Low Income Support

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Motivation for Government Transfers

Inequality $\Rightarrow$ motivates redistribution

Government Transfers direct government payments to individuals (often very low-income)

- A progressive tax system can achieve a lot of redistribution but changing tax rates cannot increase incomes at the very bottom (*Caveat:* refundable tax credits)

Transfers

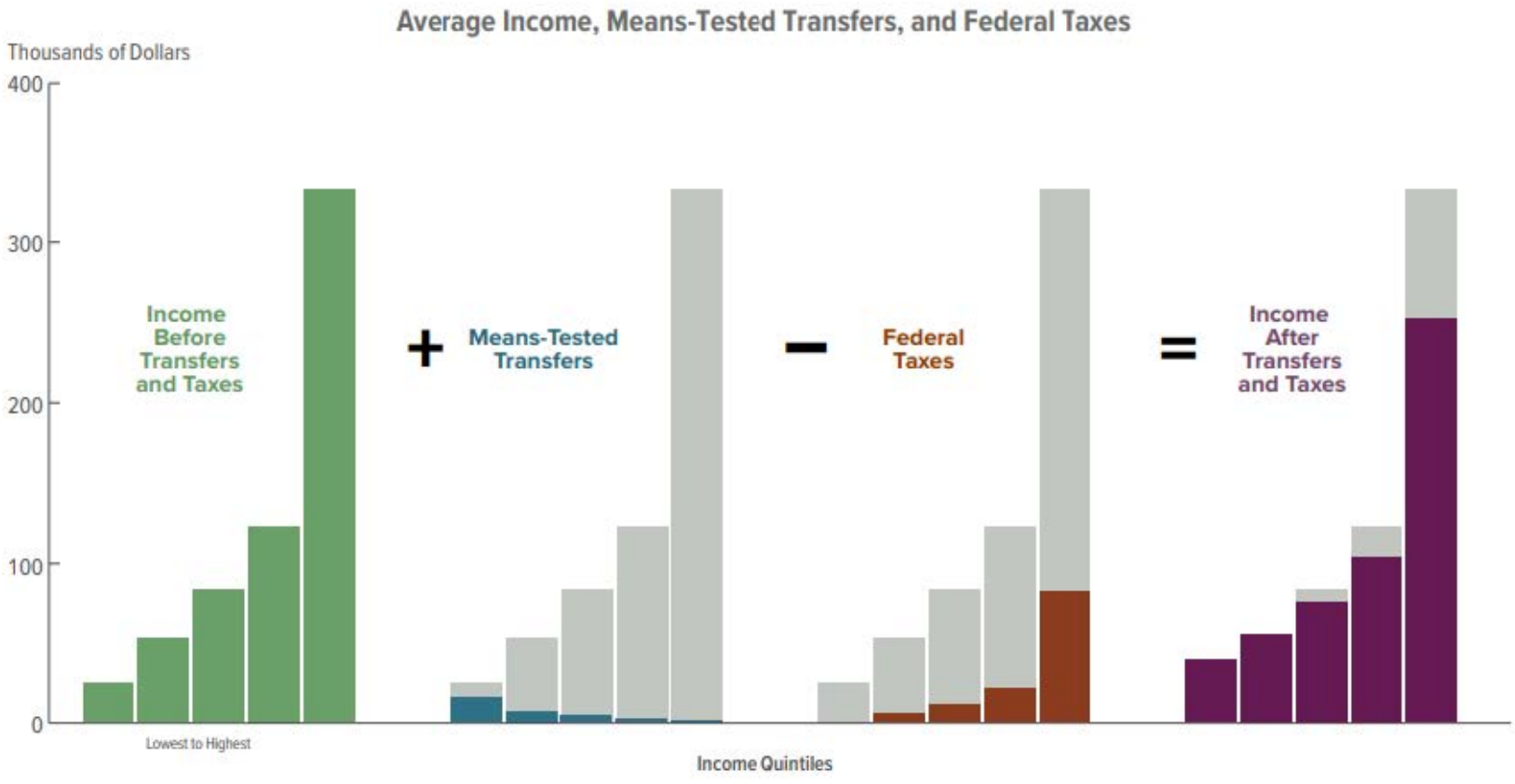


Figure: From taxes to federal government transfers (Source: Dr. Sammy Young (ASU))

Learning Goals

- Contrast low-income transfer programs
- Learn to calculate implied marginal tax rate from the EITC and evaluate labor supply consequences
- Analyze the labor supply incentives associated with welfare programs
- Consider efficiency trade-offs of ordeal mechanisms and in-kind transfers to improve targeting

How should we provide support to low-income folks? Should we?

Redistribution Can Lower Inequality

- Government can reduce inequality through redistribution
  - Progressive taxation
  - Transfer programs
  - Public services
- But redistribution involves tradeoffs:
  - May reduce incentives to work and invest
  - Administrative costs of tax/transfer systems
  - Political feasibility challenges
  - Targeting efficiency - getting aid to intended recipients
- Key policy design questions:
  - How much redistribution?
  - How to balance equity and efficiency?
  - What form should transfers take?

Rare exceptions: Pareto optimal policies

- The ideal redistributional policy is a Pareto improvement or Pareto efficient
- These policies are Pareto efficient and effectively "pay for themselves"
- They are RARE in practice
- Examples (Hendren and Sprung-Keyser (2020)):
  - College education (e.g. Florida International University free tuition to high-achieving students, Texas Pell grants)
  - Medicaid expansion to pregnant women and infants
  - Early childhood education
- What do they have in common? Long-run earnings $\Uparrow$
- Policies that boost long-run earnings will pay for themselves through increased tax revenue

Evaluation of Redistribution Policies

- Two key questions for evaluating equity/efficiency tradeoff:
  - How large are the efficiency costs from redistribution?
    - Focus on deadweight loss and behavioral responses to taxation
    - These determine the magnitude of efficiency costs
  - How do we value $1 of income across different people?
    - This is a normative question
    - Depends on values, philosophy, and social preferences
    - No purely objective answer

"Leaky Bucket" Problem

- Arthur Okun coined "leaky bucket" to describe redistribution:
  - Carrying money from high to low-income has "leaks"
- Multiple sources of "leaks":
  - Behavioral distortions from collecting taxes or giving transfers
  - Administrative costs of enabling taxation and transfers
- Consider a transfer of \$1 from high- to low-income individuals
- With no behavioral responses:
  - It costs \$1 to transfer \$1 to low-income individuals
- Potential "leaky bucket" costs:
  - $\Uparrow$ taxes may mean high-income workers $\Downarrow$ work, $\Downarrow$ tax rev by \$0.25
  - Administrative costs (\$0.10 in spending)
  - Transfers $\Downarrow$ low-income work (income effects), $\Downarrow$ tax rev by \$0.10
  - Total cost: \$1.45 to transfer \$1 to low-income individuals

