Econ 2230: Public Economics

Lecture 17: Fundraising: auction (cont) and announcement

Review from last

- All pay auction lab results
  - Common value prize and complete information:
    - Orzen: LOT = FPA < lowest price all pay auction
  - Private value prize and incomplete information
    - Schram and Onderstal: FPA> LOT
  - Common value prize, private endowment, incomplete information
    - Corazzini, Faravelli and Stanca (2010): LOT> FPA

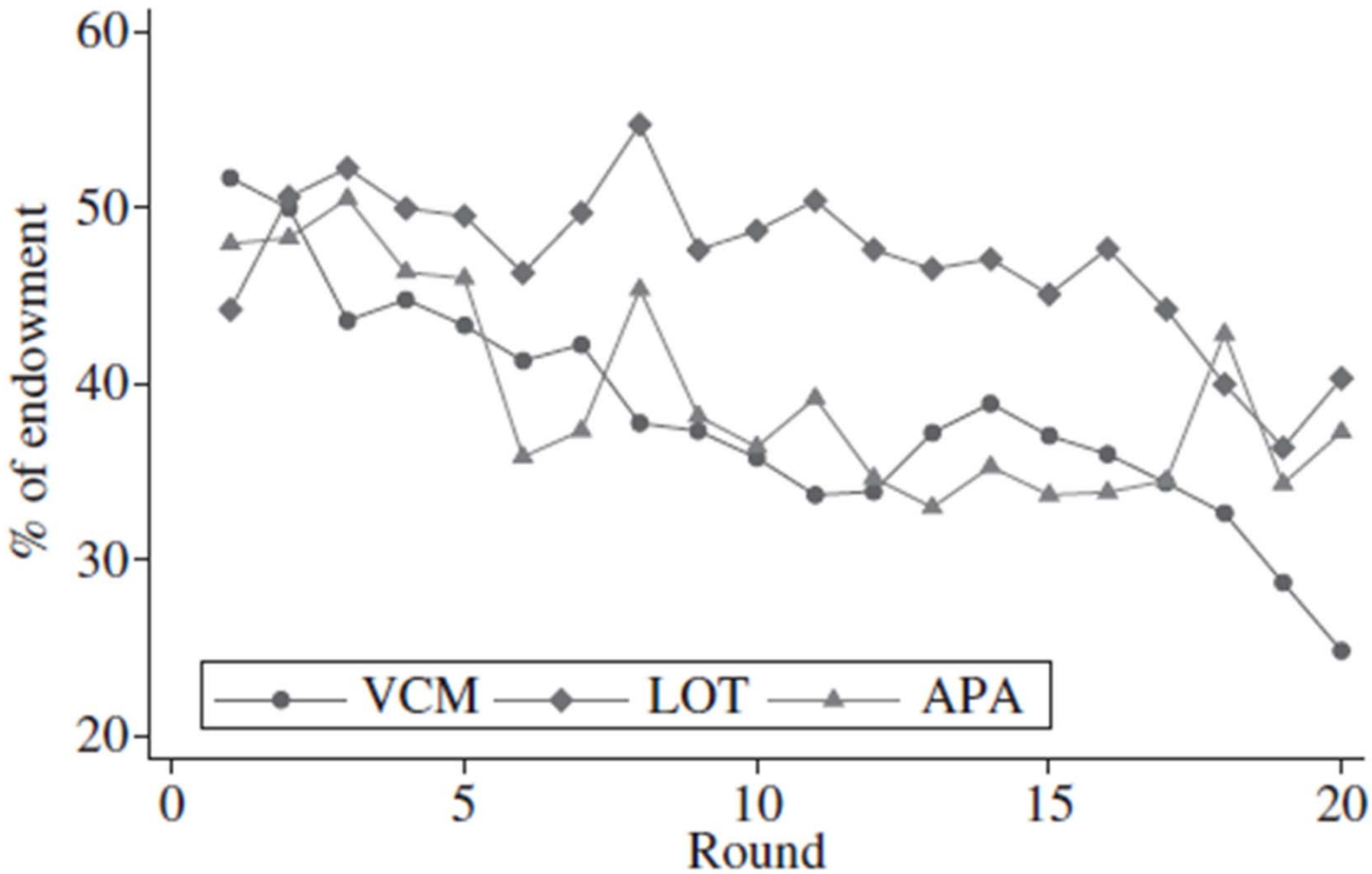
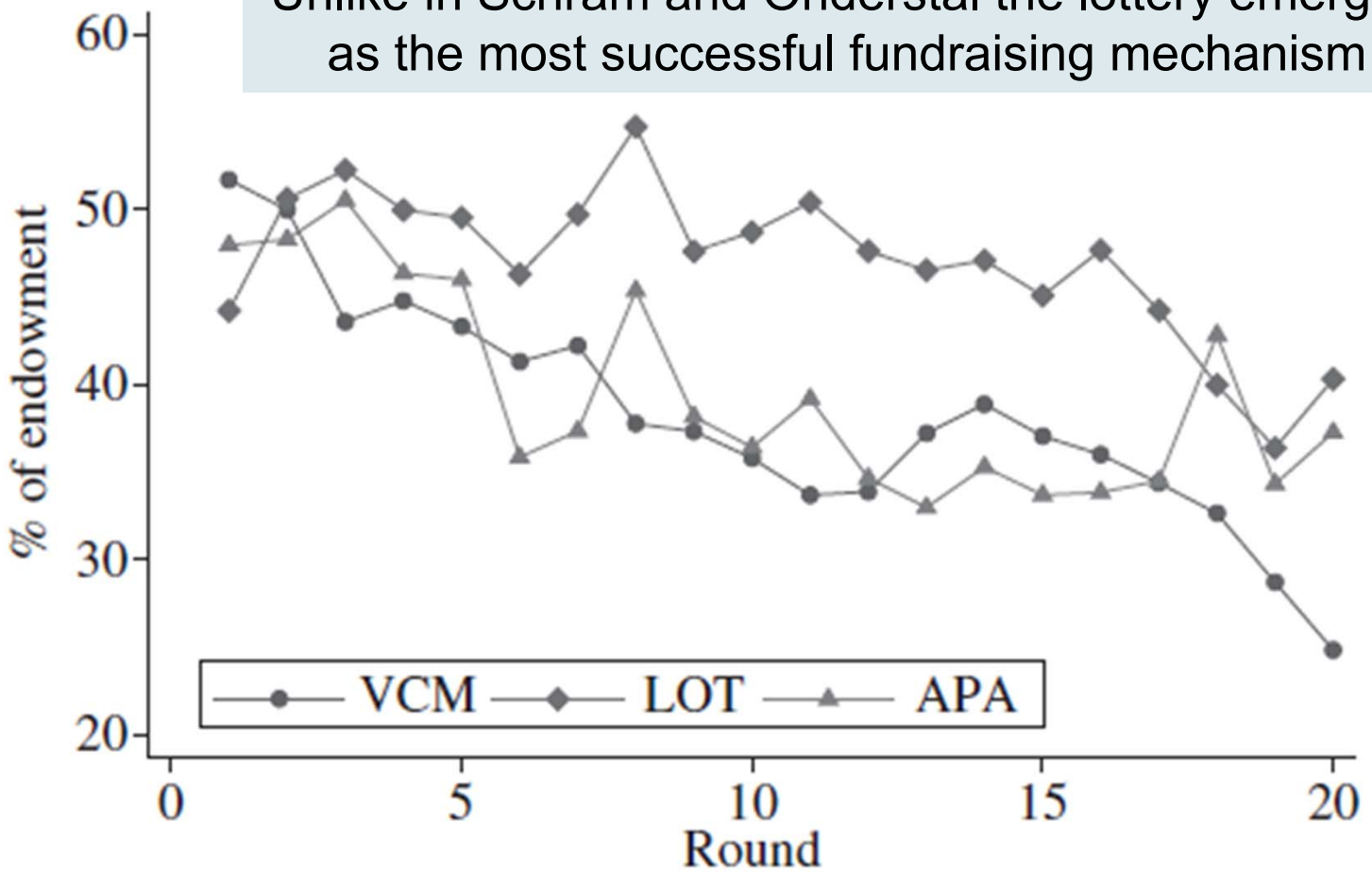


Fig. 2. *Average Public Good Provision Over Rounds*

s) Journal compilation © Royal Economic Society 2009

Unlike in Schram and Onderstal the lottery emerges as the most successful fundraising mechanism



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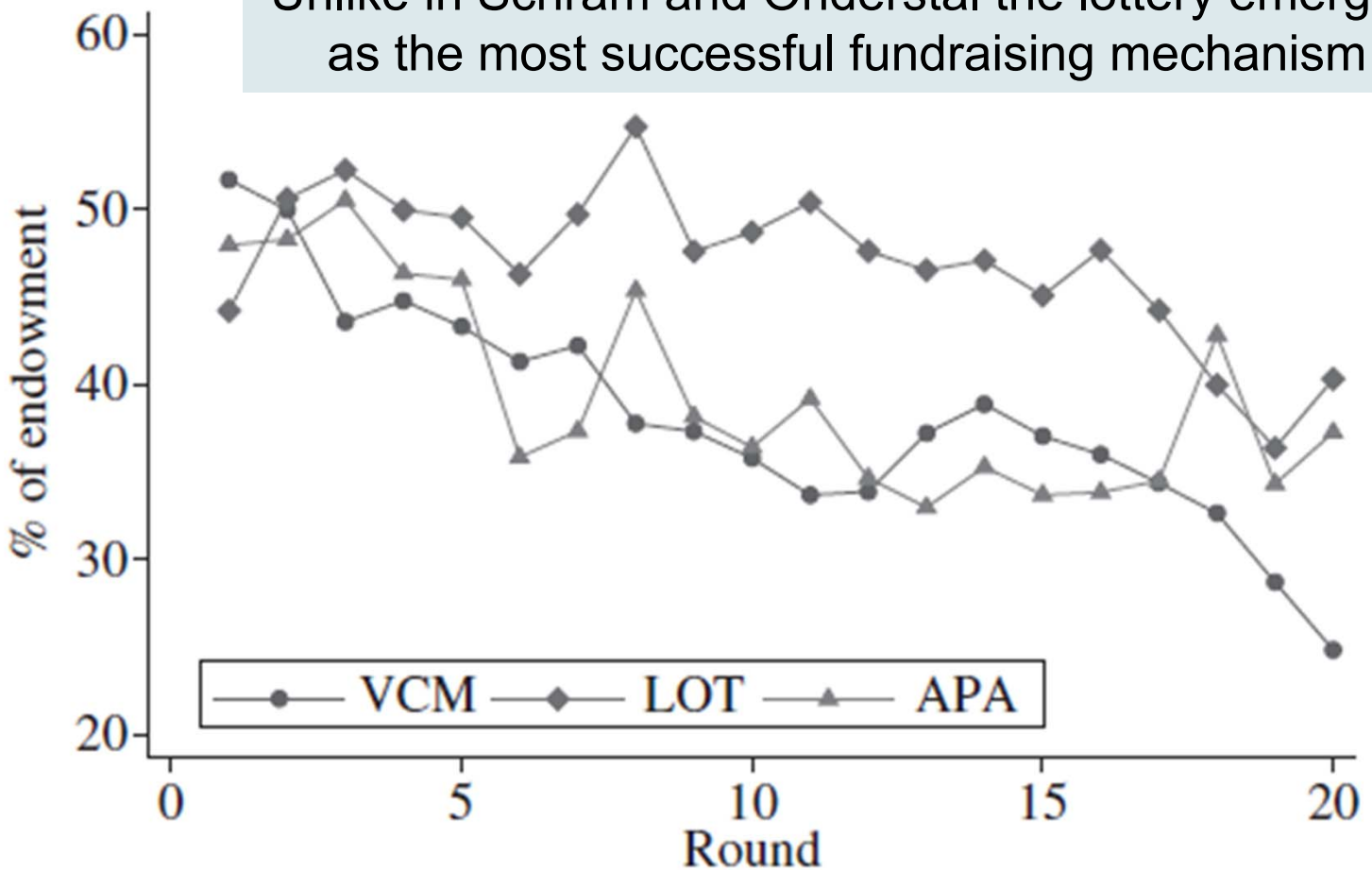

subjects choose zero contributions about three times as often in APA as in LOT (20.8% and 5.83%)

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Review from last

- All pay auction field results
  - Carpenter et al
    - Private value, incomplete information, private endowment
    - FP> SP> FPA
    - Driven by low participation in FPA
  - Continue with Onderstal, Schram, and Soetevent (2011)

Onderstal, Schram, and Soetevent (2011)

- Door-to-door fundraising
- Winner pay auctions irrelevant for door to door fundraising – not practical

- Design
- 4500 households
- Households received flyers announcing fundraising drive and explaining fundraising procedure a week in advance – given a brown envelope to put money in
- Typical Dutch procedure – except for prizes needed address on front
- Treatment:
  - all-pay auction (APA),
  - Lottery (LOT),
  - non-anonymous voluntary contribution mechanism VCM_{ano}
  - anonymous VCM_{add}

Onderstal, Schram, and Soetevent (2011)

- <u>Theory:</u>
- Public good provision (for both common and private value settings):
- VCM < LOT < APA

- <u>Experimental revenue evidence:</u>
- LOT ≥ VCM
- APA > ≥ VCM
- APA ? LOT (private value mixed, Schram and Onderstal (2009) and Carpenter et al.(2011), common value settings (LOT >= APA (Orzen, 2008) or > Corazzini et al., 2010)

Onderstal et al Experimental Design

- Charity: Dutch Brain Research Foundation
- Prize: ‘Nintendo DS game console’ with ‘Dr. Kawashima’s Brain Training Pack’
- LOT: one lottery ticket per euro donated. Household addresses are divided into groups of 300 each; one winner is selected per group. For an individual respondent, the chance of winning equals the ratio of her contribution to the sum of all contributions in her group of 300 addresses.
- APA: Household addresses are divided into groups of 300 each. Per group, the respondent donating the highest amount wins the prize. In the case of ties, the winner is determined randomly.

