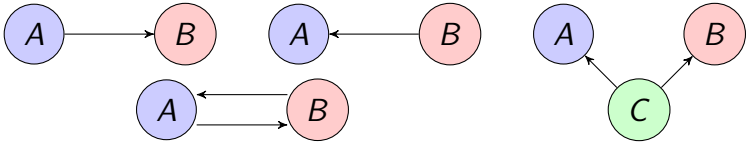
HA! HA! HA! HA!

因果 causality $A \Rightarrow B$ (“A causes B.”)

相関 correlation $\mathrm{corr}[A, B] \neq 0$ (“A is correlated with B.”)

A と B が相関: さまざまな因果関係があり得る



見せかけの相関

親の違いによる子の純資産額、所得、学歴、金融投資への影響

TABLE 3
INTERGENERATIONAL LINKS IN WEALTH

	Korean-Norwegian Adoptees			Nonadoptees			Families with Both Adoptive Child and Nonadoptive Child	
	(1)	(2)	(3)	(4)	(5)	(6)	Adoptees (7)	Nonadoptees (8)
Child-parent net wealth relation	.225***	.225***	.204***	.575***	.547***	.548***	.276**	.468***
	(.041)	(.041)	(.042)	(.011)	(.011)	(.018)	(.139)	(.122)
Adoption year indicators	Yes	Yes	Yes				Yes	
Birth year indicator of child and parents	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Gender		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adoption age (in days)		Yes	Yes				Yes	
Family characteristics			Yes		Yes	Yes		
Matched sample (propensity score)						Yes		
Observations	2,254			1,206,650			515	1,105

NOTE.—In this table, Korean-Norwegian adoptees are born in South Korea between 1965 and 1986 and adopted at infancy by Norwegian parents. Nonadoptees are born in Norway between 1965 and 1986 and raised by their biological parents. Family characteristics include education (in years) of the mother and father, number of siblings, (log of) parents' income, and (log of) the median income in parents' municipality of residence, all measured at the time of birth of the child. In col. 6, the observations in the sample of nonadoptees are weighted by the propensity score for being an adoptee (based on predetermined characteristics; see sec. V.B and table B9). In cols. 7 and 8, we restrict the sample to families with both a Korean-Norwegian adopted child and a nonadopted child. Using this restricted sample, we then estimate the intergenerational wealth transmission separately for the 515 adopted children (col. 7) and for the 1,105 nonadopted children (col. 8). The sample restriction ensures that we are comparing adoptees and nonadoptees with exactly the same set of parents. Standard errors (in parentheses) are clustered at the level of the mother.