Social Welfare Function and Redistribution

- Social Welfare Function: measure of total welfare (utility) across all individuals in society
- A simple mathematical representation:

$$\text{Social Welfare} = \sum_i \phi(U_i) = \phi_i \cdot U_i$$

where:

  - U_i is the utility of each individual i
  - ϕ ("Phi") is the SWF, ϕ_i is the social welfare weight for individual i
- Welfare weights (ϕ_i) represent society's value judgment
  - $\phi_i = 0$ for wealthiest means their utility irrelevant
- Utilitarian case: $\phi_i = 1$ for all individuals
  - Still favors redistribution due to diminishing marginal utility

Evaluating Redistribution Policies

1. Calculate the effects on individuals in each part of the distribution including DWL from taxation and transfers
2. Use welfare weights to compute the change in social welfare
3. Calculate the social welfare per dollar cost of the policy

- Lower relative social welfare weight on the most wealthy $\Rightarrow$ more support for redistribution even with a leaky bucket

Role of Economics:

- Measuring costs and benefits of policies
- Estimating incidence (who bears the burden)
- Providing a framework for evaluating policies given a set of welfare weights

Economics **cannot** determine the "right" welfare weights

Key policy design choices

Is the transfer program categorical or means-tested?

- Categorical transfer: Transfer programs restricted by a demographic characteristic, such as single motherhood or disability.
- Means-tested transfer: Transfer programs restricted only by income and asset levels.

Is the transfer program cash or in-kind?

- Cash transfer: Transfer programs that provide cash benefits to recipients.
- In-kind transfer: Transfer programs that deliver goods, such as medical care or housing, to recipients.

Cash transfer programs

- Temporary Aid for Needy Families ($28B in 2021, approximately 2M recipients in FY2023)
  - available to low income families with children
  - benefits temporary — max 5 years over lifetime, no more than 2 years in a row (with exceptions); work requirements
  - partially funded by grants from federal government to states
  - states control the structure of their welfare programs.
  - benefits are means-tested, benefit reduction rate between 50 and 100% (the rate at which benefits decline as income grows)
- Supplemental Security Income for the aged, blind, or disabled ($67.2B in 10/2022-9/2023) who are not (fully) served by Social Security or DI; 7.5M recipients as of 9/2023

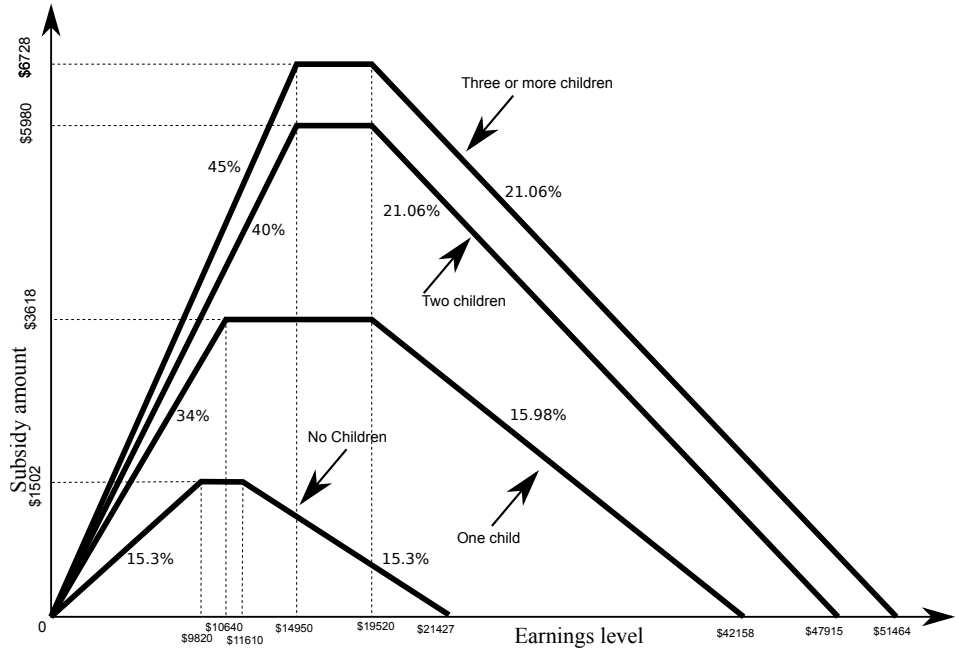
Sources:
https://www.acf.hhs.gov/ofa/programs/tanf/data-reports
https://www.acf.hhs.gov/sites/default/files/documents/ofa/fy2023_tanf_caseload.pdf
https://www.acf.hhs.gov/opre/report/2021-welfare-rules-databook
https://www.ssa.gov/policy/docs/statcomps/ssi_monthly/

Cash transfer programs

Earned Income Tax Credit (27.0M recipients in 2021; $66.4B)

- Part of tax system, refundable ($51.7B refunded in 2019)
- Subsidy increases with earnings initially ("phase-in")
- benefits vary by number of eligible children
- the maximum benefit of $7,430 in 2023 (couple with 3+ children)
- Benefits phase out at higher incomes:
  - Single parents: No benefits above $56,838
  - Joint filers: No benefits above $63,698

EITC Structure and Incentives



Key Features:

- Phase-in: Subsidy ↑ with income
- Plateau: Max benefit
- Phase-out: Benefits ↓
- Work incentives shift from positive to negative

Source: CBPP, 2021 Schedule (Single)

The slope of a benefit with respect to pre-tax income creates an *implicit marginal tax rate*

$$\text{Implicit MTR} = \frac{\Delta \text{Transfer}}{\Delta \text{Pre-tax Income}}$$

Implicit marginal tax rates of EITC

$$\text{Implicit MTR} = \frac{\Delta\text{Transfer}}{\Delta\text{Pre-tax Income}}$$

For a single parent with two kids and only labor income (earnings):

- Phase in range:
  - Subsidy $\Uparrow$ from \$0 to \$6,604 as earnings $\Uparrow$ from \$0 to \$16,510.
  - Implicit marginal tax rate: $\frac{\Delta\text{EITC}}{\Delta\text{Earnings}} - \frac{0-6604}{16510-0} = -0.4$
- Plateau range:
  - Subsidy constant from \$16,510 to \$21,560 in earnings
  - Implicit marginal tax rate: $\frac{6604-6604}{21560-16510} = 0$
- Phase out range:
  - Subsidy $\Downarrow$ to \$0 from \$21,560 to \$52,918 in earnings
  - Implicit marginal tax rate: $\frac{6604-0}{52918-21560} = 0.2106$