Framing of APA

- Carpenter et al. (2008) : “[t]he person who places the highest bid will receive the item. However, this is an All-pay Auction which means that everyone must pay their bid whether or not they are the highest bidder”.

- Onderstal et al frame APA (and also LOT) as a contribution to be in sync with the VCM: “[we] will compare the contributions of all of these households. The household that contributed most will win …” where ‘these households’ refers to a group of 300 households competing for a single prize.

Table 3: Summary statistics solicitor characteristics

	VCM Anonymous	VCM Address	Lottery	All-Pay
Total # of solicitors	8	7	15	15
Fraction male solicitors	0.500	0.571	0.467	0.533
	(0.189)	(0.202)	(0.133)	(0.133)
Average age	21.375	22.000	22.000	21.733
	(0.680)	(1.069)	(0.577)	(0.589)
Mean sociability	4.500	3.429	4.000	4.867
	(1.069)	(0.948)	(0.609)	(0.435)
Mean assertiveness	4.000	3.000	4.133	4.533
	(1.210)	(1.574)	(0.515)	(0.350)
Mean self-efficacy	4.125	4.571	4.733	3.533
	(0.549)	(0.369)	(0.530)	(0.363)
Mean performance motivation	1.750	1.857	2.133	1.133
	(0.648)	(0.738)	(0.696)	(0.616)
Mean self-confidence	4.875	3.143	3.733	3.600
	(0.295)	(0.911)	(0.530)	(0.486)
BMI	22.990	21.533	21.755	22.178
	(0.996)	(0.464)	(0.483)	(0.649)

Notes. Cells give mean solicitor values for (depicted in the first column) per treatment (given in the first row). Standard errors in parentheses. None of the variables are statistically significant at the 5%-level across treatments.

Lower participation in AP

Table 4: Summary statistics respondents (standard errors within parentheses)

	VCM Anonymous	VCM Address	Lottery	All-Pay
average donation per household (in €) that answered the door	2.006 (0.148)	1.796 (0.092)	1.858 (0.072)	1.649** (0.074)
fraction households donating	0.676 (0.021)	0.667 (0.022)	0.635 (0.015)	0.546*** (0.016)
contribution (in €) conditional on donating	3.037 (0.203)	2.715 (0.106)	2.917 (0.088)	3.068 (0.103)

Table 5 : Household contributions

Dependent variable	(1) amount	(2) amount	(3) amount	(4) amount
		Treatment		
VCM_{Add}	-0.194	-0.193	-0.222	-0.254
	(0.184)	(0.153)	(0.149)	(0.165)
Lottery (LOT)	-0.135	-0.111	-0.139	-0.160
	(0.171)	(0.145)	(0.140)	(0.147)
AllPay (APA)	-0.355*	-0.323*	-0.352**	-0.424**
	(0.203)	(0.182)	(0.174)	(0.174)
		Respondent Characteristics		
aged < 30			-0.414***	-0.421***
			(0.099)	(0.098)
aged 45-60			-0.068	-0.070
			(0.106)	(0.108)
aged > 60			-0.175	-0.185
			(0.124)	(0.127)
female respondent			0.256**	0.258***
			(0.097)	(0.096)
semidetached			0.208	0.241*
			(0.130)	(0.134)
		Solicitor Characteristics		

Table 6: Household participation decision

Dependent variable	(1) donate	(2) donate	(3) donate	(4) donate
			Treatment	
VCM_{Add}	-0.005	-0.006	-0.010	-0.011
	(0.0340)	(0.040)	(0.039)	(0.040)
Lottery (LOT)	-0.039	-0.040	-0.042	-0.044
	(0.041)	(0.042)	(0.041)	(0.040)
AllPay (APA)	-0.132***	-0.133***	-0.134***	-0.152***
	(0.047)	(0.047)	(0.047)	(0.042)
			Respondent characteristics	
aged < 30			-0.072**	-0.074**
			(0.032)	(0.032)
aged 45-60			-0.081***	-0.080***
			(0.023)	(0.023)
aged > 60			-0.077***	-0.077***
			(0.028)	(0.028)
female respondent			0.057***	0.058***
			(0.017)	(0.017)
semidetached			0.038	0.048
			(0.036)	(0.031)
			Solicitor characteristics	

Onderstal et al 2011: Results

- Revenue:
  - VCM_{Ano} > LOT > VCM_{Add} > APA
- Participation:
  - VCM_{Ano} = LOT = VCM_{Add} > APA
- The anonymous VCM did the best (the one most used by door-to-door fund raisers)

- Why is participation lower in APA?
  - Competition crowds out intrinsic motivation
    - Competition in particular - not simply the presence of external reward as also present in lottery (i.e., not simply Bernabou and Tirole, 2006)
  - Objection to non-anonymity
    - Yet participation rates similar in the VCM treatments
  - Asymmetric barriers to participation
    - Argue that little reason to think harder to understand APA (this was the primary explanation in Carpenter)

- Broad disapproval of APA

- **All-pay auction**
- “Giving a prize to the most generous donator in this way is absolutely unacceptable for me.
- Therefore, as a matter of principle I will not give anything now.”
- “We do not think that a charity contest is a good idea”
- “We find this way of fundraising unacceptable. Therefore, we will not participate.
- “Too bad. We do not want to donate like this. Missed ‘opportunity’.”
- “I will not participate in this way.”
- “We do not want a prize or a reward.”
- “We already donate €5 per month, so €60 per year. Count that too. Good luck.”
- “This campaign [...] has caused me (and others) resentment. The reason is that […] it could push
- the less well-to-do ‘off the market’. We do not think this will benefit the charity”
- “Too bad. In my opinion, the fundraisers must have damaged their when designing this campaign.”

Summary of competitive fundraising results

- All pay auction
  - At best limited evidence favoring APA
  - Lowest price all pay auction successful in lab. Question is how such a mechanism can be used in the field
- Lottery
  - Individual bids are higher than donations in VCM
  - Mixed evidence on whether revenue is higher in LOT once the prize is accounted for
- Winner pay auction
  - Poor performance in lab
- Questions:
  - When should we be using which mechanism? Large items, small items, many items? Should we seek out prizes? In studying winner pay auction – need to examine along with VCM.

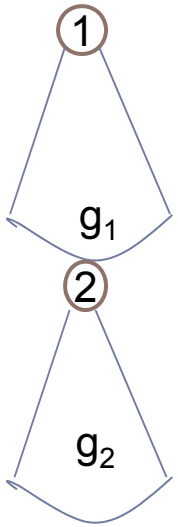
Sequential giving to public goods

- Giving to nonprofits typically modeled as a static game (free-riding prediction)

- Giving takes place over time
  - announcements of past contributions
  - updates on contributions to date
  - donors free to contribute multiple times
    - Door-to-door solicitations report neighbor donations
    - Annual campaigns announce contributions to date
    - Open collection baskets
    - Seed money solicited prior to launching capital campaign
  - Recommended fundraising strategy (e.g., Edles 1993)

Sequential giving to public goods

- Varian (1994)
  - Contributions in a sequential move game can be no larger than in a simultaneous move game
  - Sequential weakly decrease contributions: first mover free-rides off of later contributors



Sequential giving to public goods

- Simple example (n=2):
  - x_i : consumption of private good
  - y_i : contribution to public good
  - $Y=y_1+y_2$: sum of contributions to the public good
  - Budget: $w_i = x_i + y_i$

- Quasi linear preferences: $U_i = x_i + \alpha_i \ln Y$
- Best Response: $y_i = \max\{\alpha_i - y_j, 0\}$
- Simultaneous giving: only person with highest α_i gives
- Sequential giving: if α_i's not too far apart
  only last person gives

Romano and Yildirim (2001)

- Varian (1994) examine only purely altruistic preferences. That is
- $U^i = U^i(x_i, Y)$

- Romano and Yildirim (2001) examine the effect of sequential giving for a wide range of preferences
  - $U^i = U^i(x_i, Y, h^i(y_i, y_j))$
  - Show that the effect of sequential giving depends on $h^i(y_i, y_j)$

Romano and Yildirim (2001)

- Model
  - N=2
  - x_i – private good
  - y_i – contribution to public good
  - $Y = y_i + y_j$
  - $U^i = U^i(x_i, Y, h^i(y_i, y_j))$ $\quad i,j = 1,2, \; i \neq j$
  - U^i increasing in x_i, Y and weakly increasing in h^i
  - $h^i(y_i, y_j)$
    - Warm glow: $h^i(y_i, y_j) = y_i$
    - snob effect: $h^i_2 < 0$
    - bandwagon effect : $h^i_2 > 0$

Consider the benefits of sequential versus simultaneous giving

- Let
  - G_0 simultaneous move game
  - G_1 sequential move game with individual 1 moving first
  - G_2 sequential move game with individual 2 moving first

- Let $Y(G_k)$ the equilibrium total provision under game G_k

$$\max_{x_i, y_i} U^i(x_i, Y, h^i(y_i, y_j))$$

$$\text{s.t. } x_i + y_i = I_i$$

$$y_i + y_j = Y$$

$$x_i, y_i \geq 0.$$

Substitute for x_i and Y, and rewrite (P1):

$$\max_{0 \leq y_i \leq I_i} U^i(I_i - y_i, y_i + y_j, h^i(y_i, y_j)).$$

$$-U_1^i + U_2^i + U_3^i h_1^i = 0. \tag{1}$$

Our assumptions above imply that second-order condition is satisfied,[12] i.e. that

$$K_i \equiv U_{11}^i + U_{22}^i - 2U_{12}^i + 2h_1^i(-U_{13}^i + U_{23}^i + U_{33}^i h_1^i/2) + U_3^i h_{11}^i \leq 0. \tag{2}$$

From (1), the slope of agent i's best-reply function is:

$$\frac{\partial f^i}{\partial y_j} = \frac{U_{12}^i - U_{22}^i - U_{32}^i h_1^i + U_{13}^i h_2^i - U_{23}^i h_2^i - U_{33}^i h_1^i h_2^i - U_3^i h_{12}^i}{K_i}. \tag{3}$$

The 'total effect' of agent j's contribution on i's utility is:

$$\frac{\mathrm{d}U^i}{\mathrm{d}y_j} = U_2^i + U_3^i h_2^i. \tag{4}$$

The simultaneous-move equilibrium of G_0 occurs at the intersection of $y_i = f^i(y_j)$ and $y_j = f^j(y_i)$. The subgame-perfect equilibrium of the sequential-move game G_i occurs at the value of y_i on $y_j = f^j(y_i)$ that maximizes U^i. The latter is found by solving the program:

$$\underset{0 \leq y_i \leq I_i}{\mathrm{Max}}\ U^i(I_i - y_i, y_i + f^j(y_i), h^i(y_i, f^j(y_i))). \tag{P2}$$

Proposition 1. *The signs of* $(\mathrm{d}U^i/\mathrm{d}y_j \;\; \partial f^j/\partial y_i)|_{G_0}$ *and* $(y_i(G_i) - y_i(G_0))$ *are the same. Furthermore,* $(\mathrm{d}U^i/\mathrm{d}y_j \;\; \partial f^j/\partial y_i)|_{G_0}$ *and* $(Y(G_i) - Y(G_0))$ *have the same (opposite) sign whenever* $(1 + \partial f^j/\partial y_i)$ *is positive (negative) for* y_j *between and including* $y_j(G_0)$ *and* $y_j(G_i)$.[13]

