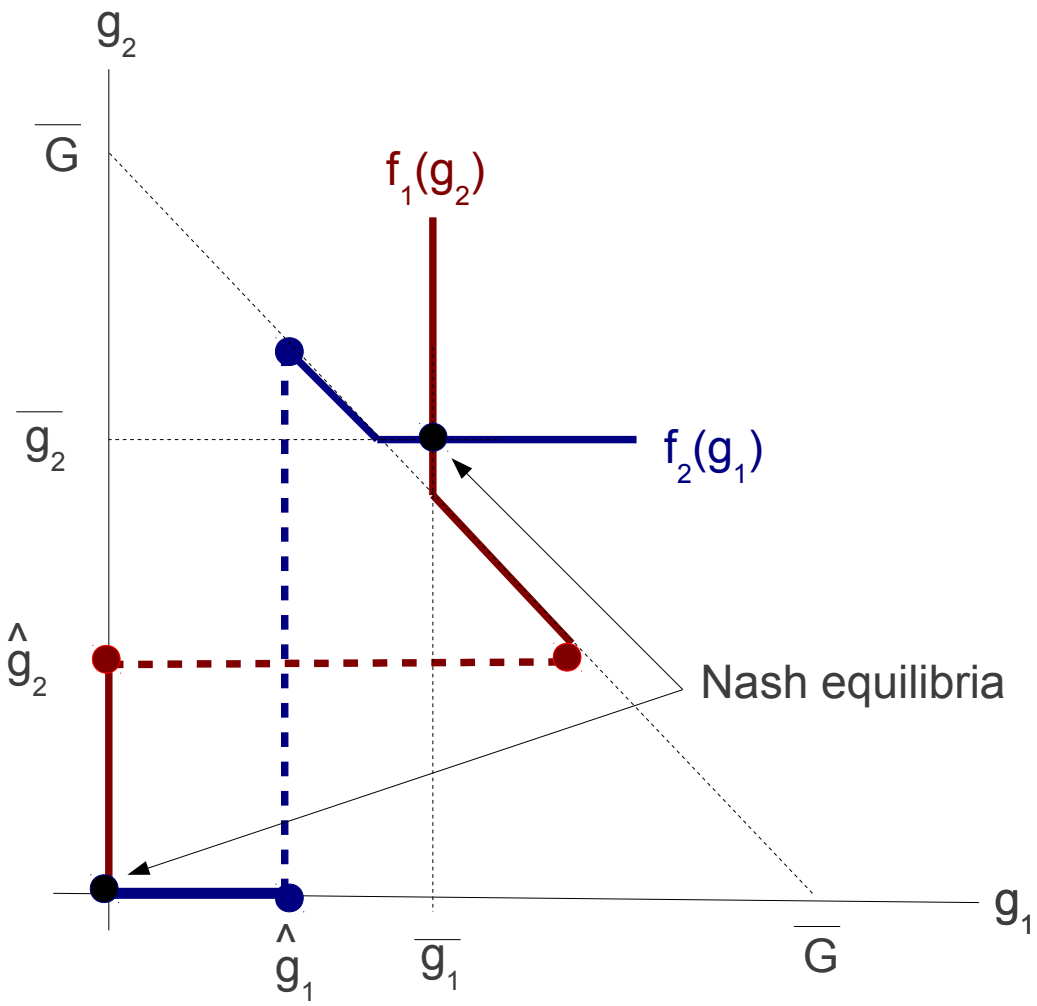
Case 1. Public equilibria



Case 2. Partially private equilibrium



Case 3. Fully private equilibrium



Conclusion

- Adding private gift may enlarge the set of equilibria (fully public)
- Adding private gift may contract the set of equilibria (other cases)
- May yield a purely private equilibrium with total contributions greater that $\bar{G}$.
- The more players the larger the contributions due to private gifts
- Contributions to receive private gift may be adequate to fund public good