Interaction with taxation (and other programs)

- For single parents of two, income $\geq$\$20.8K[1] taxed (2023)
- Statutory MTR $\uparrow$ from 10% to 12% for in EITC range
- Payroll tax (employee's share only): 7.65%

$$\text{Total MTR} = \text{Implicit MTR} + \text{Statutory MTR}$$

Income range		Marginal tax rate				Tax liability
		EITC	Tax	Payroll	Total	(at lower limit)
\$0	\$16,510	-0.4	0	0.0765	-0.3235	\$0.00
\$16,510	\$20,800	0	0	0.0765	0.0765	-\$5340.98
\$20,800	\$21,650	0	0.10	0.0765	0.1765	-\$5012.80
\$21,650	\$37,700	0.2106	0.10	0.0765	0.3871	-\$4,433.78
\$37,700	\$52,918	0.2106	0.12	0.0765	0.4071	\$1,504.55
\$52,918	\$80,650	0	0.12	0.0765	0.1965	\$7,654.39
\$80,650		0	0.22	0.0765	0.2965	\$15,786.93

- What is effective income at \$16,510?
- Is the total MTR strictly progressive/vertically equitable?

[1] Standard deduction

Automate that: Policy Rules Database

- Real-world programs have many more moving parts:
  - Multiple benefit phase-outs
  - Various eligibility criteria
  - State-level variations
- Federal Reserve Bank of Atlanta's Policy Rules Database
  - Model multiple program interactions for different households
  - Download data of payments by $1000 increments

Try it yourself! (`https://tinyurl.com/fed-prd`)

Example

- Set the county to Dutchess County, NY and enter your age
- Select Medicaid for Adults, Health Insurance Marketplace Subsidy, Section 8, SNAP, and EITC
- Are you eligible for all of these programs? Why or why not?
- Download the data to calculate the total MTR at each earnings level – what are the implications for labor supply?

Welfare and incentives to work

- Transfers affect budget constraint, i.e. incentives to work
- Unconditional transfers lower labor supply via income effect[2]
  - Caveat: If the goal is to $\Uparrow$ recipient welfare, $\Downarrow$ work is fine. It's only an efficiency loss if the the aim is $\Uparrow$ income
- Removing benefits at high income keeps costs under control
- ...hence, benefits are taken away as income increases (slowly or sharply, depending on the design)
- Reducing transfer results in reducing the price of leisure $\Rightarrow\downarrow$ labor due to the substitution effect
- Substitution effect represents a loss of welfare
  - Same monetary benefits could provide a higher utility level if offered without distorting prices (recall welfare theorems)
- There are many ways of taking away benefits, but there is no way to avoid work disincentives everywhere

[2] If leisure is a normal good

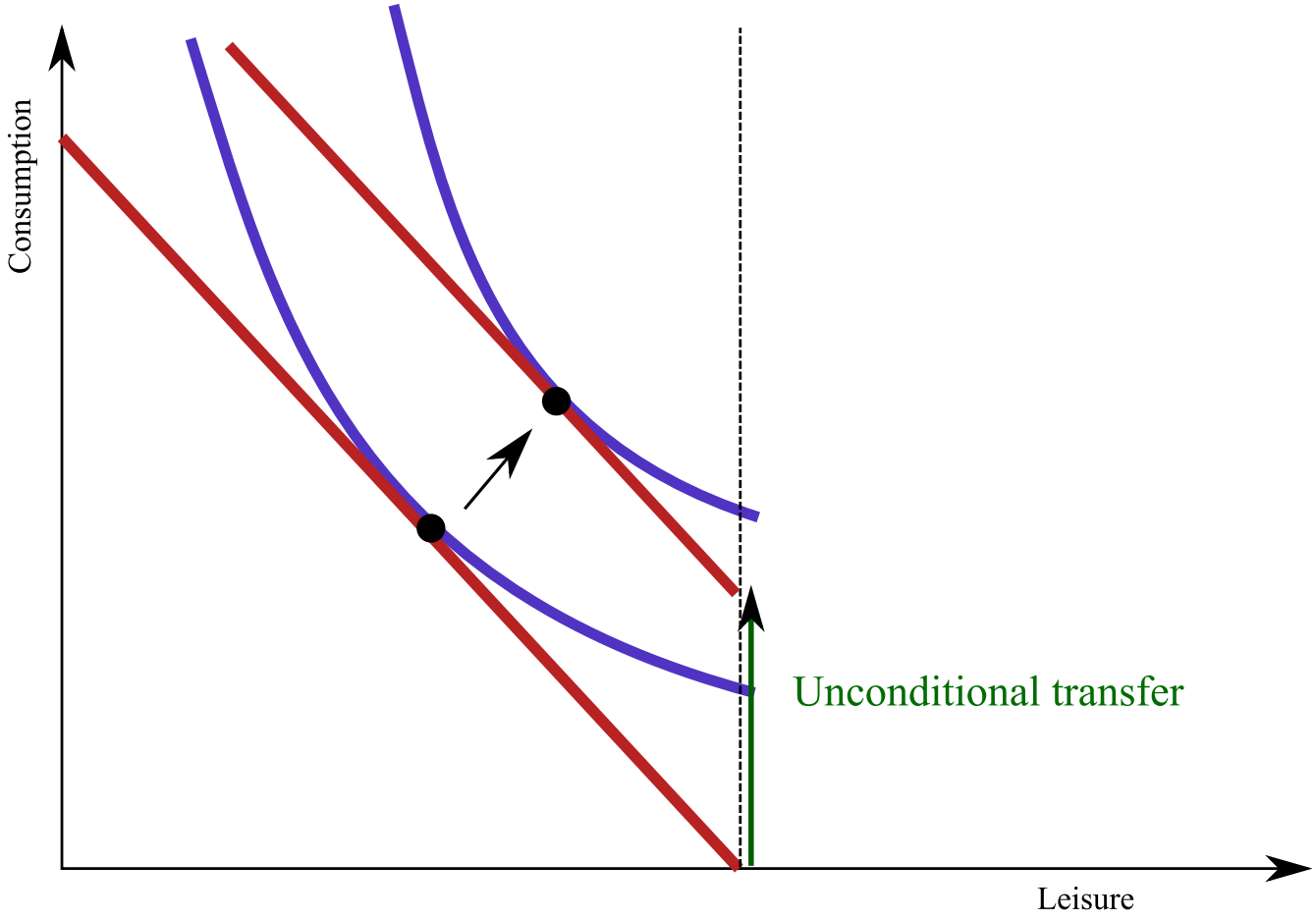
"Review" of Labor Supply Derivation

- L is leisure, so $1 - L$ is labor (a percent of time)
- Work 100% of time, earn $w = 150$ (w is opp. cost of leisure)
- Consumption: C with price 1
- Receive a transfer $T = 50$
- Utility function: $U(C, L) = \ln(C) + ln(L)$
- Budget constraint: $C = 150(1 - L) + 50$

$$\max_{C,L} \ln(C) + \ln(L)$$

$$\text{s.t. } C = 150(1 - L) + 50 \text{ or } C + 150L = 200$$

This is the same as any old utility maximization problem, but with a slightly more complicated budget constraint.