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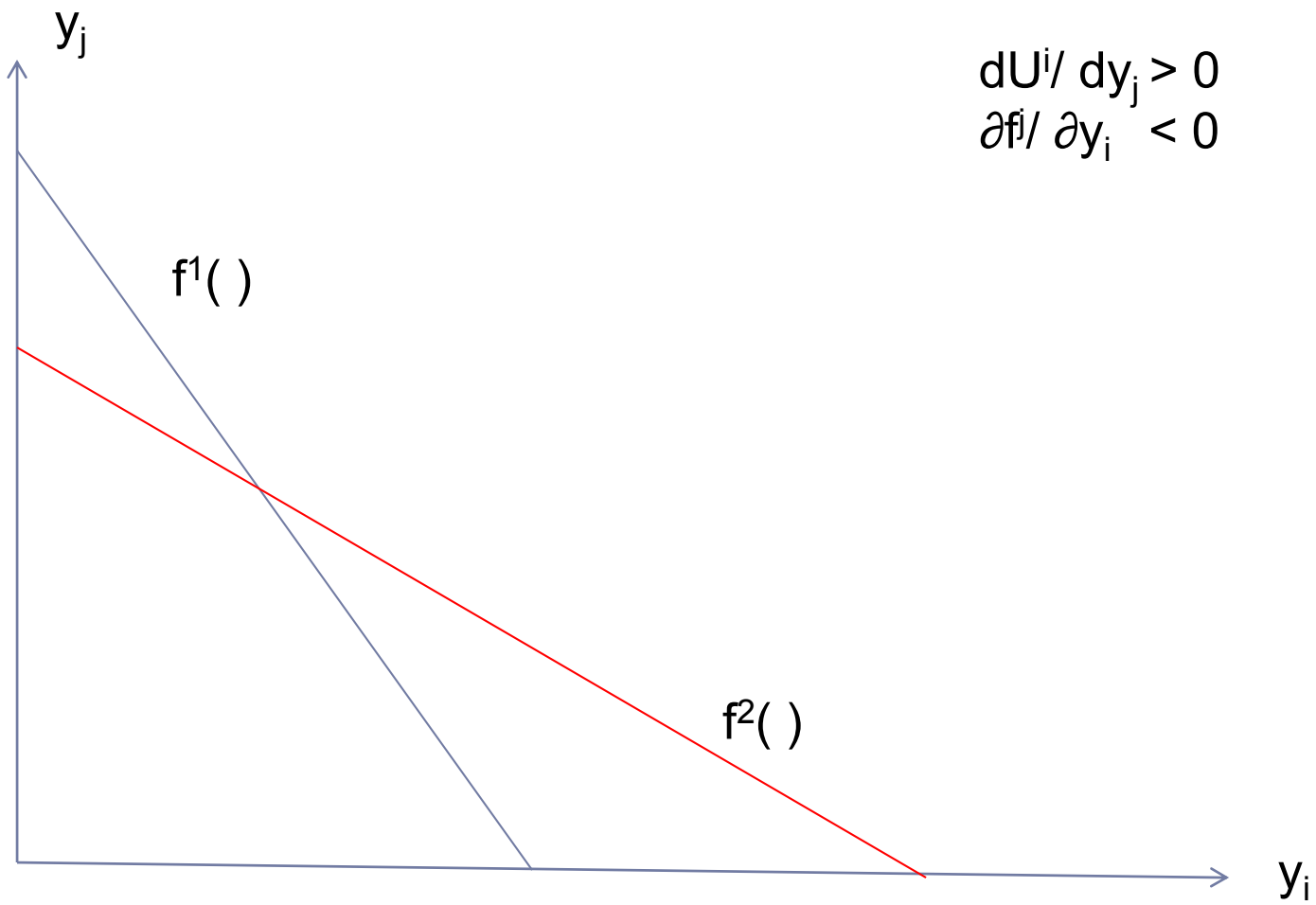
$$\frac{\mathrm{d}U^i}{\mathrm{d}y_j} = U_2^i + U_3^i h_2^i.$$

- Note that depending on h^i_2 dU^i/dy_j may be less than 0 even though U_2, $U_3 > 0$
- A dominating public good effect would require that $dU^i/dy_j > 0$

Proposition 1. *The signs of* $(\mathrm{d}U^i/\mathrm{d}y_j \;\; \partial f^j/\partial y_i)|_{G_0}$ *and* $(y_i(G_i) - y_i(G_0))$ *are the same. Furthermore,* $(\mathrm{d}U^i/\mathrm{d}y_j \;\; \partial f^j/\partial y_i)|_{G_0}$ *and* $(Y(G_i) - Y(G_0))$ *have the same (opposite) sign whenever* $(1 + \partial f^j/\partial y_i)$ *is positive (negative) for* y_j *between and including* $y_j(G_0)$ *and* $y_j(G_i)$.[13]

- What is the sign of $\partial f^j / \partial y_i$ in the pure altruism model?
- $\partial f^j / \partial y_i < 0$
- What implications do normality have on the best response function in the pure altruism model?
- $\partial f^j / \partial y_i = - \partial x_i / \partial I_i$
- Provided normality $-1 < \partial f^j / \partial y_i < 0$

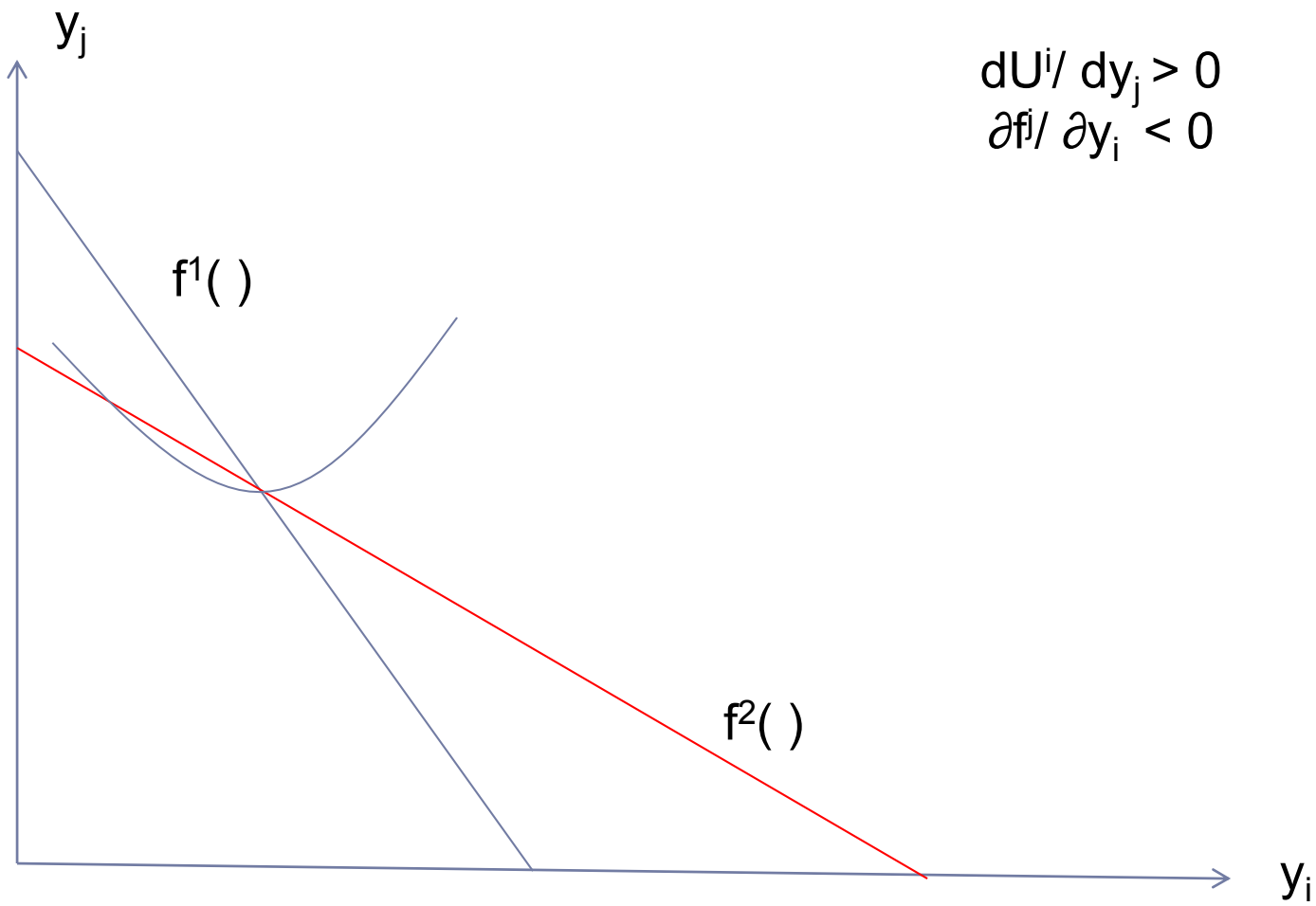
Sign of $[dU^i/ dy_j] [\partial f^j/ \partial y_i]$ same as $(y_i (G_i) - y_i(G_0))$



$dU^i/ dy_j > 0$

$\partial f^j/ \partial y_i < 0$

Sign of $[dU^i/ dy_j] [\partial f^j/ \partial y_i]$ same as $(y_i (G_i) - y_i(G_0))$



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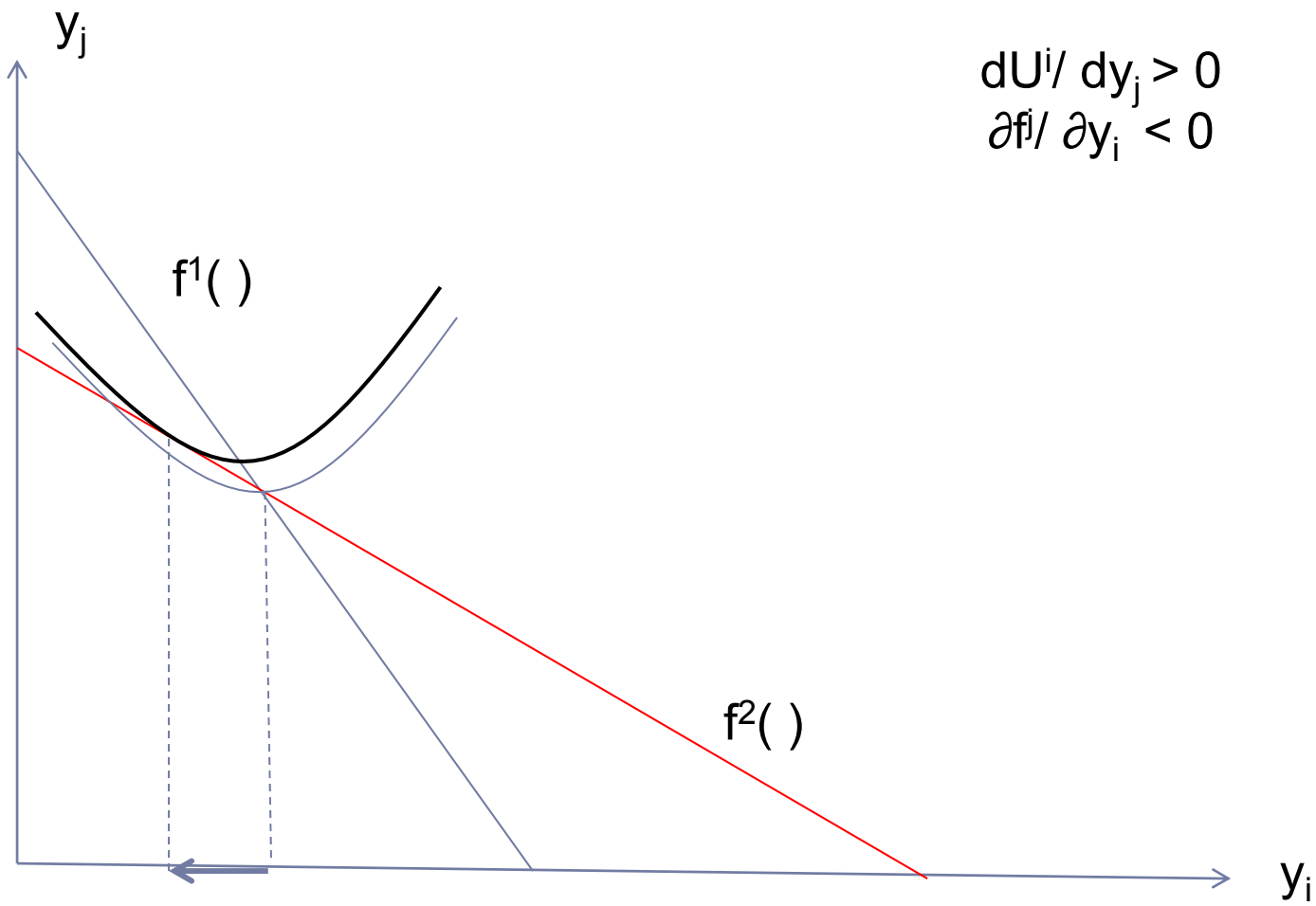