** $p<.05$.
*** $p<.01$.

養親純資産額 ⇒ 養子純資産額

(1)-(3) 韓国出自の養子
(4)-(6) 実子

韓国出自の養子のいる家庭の
(7) 養子と(8) 実子のサンプル

推計値と標準誤差
その他共変数
標本サイズ

$**p < .05$, $***p < .01$ は p value を示す

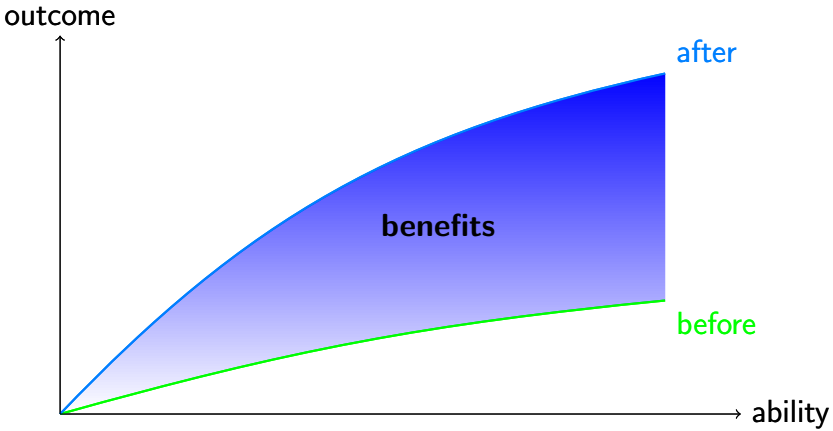
(1)-(3) の係数: .204 - .225

養親の純資産額が 5 クローネ増えると養子の純資産額を (少なくとも)1 クローネ増やす

(4)-(6) の係数: .547 - .575

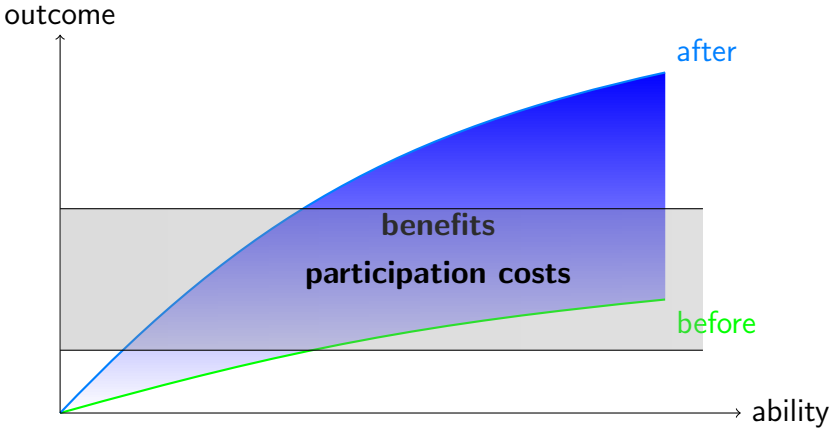
養親の純資産額が 5 クローネ増えると実子の純資産額を (少なくとも)2.5 クローネ増やす

self-selection (benefits)

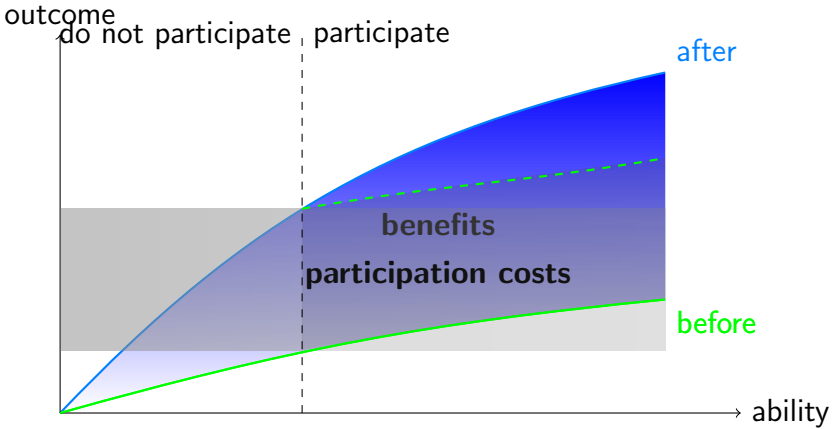


self-selection (costs)

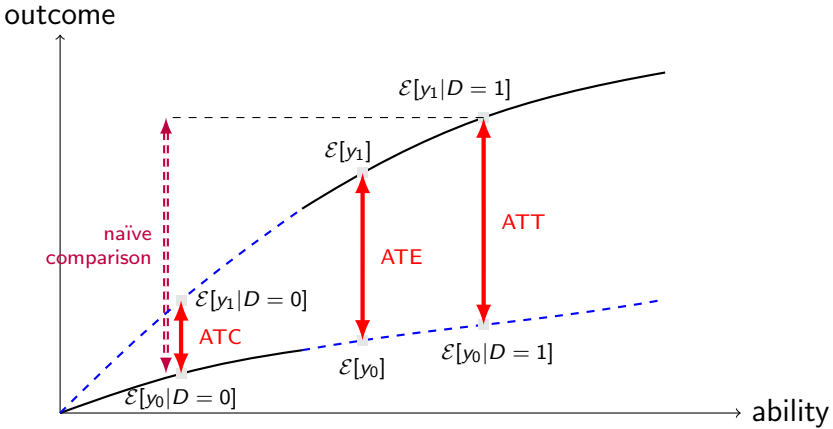
self-selection (benefits and costs)