$$\text{No transfer} : \max_{C,L} \ln(C) + \ln(L) \text{ s.t. } C = 150(1 - L)$$

$$\text{First MRS} : \frac{L}{C} = \frac{1}{150} \Rightarrow C = 150L$$

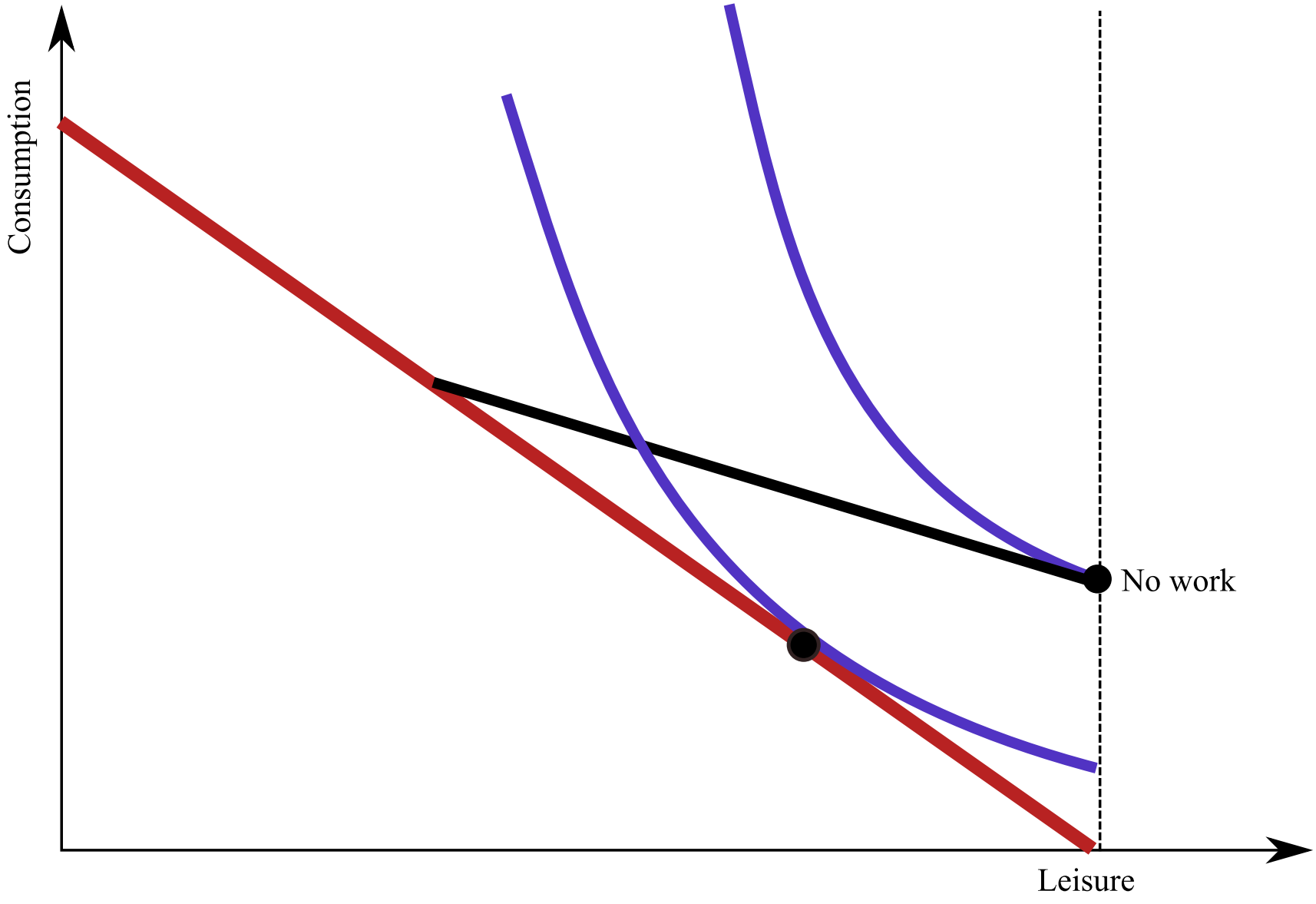
$$\text{Sub into BC} : 150L = 150(1 - L)$$