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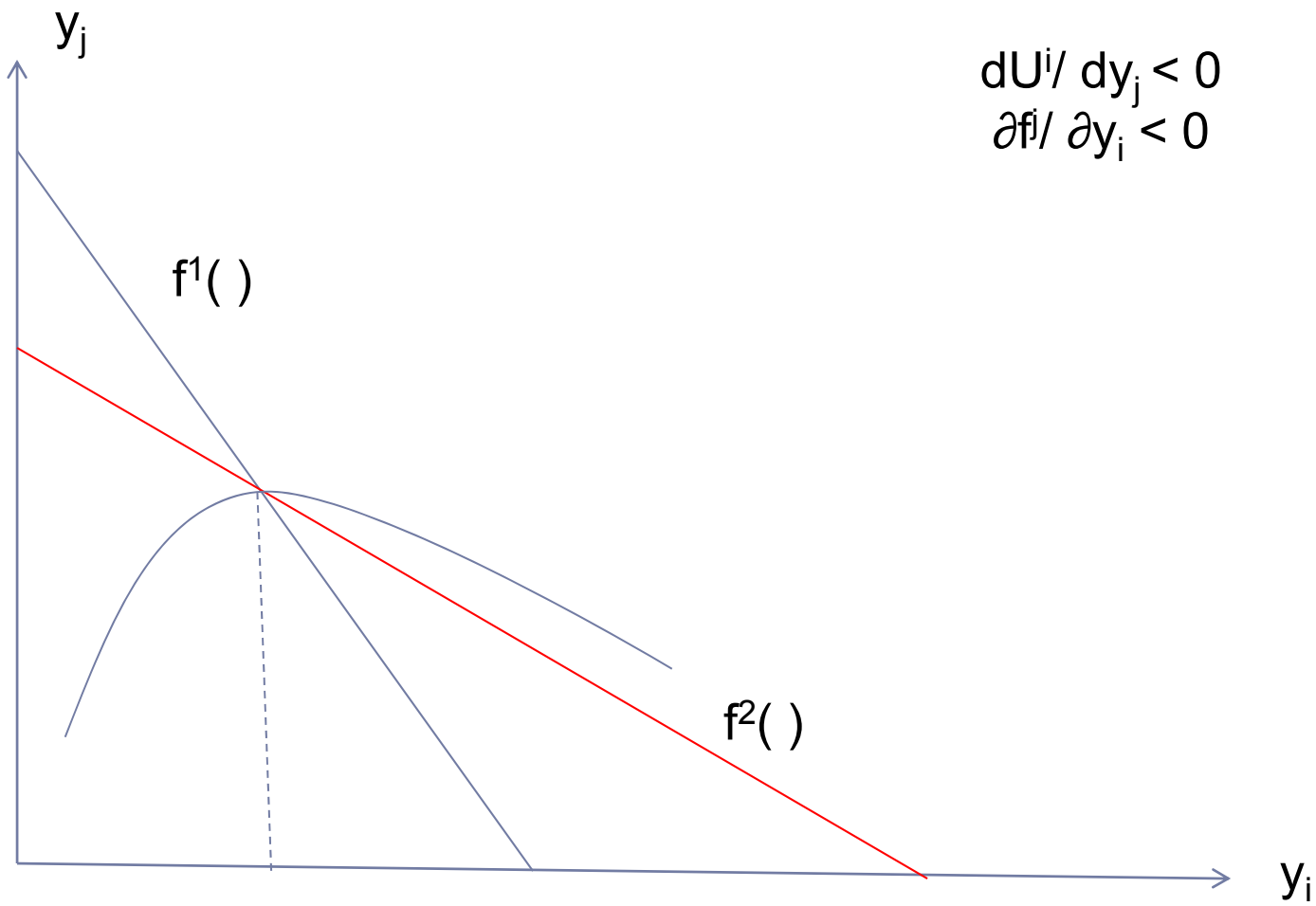

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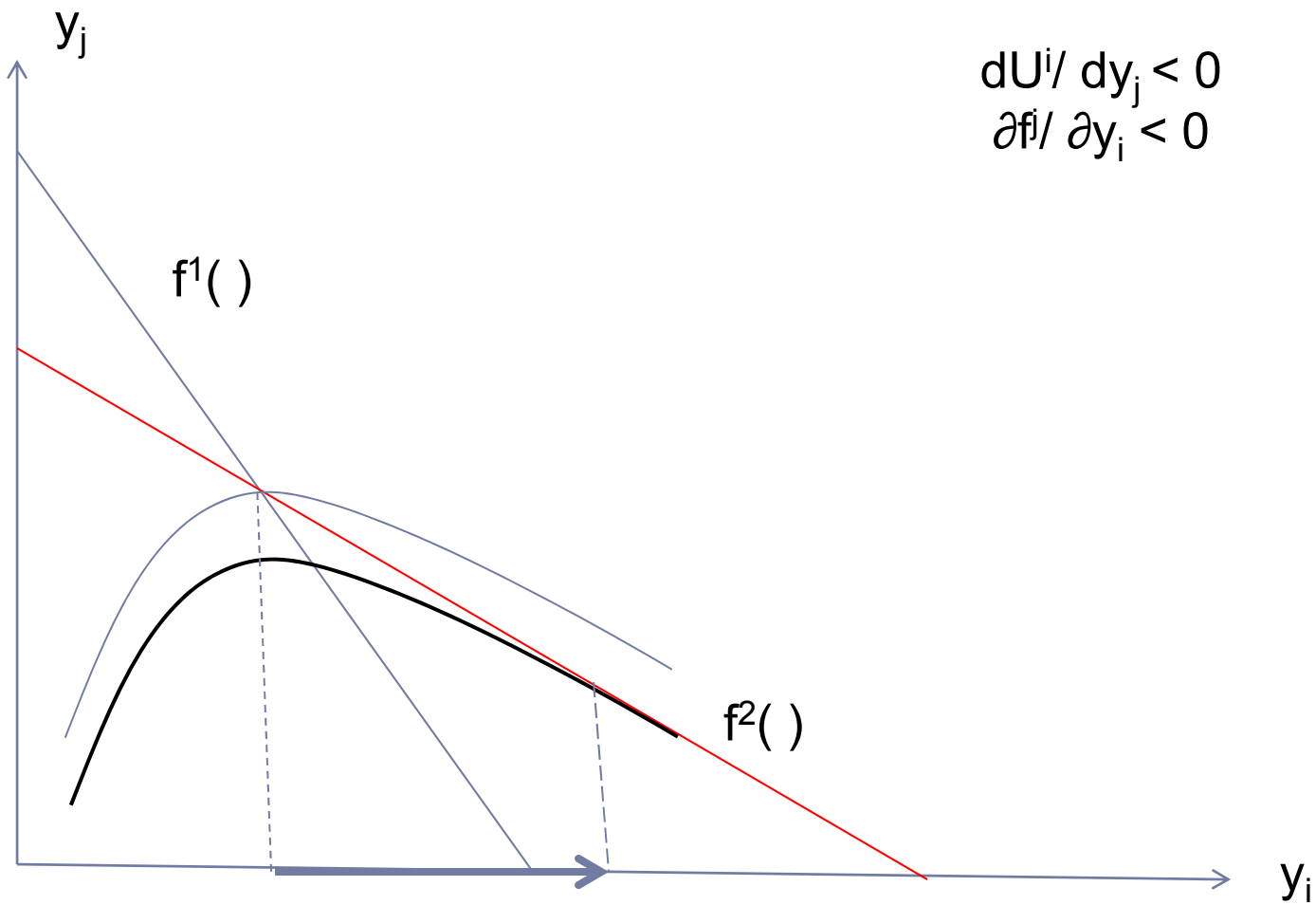

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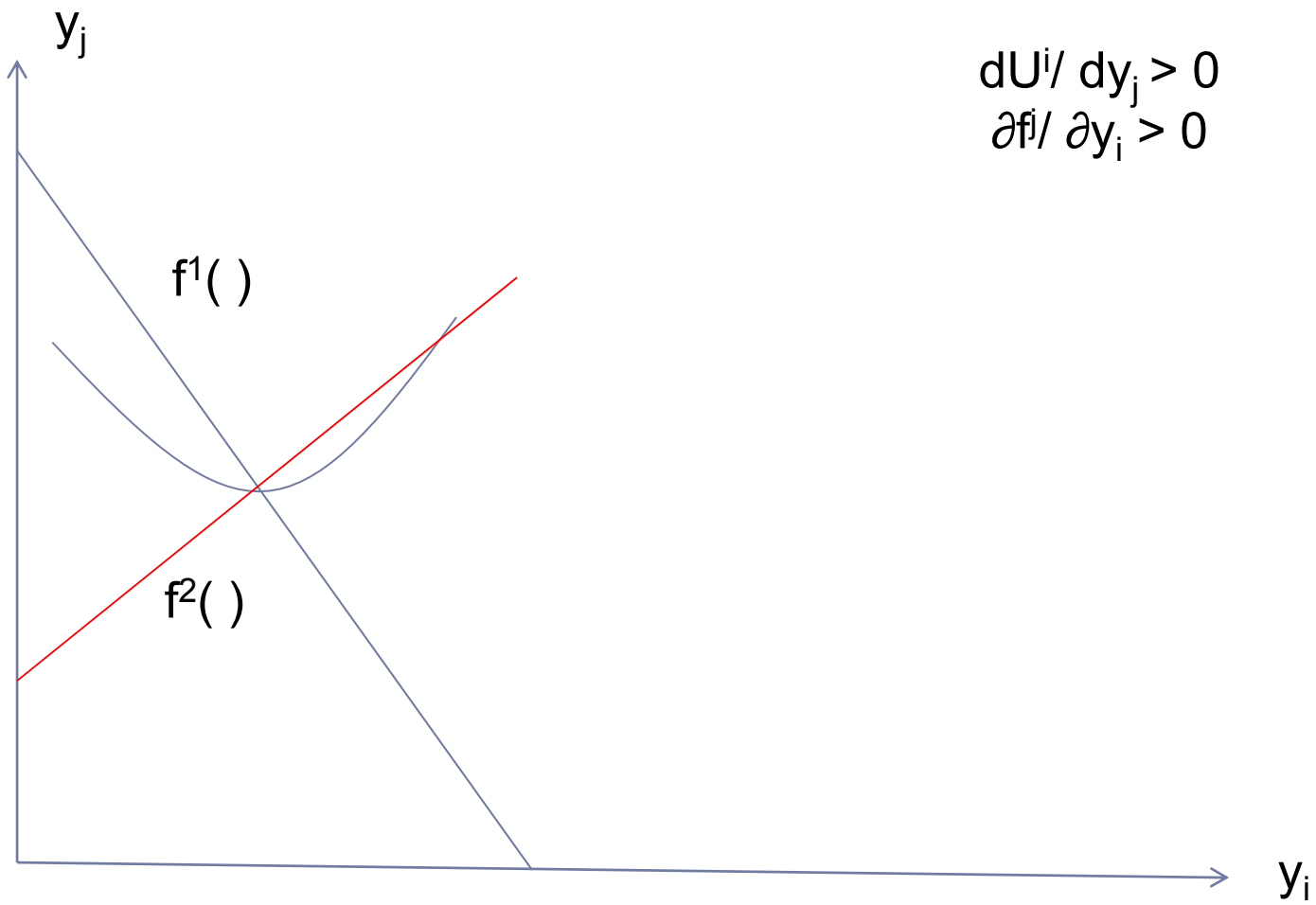

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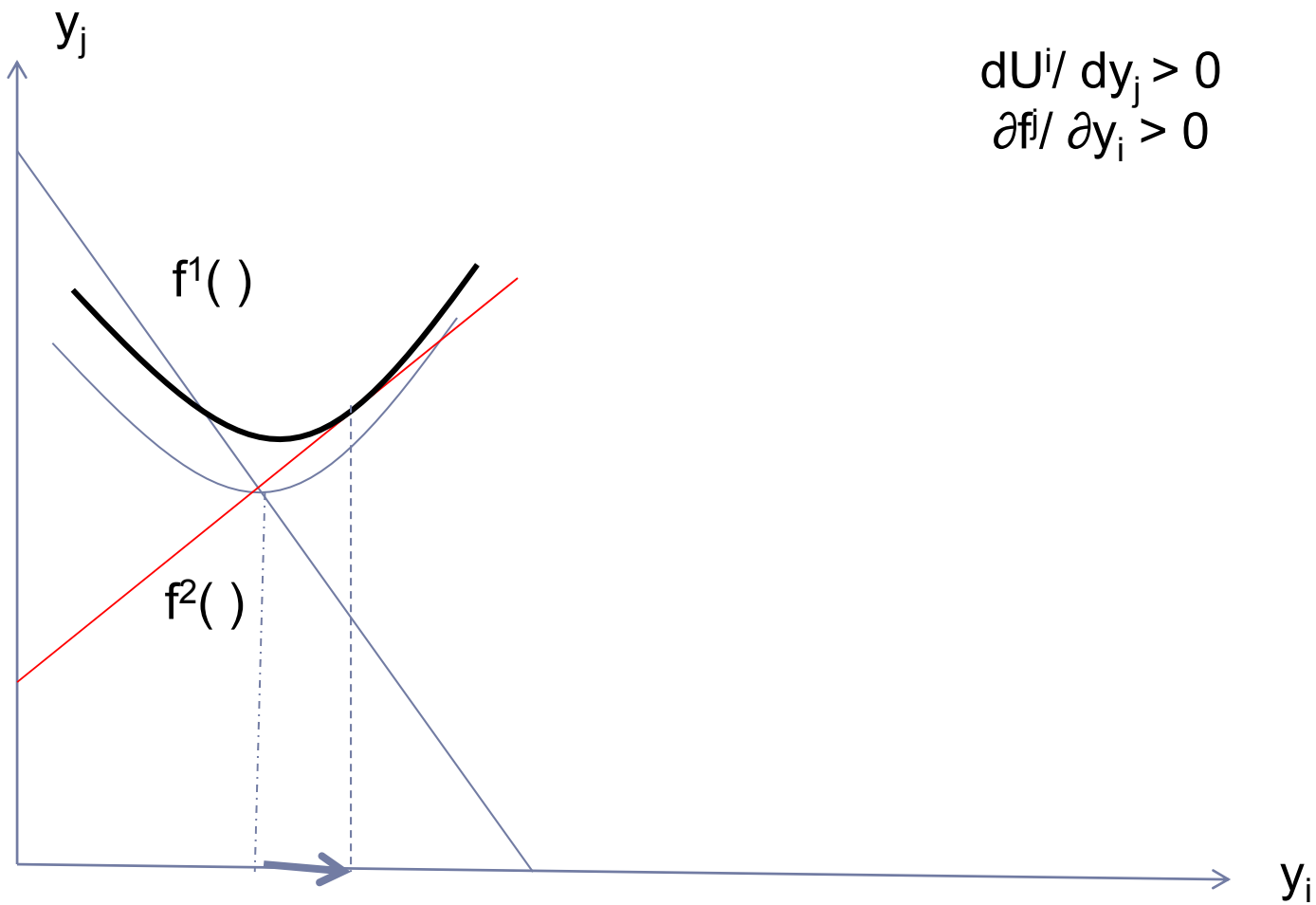