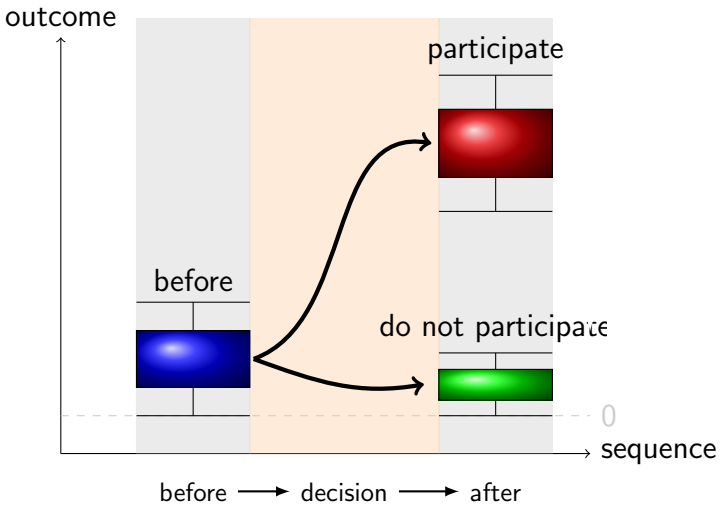
self-selection (participation decisions)



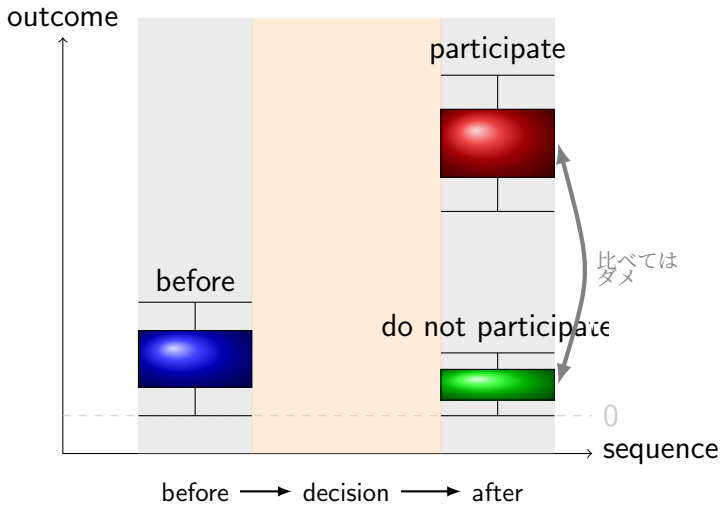
self-selection (results)



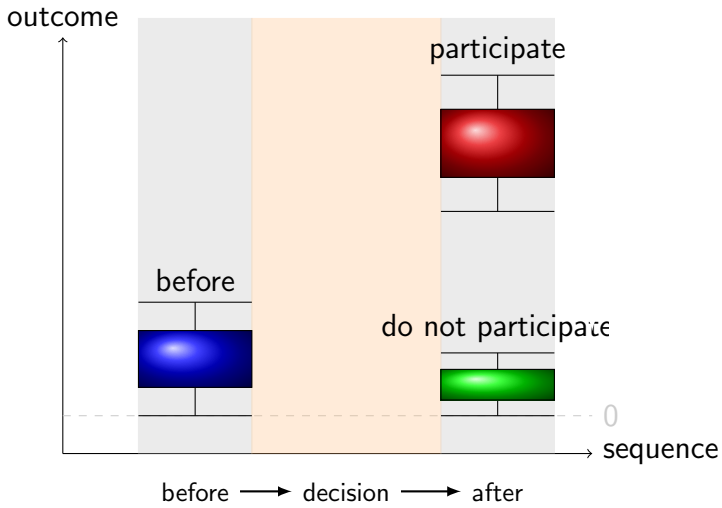
self-selection (what we observe)