$$\text{Solve for } L : L^* = 0.5$$

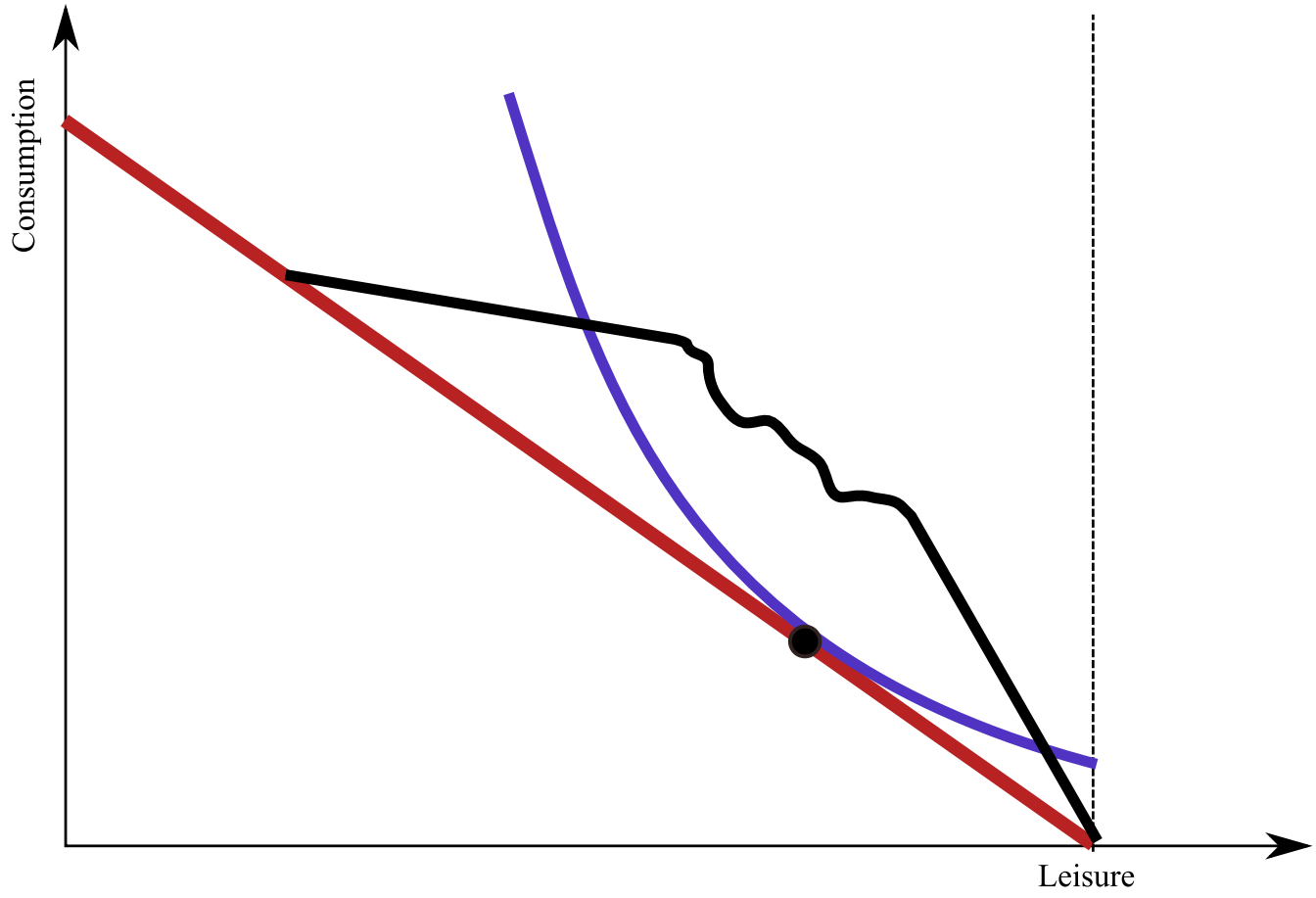
Reducing disincentives to work

- Providing transfers to those who do not work may lead to others not working
- Subsidizing work at the bottom of the distribution instead, eliminates this possibility
- Phase-in, phase-out encourages labor force participation
- This design still must discourage hours of work in some region
- Empirically, labor force participation responds to incentives much stronger than hours of work