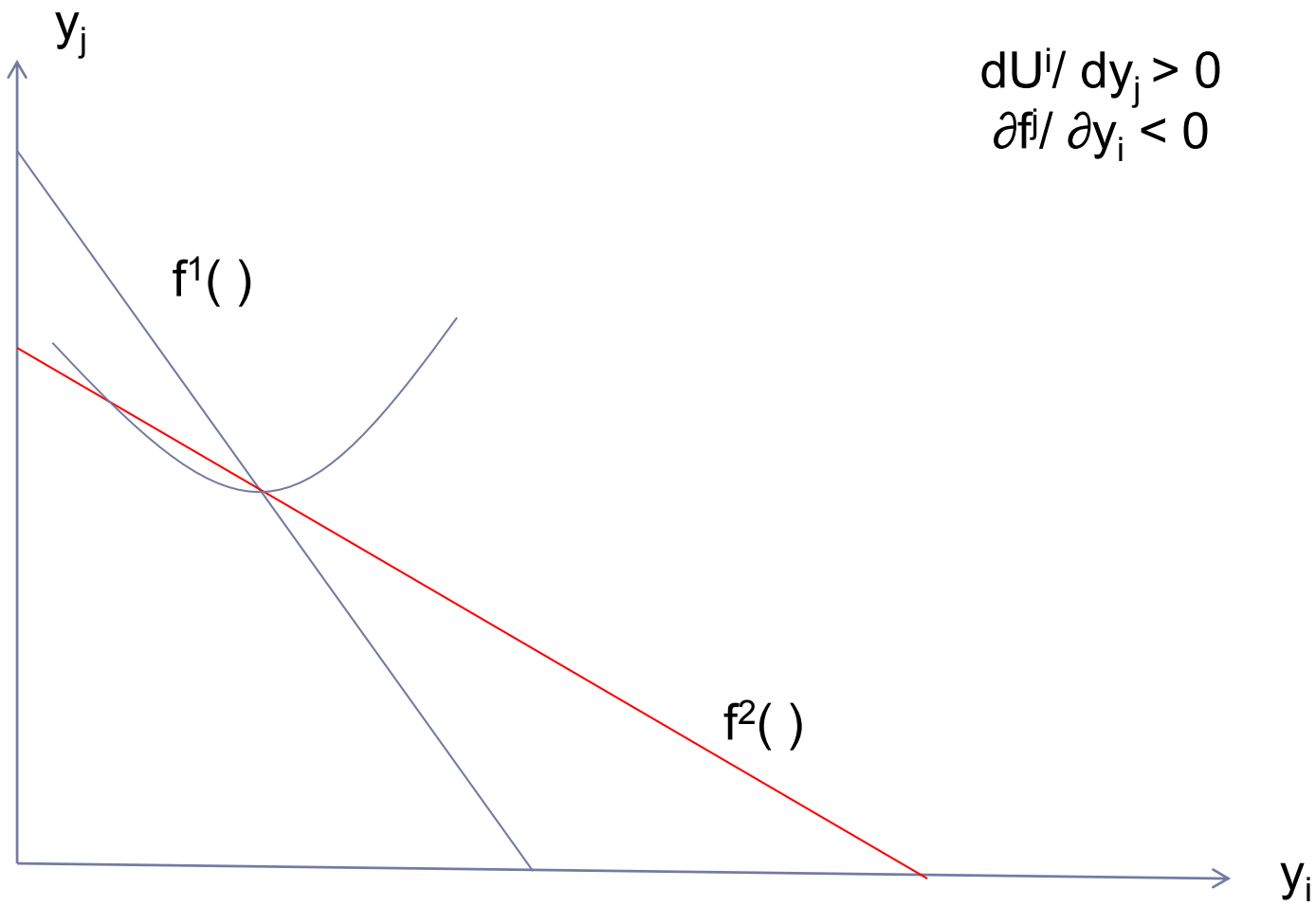
$dU^i/ dy_j > 0$

$\partial f^j/ \partial y_i > 0$

- Concern is not merely leader's contribution but rather effect on total provision

Proposition 1. *The signs of* $(\mathrm{d}U^i/\mathrm{d}y_j \;\; \partial f^j/\partial y_i)|_{G_0}$ *and* $(y_i(G_i) - y_i(G_0))$ *are the same. Furthermore,* $(\mathrm{d}U^i/\mathrm{d}y_j \;\; \partial f^j/\partial y_i)|_{G_0}$ *and* $(Y(G_i) - Y(G_0))$ *have the same (opposite) sign whenever* $(1 + \partial f^j/\partial y_i)$ *is positive (negative) for* y_j *between and including* $y_j(G_0)$ *and* $y_j(G_i)$.[13]

Sign of $[dU^i/ dy_j] [\partial f^j/ \partial y_i]$ same as $(Y(G_i) - Y(G_0))$ when $1 + \partial f^j/ \partial y_i > 0$



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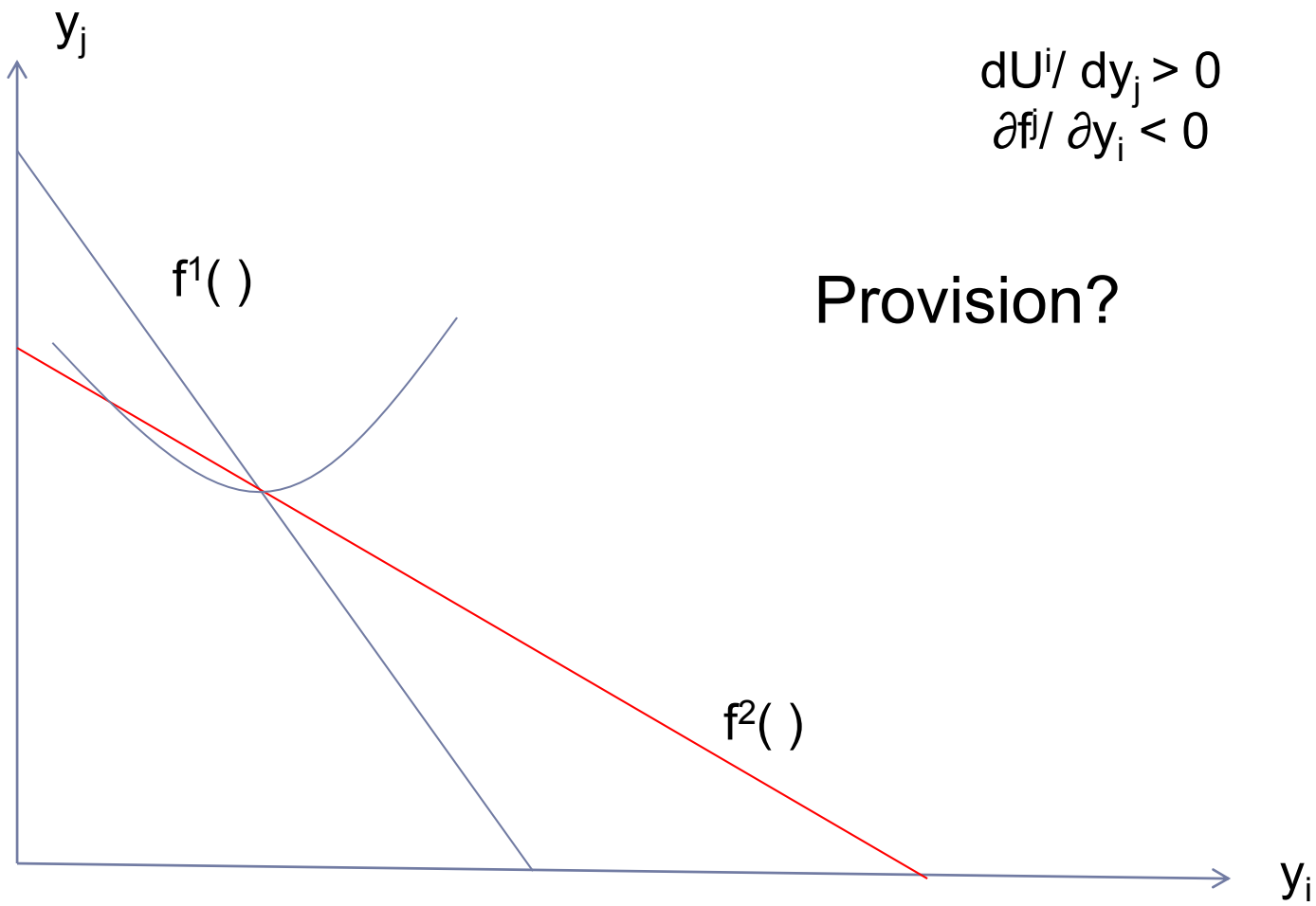
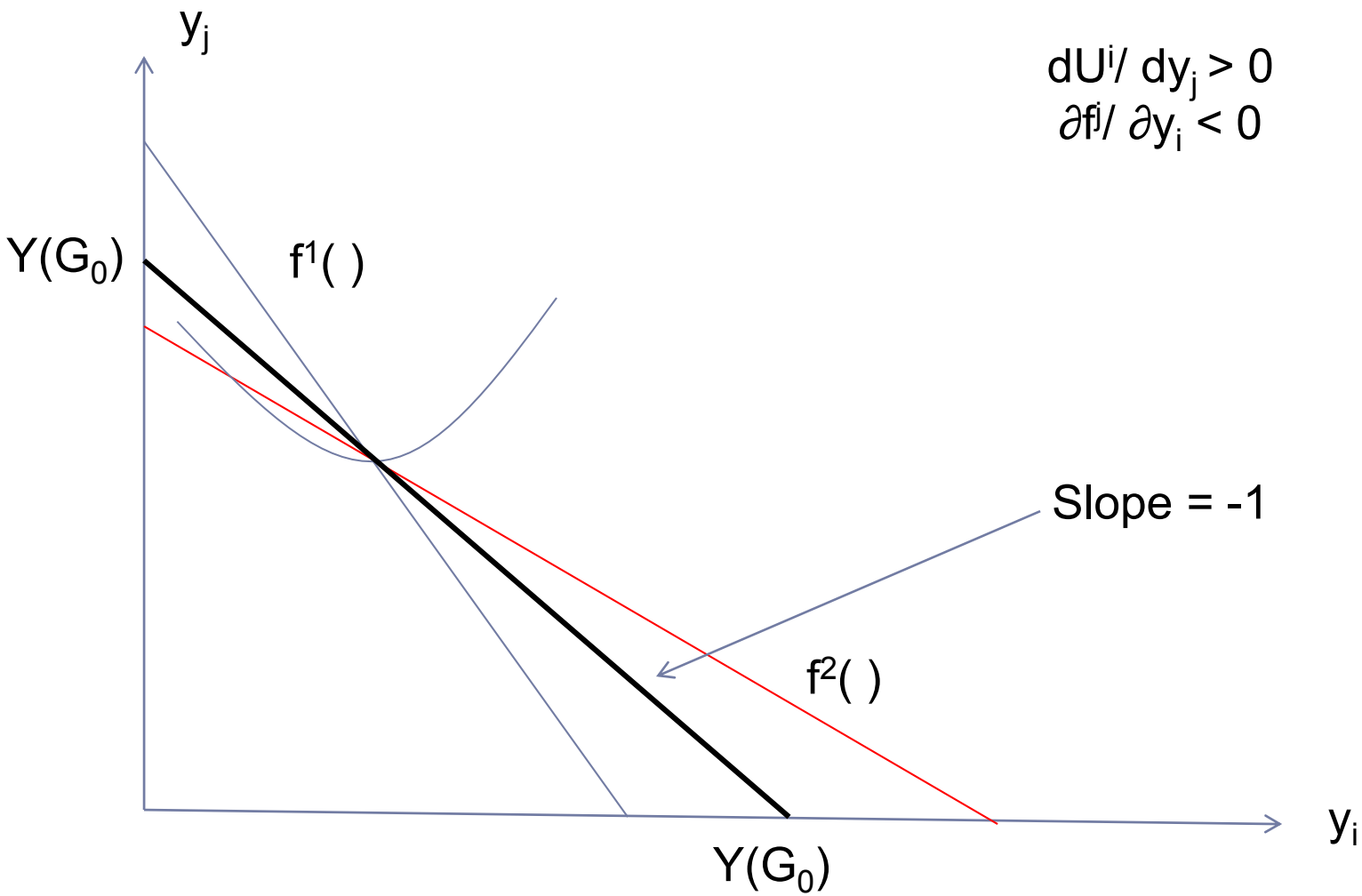