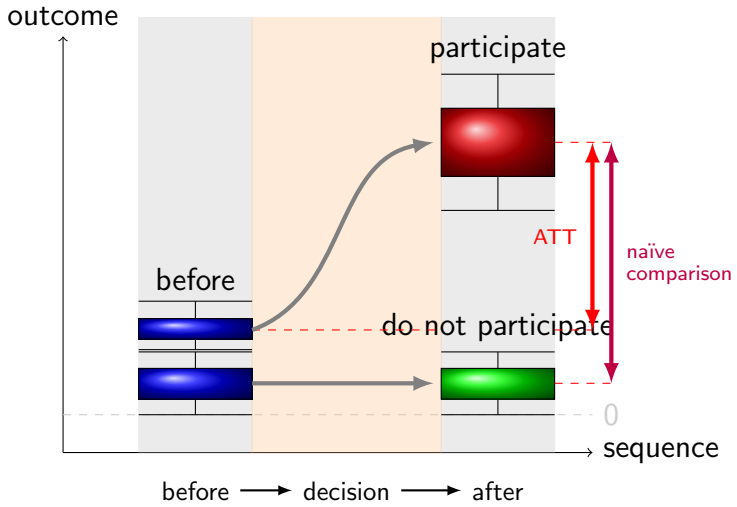
evaluation: naïve comparison



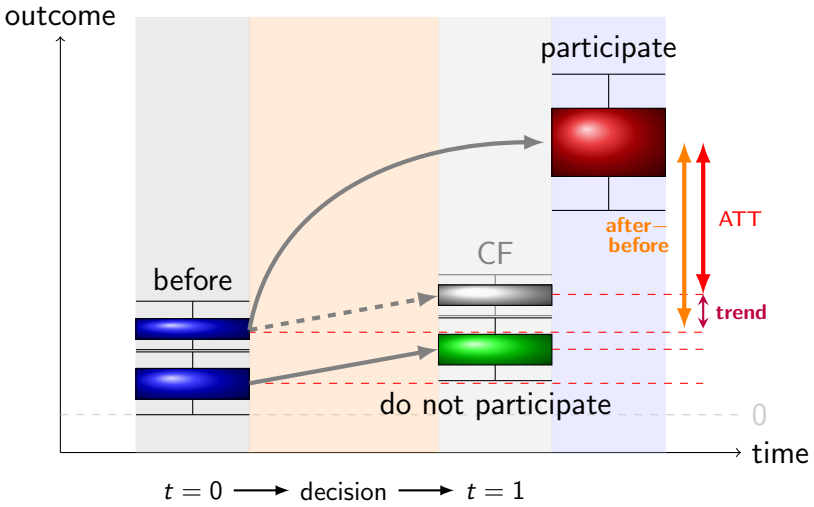
evaluation: proper comparison



evaluation: proper comparison



difference-in-differences (idea)



difference-in-differences (implementation)

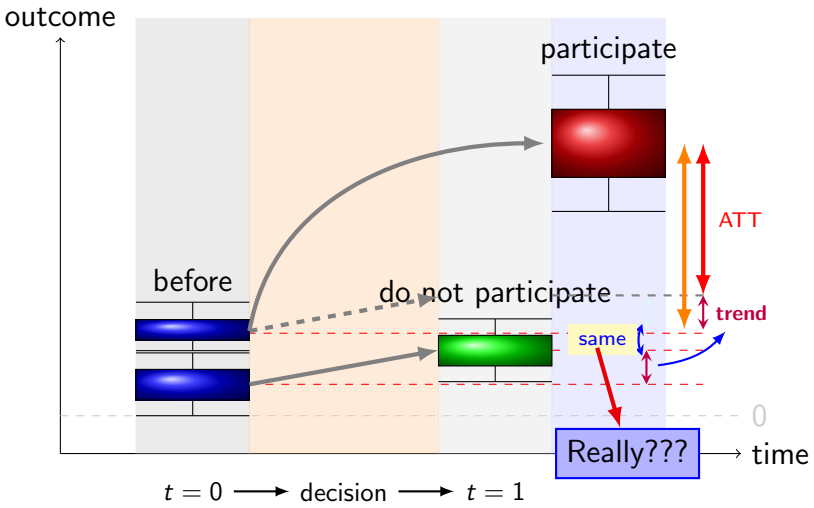


Table 4—Perinatal Deaths[a] among 1334 Infants Born to 626 Parous Women, by Cohort of Famine Exposure[b]: Dutch Famine Birth Cohort Study