Basic Income and tax

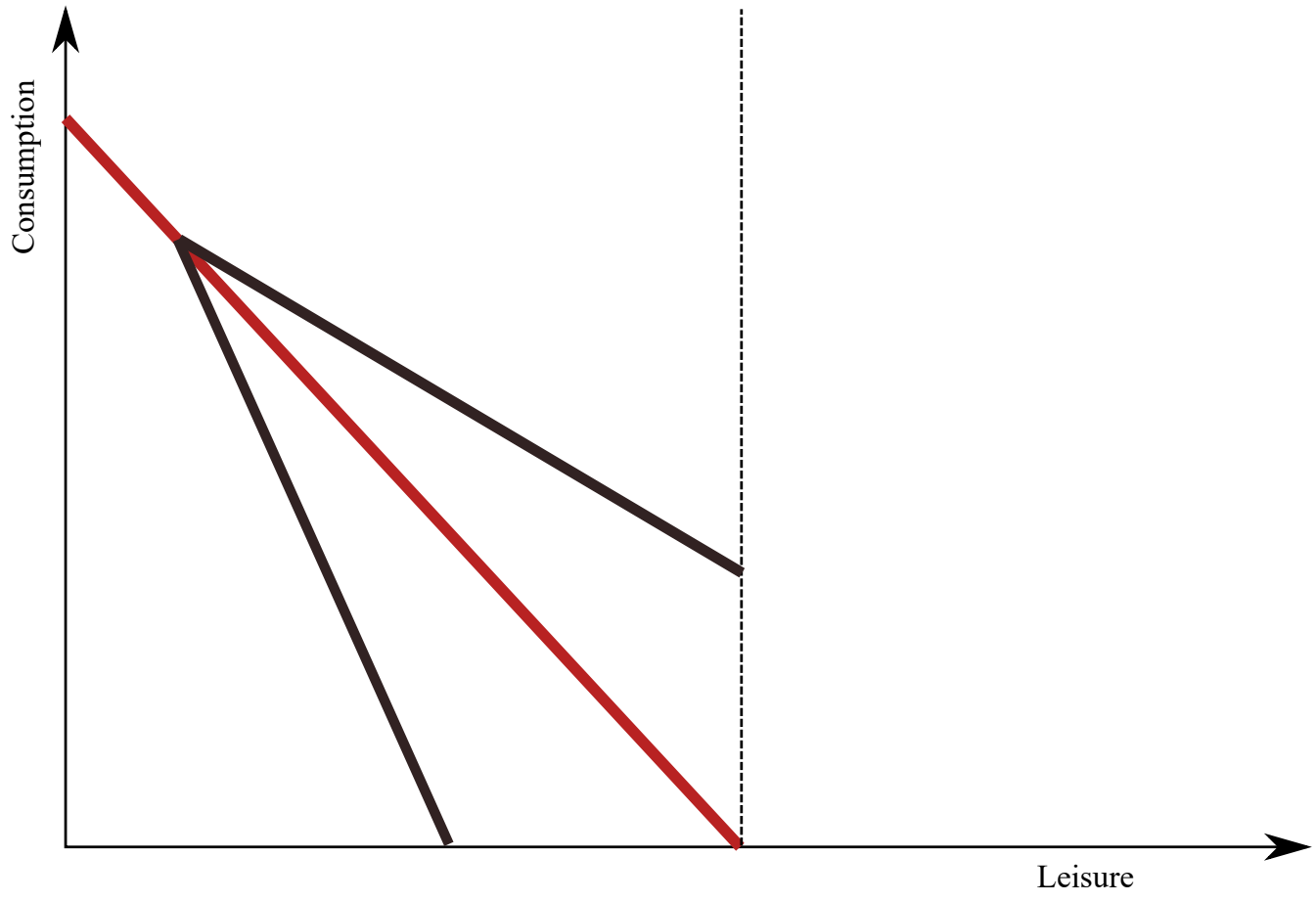


Kinked budget constraint: EITC-like



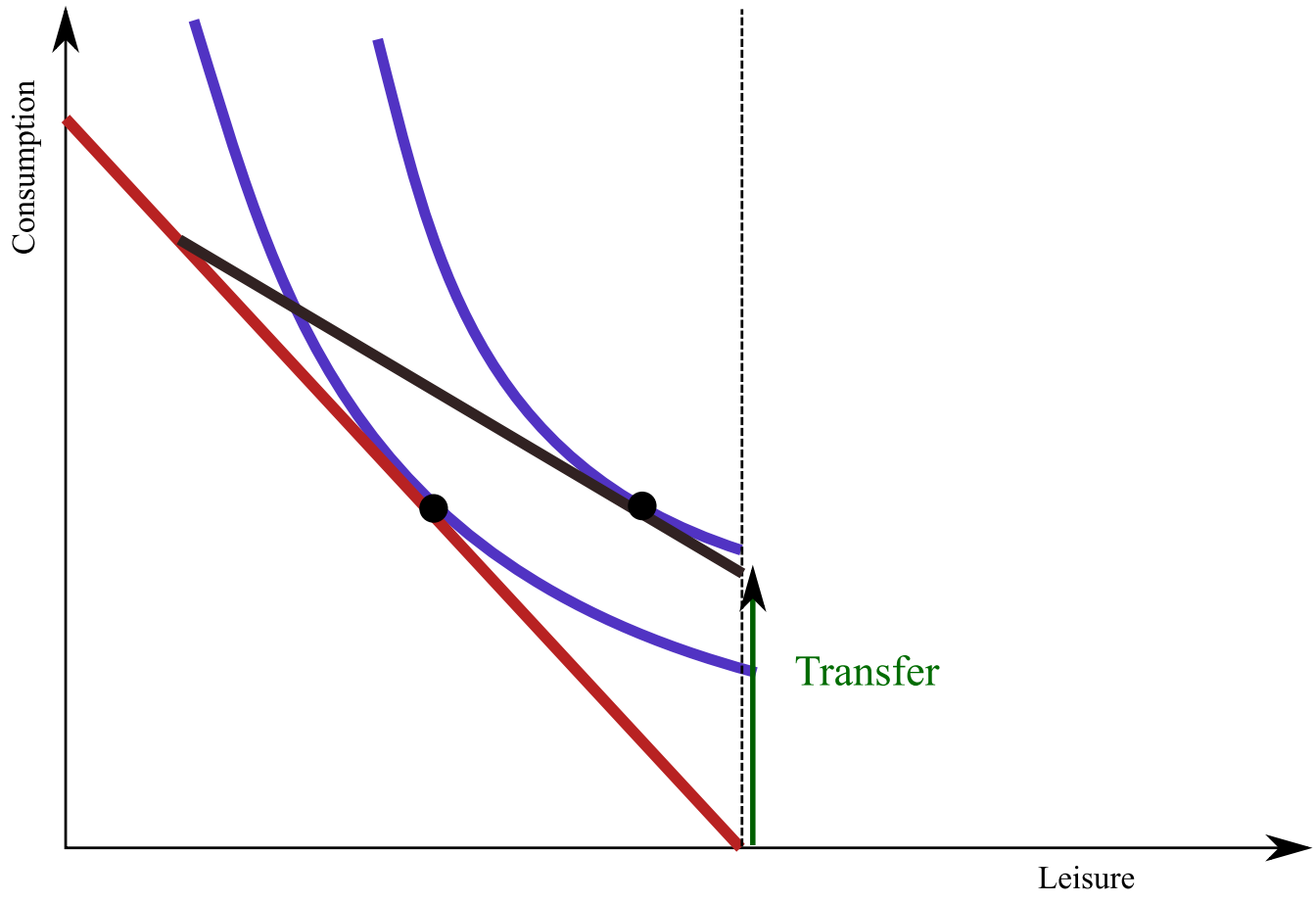
The slope of the BC changes at kink points. Note the non-linearities from implicit marginal tax rate interactions.

Kinked budget constraint: Simpler example



Which budget constraint shows the price of leisure decreasing?

Kinked budget constraint



With a kinked BC, the slope of the BC changes at the kink point.

Utility maximization with a kinked BC

1. Find the kink point of a program
2. Solve for optimal choices on each segment of the BC
3. Confirm that the optimal choice would be in the relevant segment of the BC
4. If so, compare utilities
5. Pick the bundle that gives the highest utility

Finding the kink point

- Transfer pays \$50 at zero earnings, reduced \$0.5 per \$ earned:

$$B(E) = 50 - 0.5\,E \quad \Rightarrow \quad B(E) = 0 \text{ when } E = 100.$$

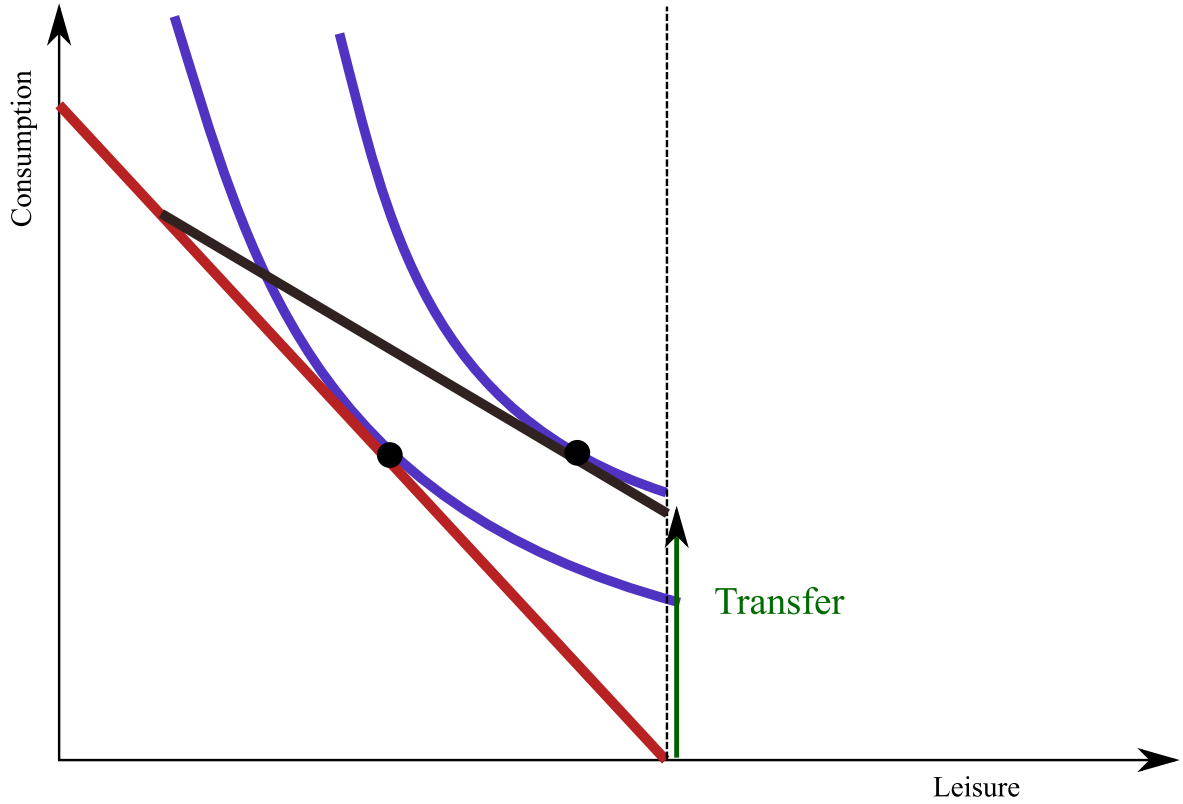
- Earnings at kink: $E^* = 100$.
- With wage w, leisure at the kink: $L_{\text{kink}} = 1 - \dfrac{100}{w}$, consumption $C_{\text{kink}} = 100$.
- Piecewise budget (no taxes):