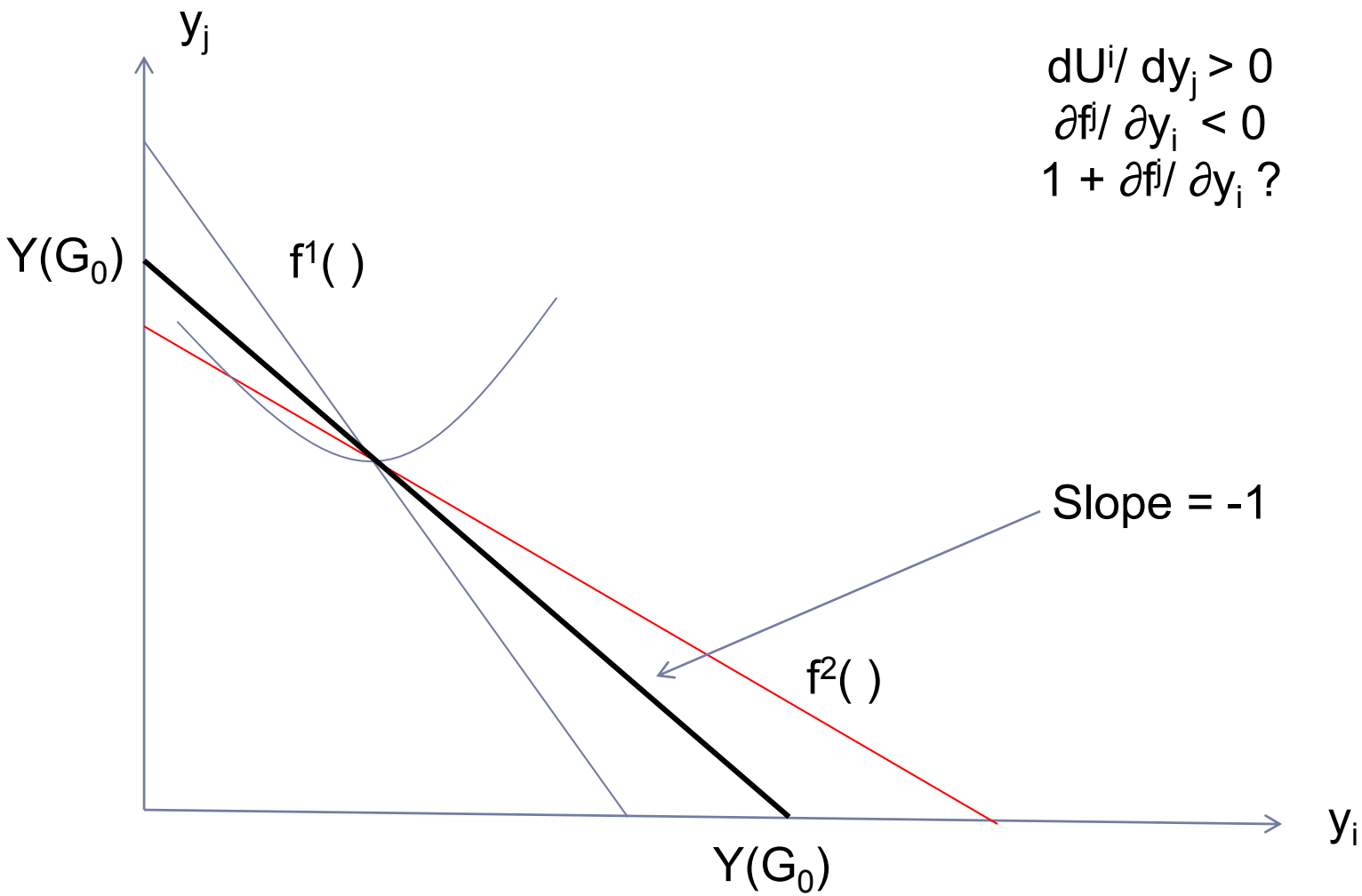
$dU^i/ dy_j > 0$
$\partial f^j/ \partial y_i < 0$

Provision?

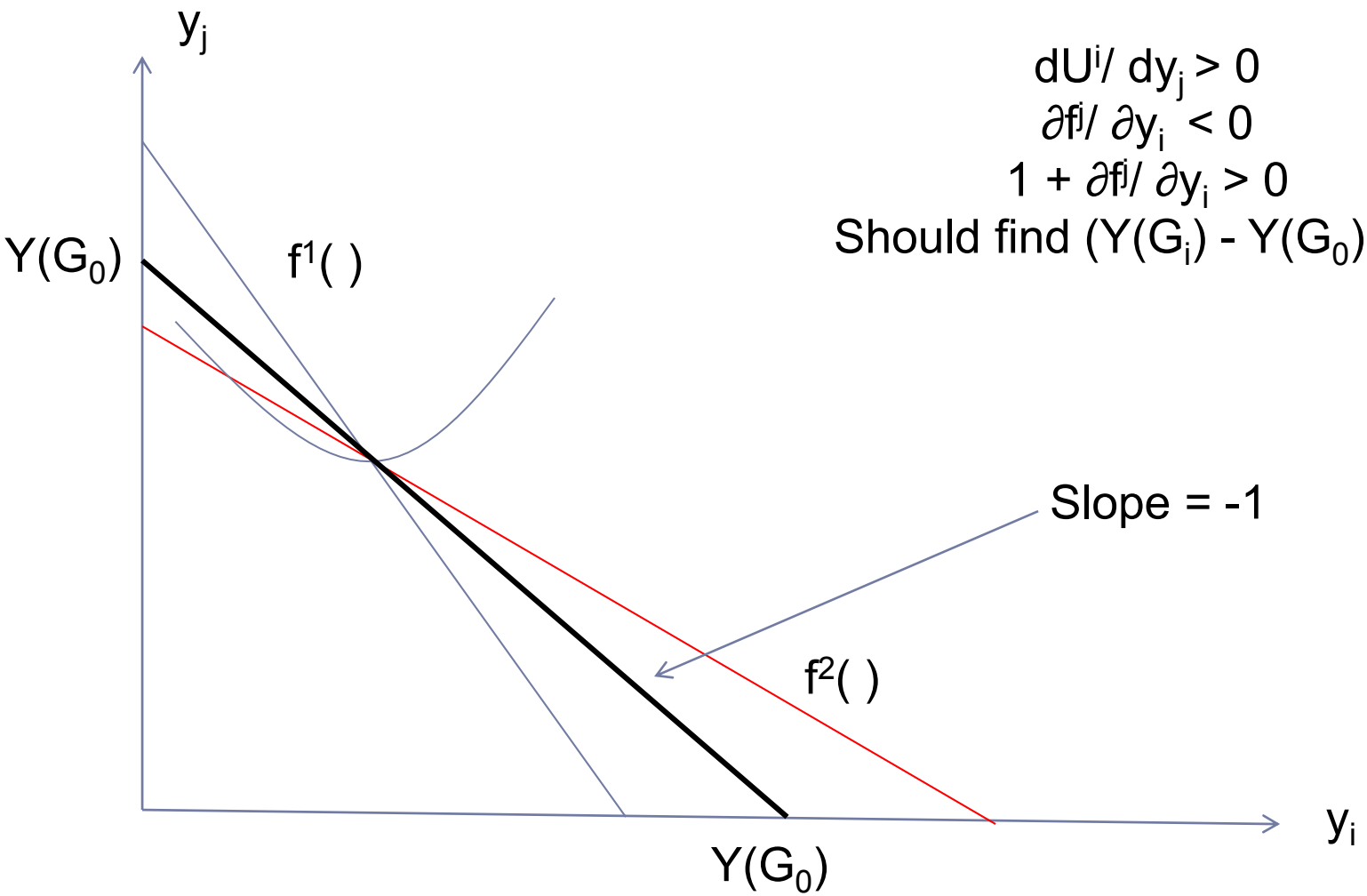
Sign of $[dU^i/ dy_j] [\partial f^j/ \partial y_i]$ same as $(Y(G_i) - Y(G_0))$ when $1 + \partial f^j/ \partial y_i > 0$



Sign of $[dU^i/ dy_j] [\partial f^j/ \partial y_i]$ same as $(Y(G_i) - Y(G_0))$ when $1 + \partial f^j/ \partial y_i > 0$



Sign of $[dU^i/ dy_j] [\partial f^j/ \partial y_i]$ same as $(Y(G_i) - Y(G_0))$ when $1 + \partial f^j/ \partial y_i > 0$ opposite sign when $1 + \partial f^j/ \partial y_i < 0$