	Not Exposed (n = 378)	Exposed in Third Trimester (n = 160)	Exposed in Second Trimester (n = 152)	Exposed in First Trimester (n = 125)
Among singleton offspring				
No.	7/688	12/309	6/294	6/240
%	1.0	3.9	2.0	2.5
RR	1.00	3.71	1.95	2.39
95% CI	(Reference)	1.35, 11.1	0.54, 6.77	0.66, 8.29
Among twins				
No.	3 of 18	3 of 4	2 of 10	0 of 8
%	16.7	75.0	20.0	0.0
RR	1.00	4.50	1.20	. . .[c]
95% CI	(Reference)	0.60, 33.6	0.10, 10.5	. . .

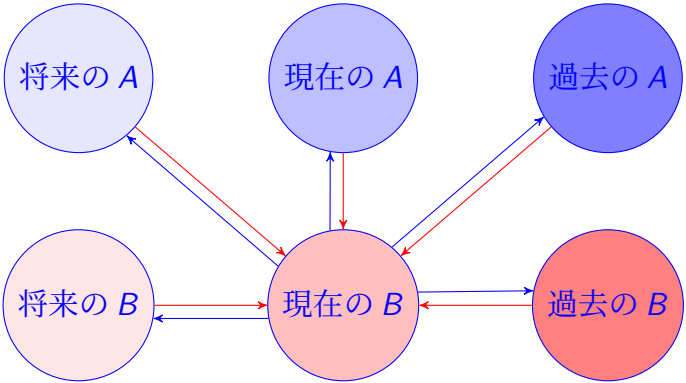
Note. RR = relative risk; CI = confidence interval.
[a]Stillbirths plus deaths in the first 7 days of life as a proportion of all births.
[b]Women may have been exposed in more than one trimester, and these categories are therefore not mutually exclusive. There is no overlap between any exposure cohort and the unexposed cohort, or between those exposed in the third trimester and those exposed in the first trimester.
[c]No deaths occurred among twin offspring of women exposed early in pregnancy.

7/688 vs. 12/309 という比較:
small sample bias?

- ☞ 確かに第 3 三半期の方は 3.82 倍 [表の RR=3.71 は計算間違い? 下段 RR は正しいが上段全て間違い]
- ☞ 統御群で 1.02%という珍しい症例。しかも、310(= 全出産数 688-女性総数 378) 件は 2 人目以降の出産。おそらく標本サイズが十分ではない。
- ✍ 例えば 3%が 4.3%に増えたとき: 誤差、それとも、43%ポイントも増えた、と表現するのか。標本サイズ 300 人だと 9 人が 13 人に増えただけ。誤差。と共著者に言ったら怒られた。

GoTo トラベルの効果?

グレンジャー因果性 Granger causality: A Granger-causes B



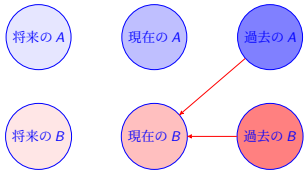
矢印は現在の B に関わるもののみ表示 (他は無視)

過去の B を考慮にした上で過去の A が現在の B と相関があること

GoTo トラベルの効果?

グレンジャー因果性 Granger causality: A Granger-causes B

- ☞ 現在の A は?
- ☞ 将来の B を見越して現在の B が変化している場合は? 現在の B を見越して過去の B が変化している場合は?
- ☞ 将来の B を見越して現在の A が変化している場合は? 現在の B を見越して過去の A が変化している場合は?
- ☞ 本来の G 因果性ならば遡れるだけの過去の A との相関を推計するが、どこまで遡るべきかは考慮している現象次第



無いと仮定

この仮定が満たされづらいので G 因果性はあまり使われない