$$C = \begin{cases} 0.5\,w(1-L) + 50, & \text{if } w(1-L) < 100, \\ w(1-L), & \text{if } w(1-L) \geq 100. \end{cases}$$

FOCs on each segment (tangencies)

- $U(C, L) = \ln C + \ln L \Rightarrow \text{MRS}_{CL} = \dfrac{C}{L}$.
- **Segment 1 (with transfer):** slope $= 0.5\,w \Rightarrow$ tangency $C = 0.5\,w\,L$.
- **Segment 2 (no transfer):** slope $= w \Rightarrow$ tangency $C = w\,L$.
- Always check *feasibility* of a segment's tangency against its own segment condition.

Solving



Seg 1: $\max_{C,L} \ln(C) + \ln(L)$ s.t. $C = 75(1-L) + 50$ if $150(1-L) < 1$

$$\text{MRS}: \frac{L}{C} = \frac{1}{75} \Rightarrow C = 75L$$

$$\text{Sub into BC: } 75L = 75(1-L) + 50$$

$$\text{Solve for } L\text{: } L^* = \frac{125}{150} = 0.8333$$

When do you compare utilities?

In that example, I did not need to compare utilities – the no subsidy option was not feasible.

If $w = 250$, then the BC is:

$$C = \begin{cases} .5 \times 250(1 - L) + 50, & \text{if } 250(1 - L) < 100 \\ 250(1 - L), & \text{if } 250(1 - L) \geq 100 \end{cases}$$

- Seg 1: $L^* = .7, C^* = 87.5$, $250(1 - L^*) = 75 < 100$, feasible
- Seg 2: $L^* = .5, C^* = 125$, $250(1 - L^*) = 120 \geq 100$, feasible
- Based on utilities:
  - Seg 1: $U^* = \ln(87.5) + \ln(.7) \approx 4.11$
  - Seg 2: $U^* = \ln(125) + \ln(.5) \approx 4.13$
- So the individual chooses the no subsidy option.

Try it yourself

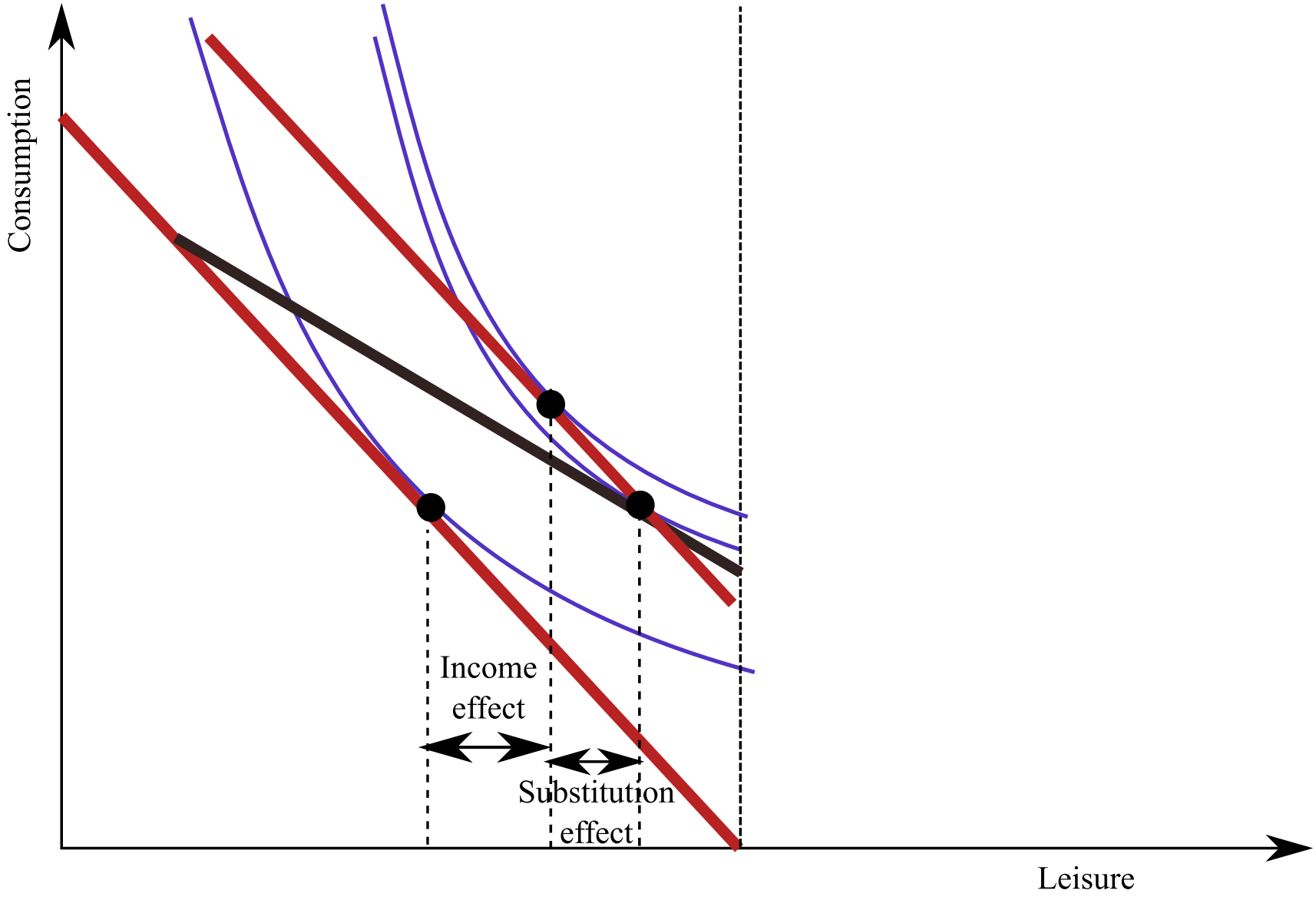
$U(C, L) = \ln(C) + ln(L)$. Wage rate $w = 100$. L is between 0 and 1. Subsidy $T = 20$ if not working, reduced $t = 0.5$