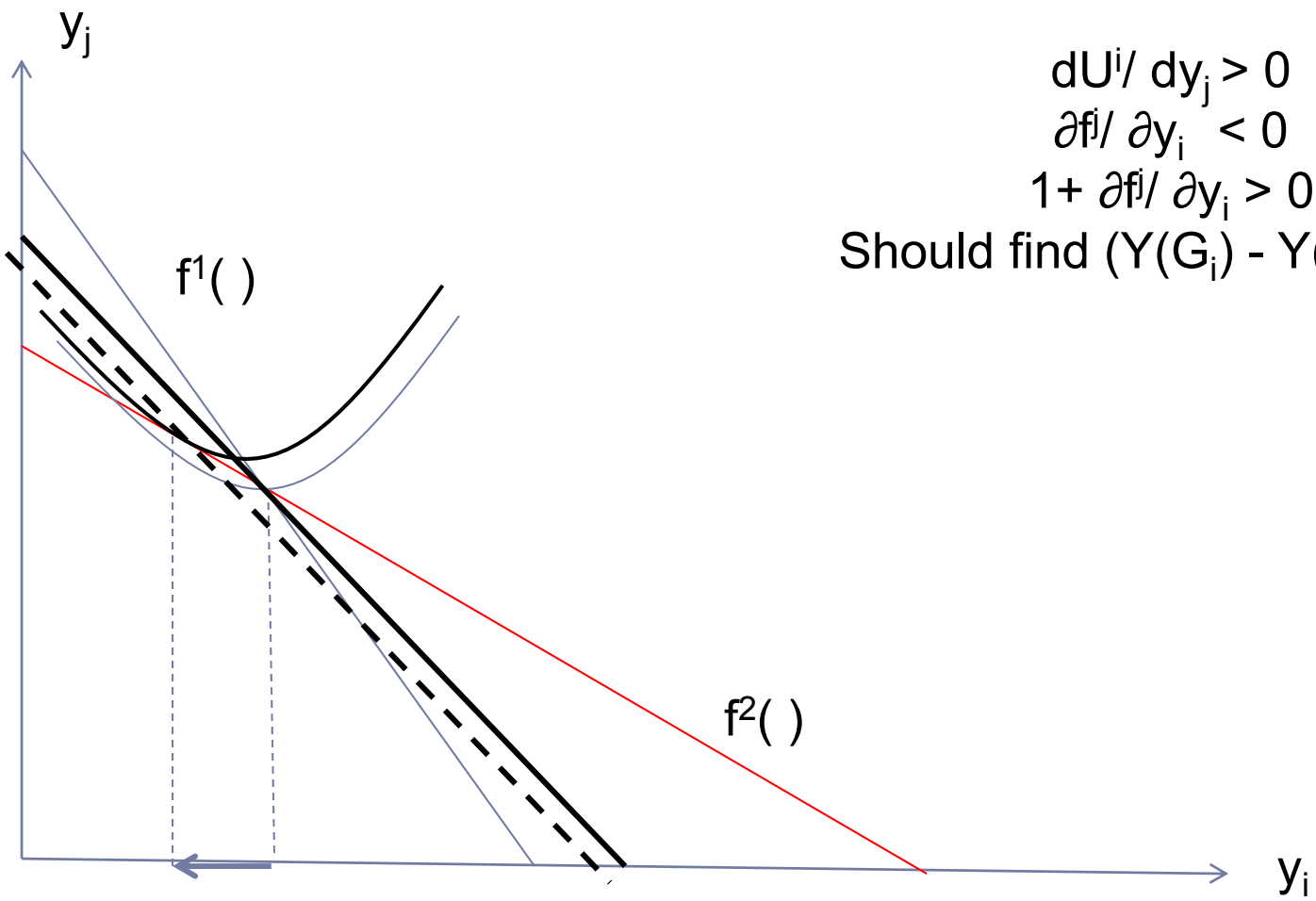
$dU^i/ dy_j > 0$

$\partial f^j/ \partial y_i < 0$

$1 + \partial f^j/ \partial y_i > 0$

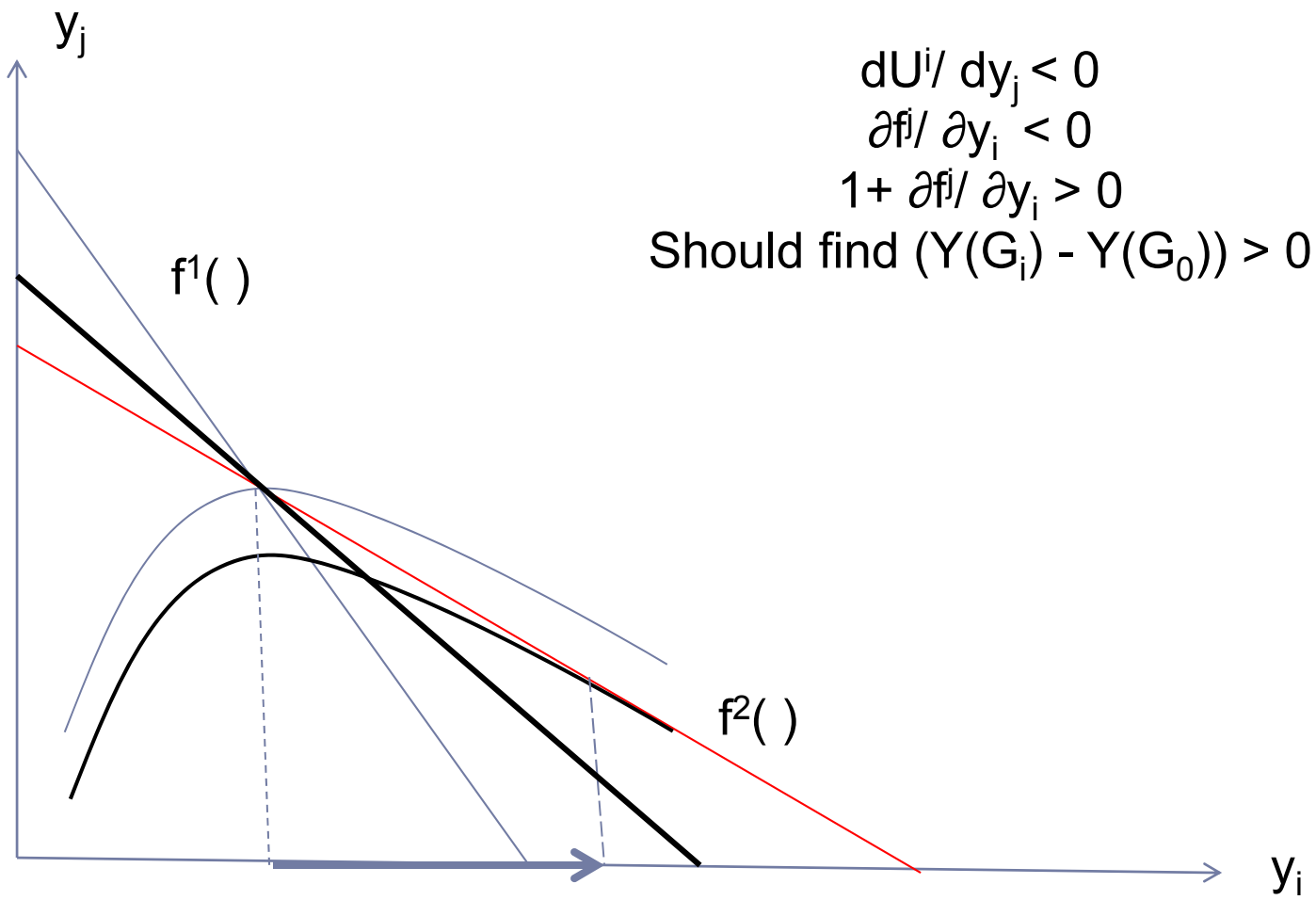
Should find $(Y(G_i) - Y(G_0)) < 0$

Sign of $[dU^i/ dy_j] [\partial f^j/ \partial y_i]$ same as $(Y(G_i) - Y(G_0))$ when $1 + \partial f^j/ \partial y_i > 0$
opposite sign when $1 + \partial f^j/ \partial y_i < 0$



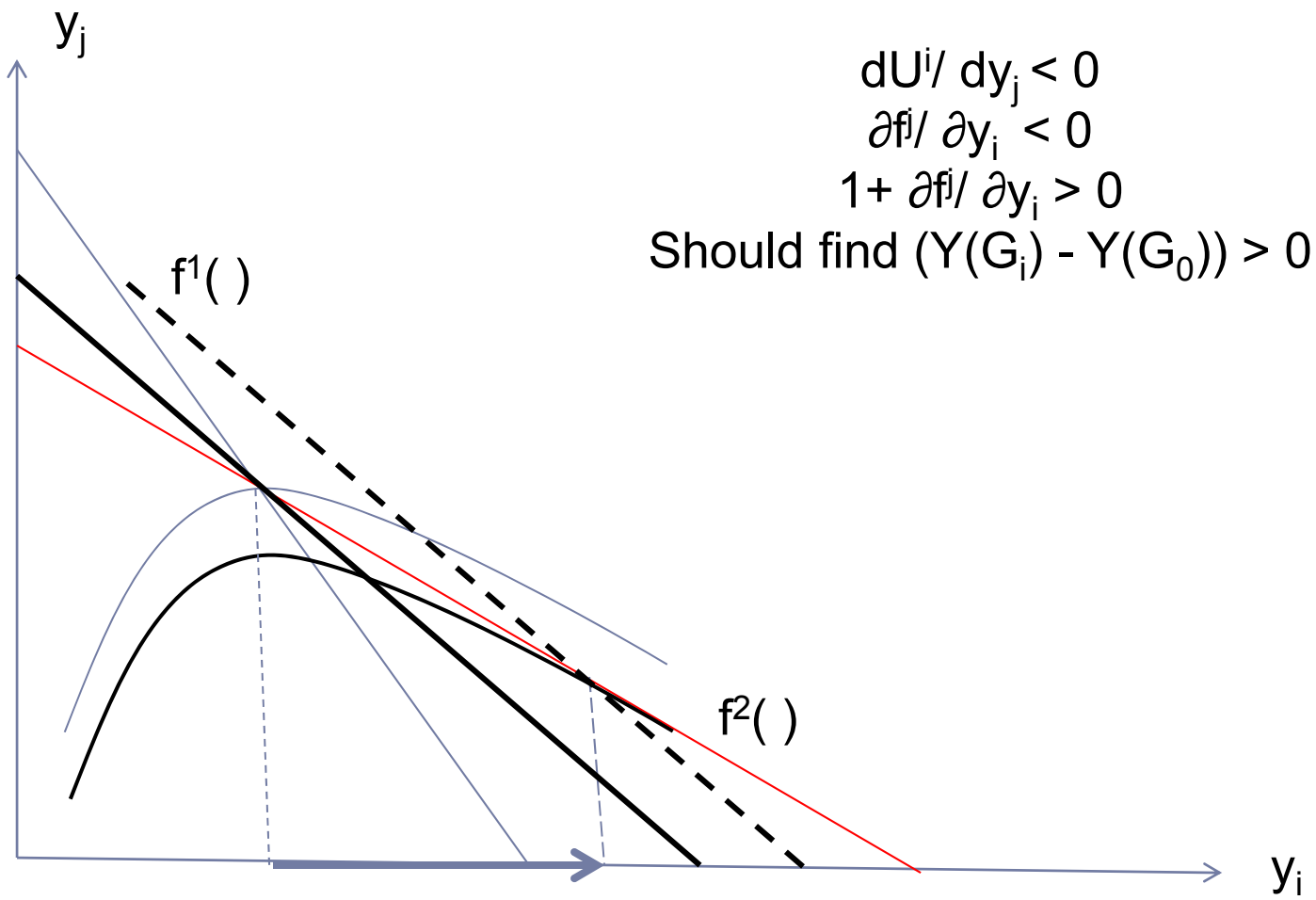
$dU^i/ dy_j > 0$
$\partial f^j/ \partial y_i < 0$
$1+ \partial f^j/ \partial y_i > 0$
Should find $(Y(G_i) - Y(G_0)) < 0$

Sign of $[dU^i/ dy_j] [\partial f^j/ \partial y_i]$ same as $(Y(G_i) - Y(G_0))$ when $1 + \partial f^j/ \partial y_i > 0$
opposite sign when $1 + \partial f^j/ \partial y_i < 0$



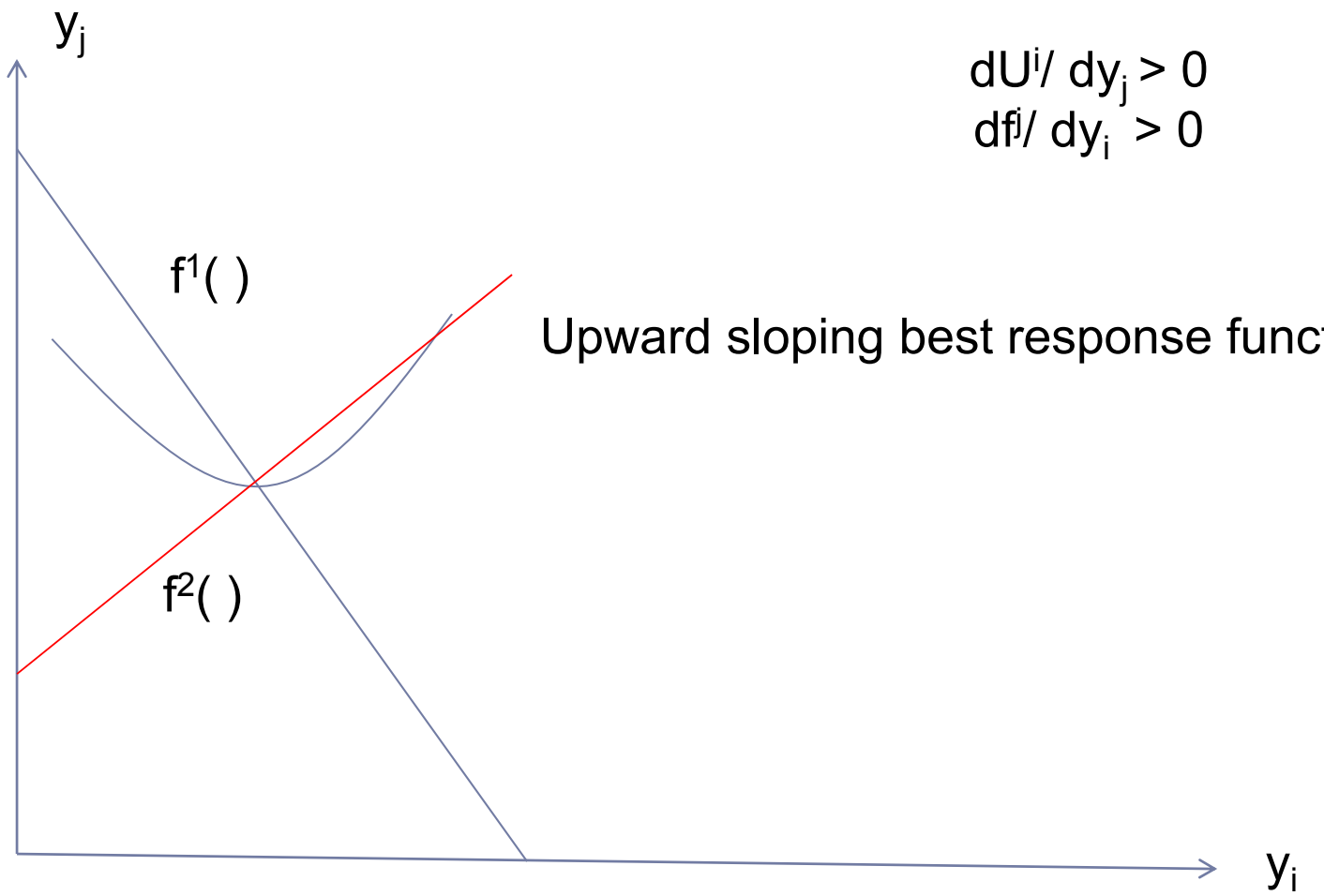
$dU^i/ dy_j < 0$
$\partial f^j/ \partial y_i < 0$
$1+ \partial f^j/ \partial y_i > 0$
Should find $(Y(G_i) - Y(G_0)) > 0$

Sign of $[dU^i/ dy_j] [\partial f^j/ \partial y_i]$ same as $(Y(G_i) - Y(G_0))$ when $1 + \partial f^j/ \partial y_i > 0$
opposite sign when $1 + \partial f^j/ \partial y_i < 0$



$dU^i/ dy_j < 0$
$\partial f^j/ \partial y_i < 0$
$1+ \partial f^j/ \partial y_i > 0$
Should find $(Y(G_i) - Y(G_0)) > 0$

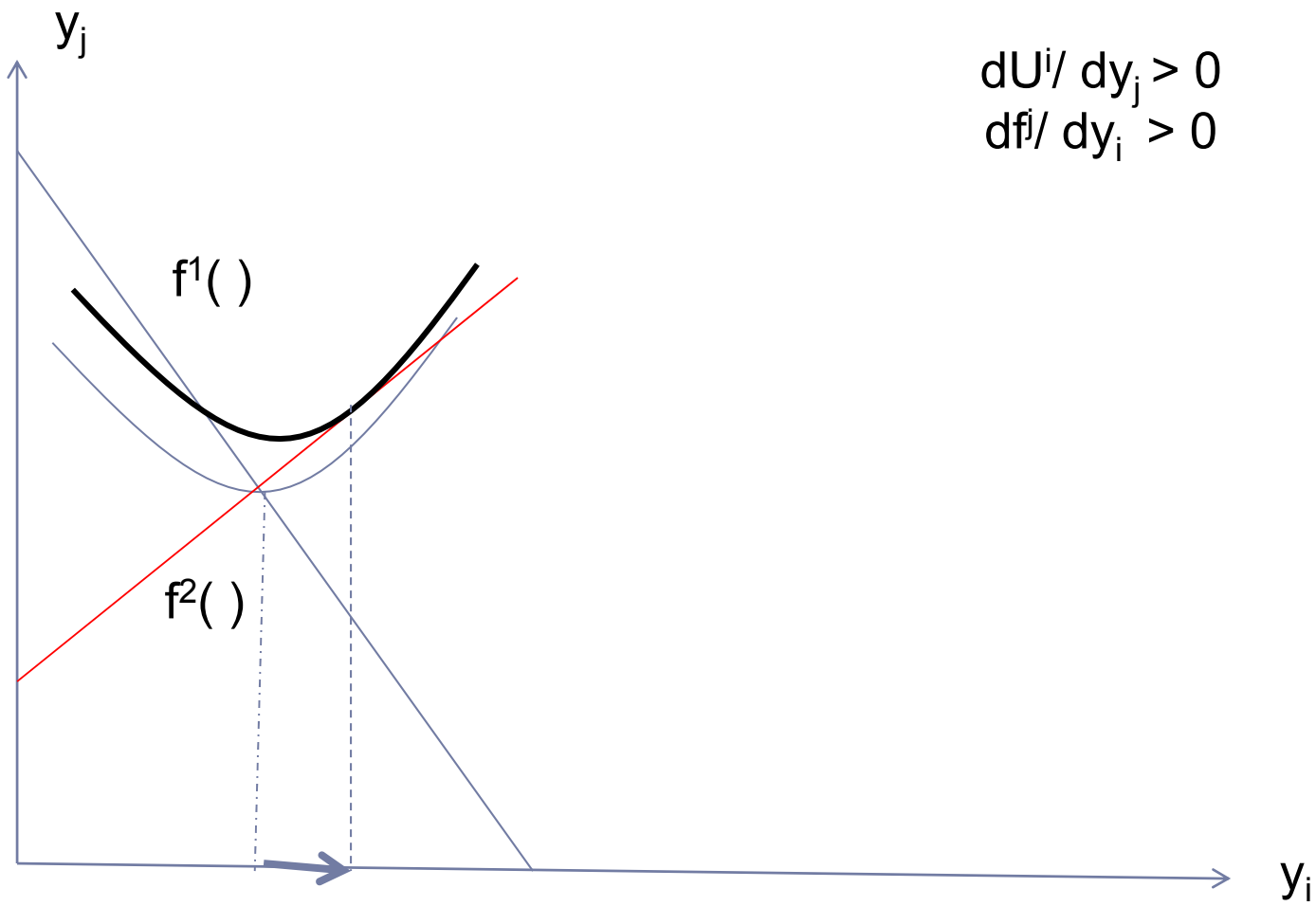
Sign of $[dU^i/ dy_j] [df^j/ dy_i]$ same as $(Y(G_i) - Y(G_0))$ when $1 + df^j/ dy_i > 0$
opposite sign when $1 + df^j/dy_i < 0$



$dU^i/ dy_j > 0$
$df^j/ dy_i > 0$

Upward sloping best response function?

Sign of $[dU^i/ dy_j] [df^j/ dy_i]$ same as $(Y(G_i) - Y(G_0))$ when $1 + df^j/ dy_i > 0$
opposite sign when $1 + df^j/dy_i < 0$



$dU^i/ dy_j > 0$
$df^j/ dy_i > 0$

- Note that Varian's finding that $(Y(G_i) - Y(G_0)) < 0$ was derived in the standard altruistic case where $[dU^i/ dy_j] > 0$ and $-1 < [\partial f^j/ \partial y_i] < 0$

- Considering the case in which the public good component dominates $(dU^i/ dy_j > 0)$ Romano and Yildirim (2001) show that it need not be the case that $[\partial f^j/ \partial y_i] < 0$

$$\frac{\partial f^i}{\partial y_j} = -\frac{\partial x_i^d}{\partial I_i} + \frac{(h_1^i - h_2^i)(-U_{13}^i + U_{23}^i + U_{33}^i h_1^i) + (h_{11}^i - h_{12}^i)U_3^i}{K_i}.$$

- Note in impure altruism model $h_1^i = 1$ and $h_2^i = h_{11}^i = h_{12}^i = 0,$

- Reducing slope to $-\partial x_i^d / \partial I_i + 1/K_i \; dU_3^i / dy_i.$

- If public good component dominates expect the results of Varian
- Becomes an empirical question to determine whether an individual's best response function is upward or downward sloping.
- Need to examine sequential vs. simultaneous provision in a controlled environment

Sequential versus simultaneous giving in the lab

- Experiment: Investment Game
- Assigned to be RED or BLUE investor
- Randomly paired with an investor of opposite color
- Decision: Purchase Investment Units 0-20
  - Cost 10 cents per unit
  - Return depends on TOTAL investment made by you and the other participant
  - Return depends on whether you are BLUE or RED investor.

Investment Returns to RED and BLUE Investors
Based on Total Investment by Both Investors.
(Returns are Listed in Cents)

Total Investment Units Purchased by Both Investors	Total Return to RED from total investment	Additional Return to RED from just the last unit	Total Return to BLUE from total investment	Additional Return to BLUE from just the last unit
0	0		0	
1	15	15	16	16
2	30	15	32	16
3	45	15	48	16
4	60	15	64	16
5	75	15	80	16
6	90	15	93	13
7	103	13	104	11
8	114	11	115	11
9	125	11	124	9
10	134	9	132	8
11	142	8	139	7
12	149	7	146	7
13	156	7	152	6
14	162	6	158	6
15	168	6	163	5
16	174	6	168	5
17	180	6	173	5
18	185	5	177	4
19	190	5	181	4
20	194	4	185	4
over 20	194	0	185	0

Reminder: Investment Units cost 10 each.

Investment Returns to RED and BLUE Investors
Based on Total Investment by Both Investors.
(Returns are Listed in Cents)

Total Investment Units Purchased by Both Investors	Total Return to RED from total investment	Additional Return to RED from just the last unit	Total Return to BLUE from total investment	Additional Return to BLUE from just the last unit
0	0		0	
1	15	15	16	16
2	30	15	32	16
3	45	15	48	16
4	60	15	64	16
5	75	15	80	16
6	90	15	93	13
7	103	13	104	11
8	114	11	115	11
9	125	11	124	9
10	134	9	132	8
11	142	8	139	7
12	149	7	146	7
13	156	7	152	6
14	162	6	158	6
15	168	6	163	5
16	174	6	168	5
17	180	6	173	5
18	185	5	177	4
19	190	5	181	4
20	194	4	185	4
over 20	194	0	185	0

Reminder: Investment Units cost 10 each.

Investment Returns to RED and BLUE Investors
Based on Total Investment by Both Investors.
(Returns are Listed in Cents)

Total Investment Units Purchased by Both Investors	Total Return to RED from total investment	Additional Return to RED from just the last unit	Total Return to BLUE from total investment	Additional Return to BLUE from just the last unit
0	0		0	
1	15	15	16	16
2	30	15	32	16
3	45	15	48	16
4	60	15	64	16
5	75	15	80	16
6	90	15	93	13
7	103	13	104	11
8	114	11	115	11
9	125	11	124	9
10	134	9	132	8
11	142	8	139	7
12	149	7	146	7
13	156	7	152	6
14	162	6	158	6
15	168	6	163	5
16	174	6	168	5
17	180	6	173	5
18	185	5	177	4
19	190	5	181	4
20	194	4	185	4
over 20	194	0	185	0

Reminder: Investment Units cost 10 each.

Experiment

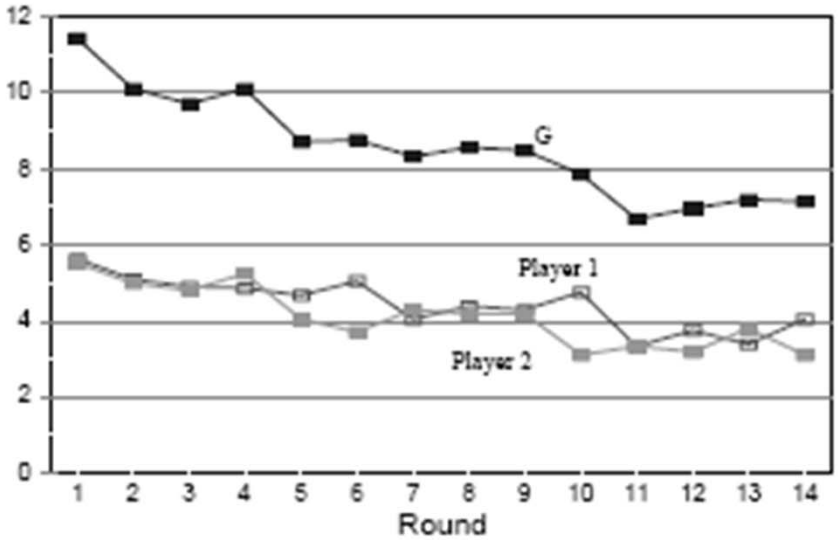
- Treatment 1: Red and Blue investor please make your investment decision

- Treatment 2: Red investor makes investment decision first – Blue investors sees investment decision before investing.

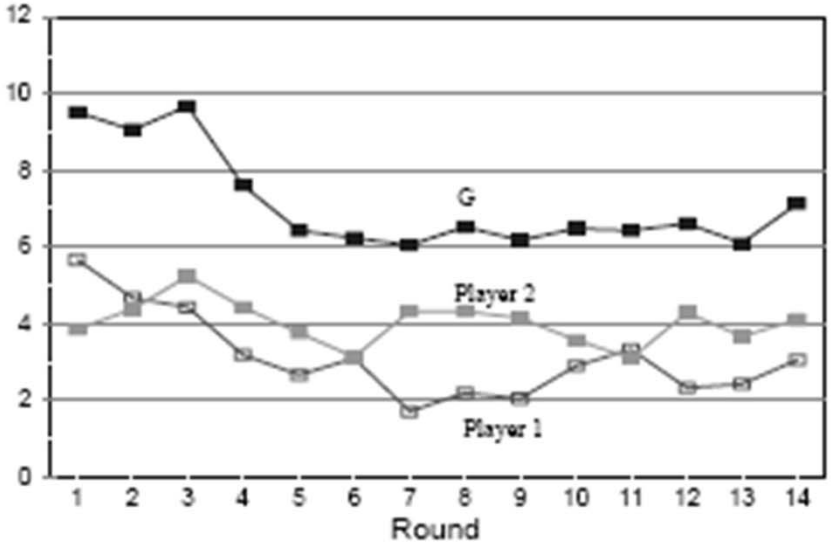
- SIMULTANEOUS CONTRIBUTION: 9
  - Investment by RED: 9
  - Investment by BLUE: 0
- SEQUENTIAL CONTRIBUTION (summation): 8
  - Investment by RED: 0
  - Investment by BLUE: 8

Testing Varian model

- Andreoni, Brown and Vesterlund (GEB 2002)
- Use payoffs as described
- Treatments:
  - Sim
  - Seq
  - (Seq with best shot)
- 14 subjects play 14 rounds
- Randomly paired
- Three sessions per treatment
- Finding w/ summation:
  - Contrary to prediction we do not see one party free riding on the other

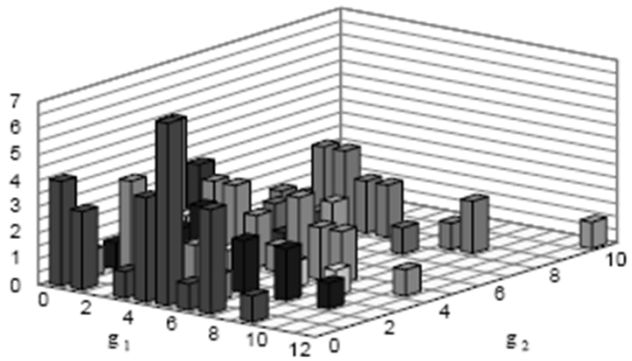


(a) Simultaneous

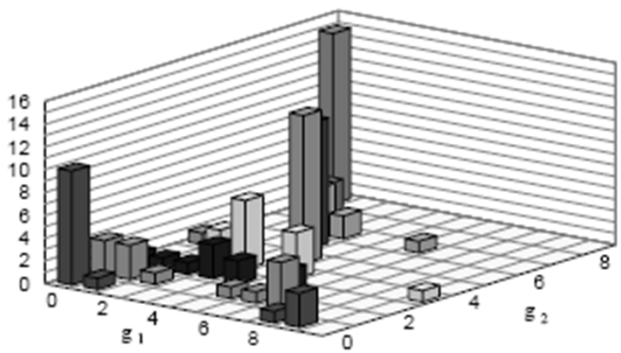


(b) Sequential

Last five rounds



(a) Simultaneous



(b) Sequential

Evidence from lab experiments

- Lab experiments: mixed evidence on sequential giving increasing contributions
  - Andreoni, Brown, and Vesterlund, (*GEB* 2002)
    - Quasi linear preferences
    - Smaller contributions with sequential giving
  - Gaechter and Renner, *(JCR* 2003)
    - No effect in linear public good environment
  - Gaechter, Nosenzo, Renner and Sefton (*JPubE* 2010)
    - Quasi linear preferences
    - Smaller contributions with sequential moves
  - Moxnes and Van der Heijden (2003)
    - Leader improves outcome in public bad setting
  - Meidinger and Villeval (WP)
    - leading-by-example effective

So why might we see announcements?

- Does not appear that preferences alone give rise to upward sloping best response functions
- Need to have a theory for what might give rise to “upward sloping best response functions”
- Chairman of trustees, Johns Hopkins:
  - “Fundamentally we are all followers. If I can get somebody to be the leader, others will follow. I can leverage that gift many times over.”
- Explanation involves increasing leader and follower contribution
  - Coordination on a particular equilibrium
  - Information
  - Reciprocity
  - Status
  - Expanded the set of equilibria