Steps to answer:

- What is the kink point? $B(E) = 20 - 0.5E \Rightarrow E = 40$
- What is the BC and optimal choice in each region?

$$C = \begin{cases} 50(1 - L) + 20, & \text{if } 100(1 - L) < 40 \\ 100(1 - L), & \text{if } 100(1 - L) \geq 40 \end{cases}$$

- Are both regions valid (Compare $w(1 - L^*)$ to T/t)?
  - Seg 1: $L^* = .7, C^* = 35$, $100(1 - L^*) = 30 < 40$, feasible
  - Seg 2: $L^* = .5, C^* = 50$, $100(1 - L^*) = 50 \geq 40$, feasible
- If so, compare utilities
  - Seg 1: $U^* = \ln(35) + \ln(.7) \approx 3.19$
  - Seg 2: $U^* = \ln(50) + \ln(.5) \approx 3.21$


Consumption
Income
effect
Substitution
effect
Leisure

Disincentives — how serious they can be

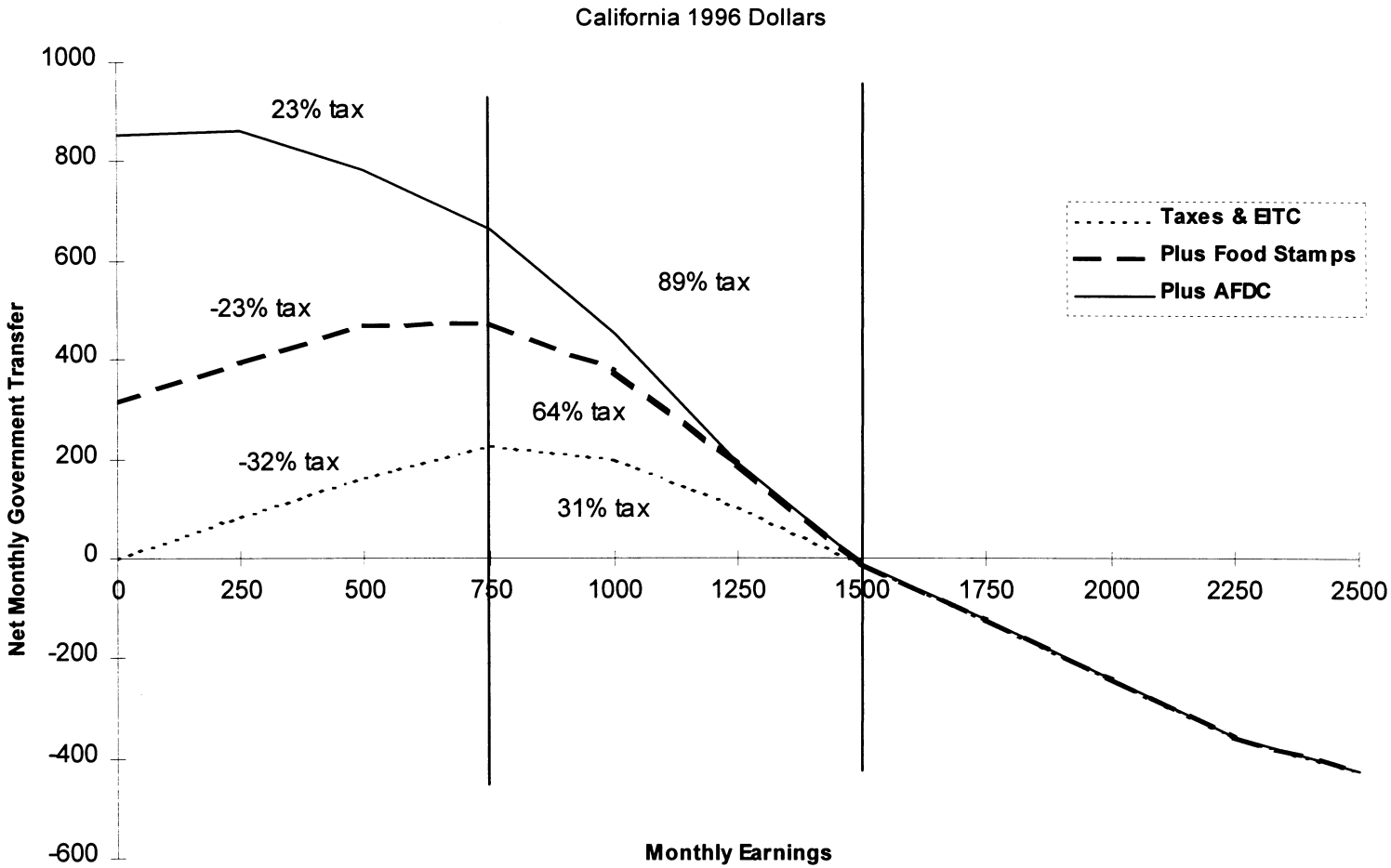


Fig. 1. Net transfers/taxes for California in 1996.

From Blundell and Hoynes (2001)

Recent RCTs on cash assistance/UBI

- Many RCTs about giving cash directly to people
- Progresa in Mexico – a cash transfer program conditional on school attendance (Parker et al. (2017)):
  - 1.4 more years of school attendance, lower child labor, no reduction in parental labor supply
- Vivalt et al. (2025) gave out \$1000/month versus \$50/month (control) in IL and TX for three years
  - Non-transfer income fell \$1,800/year after three years, 3.9 pp drop in labor force participation
  - Work hours fell by 1-2 hours/week after three years, leisure hours up
- Spending up in all UBI studies
- Ambiguous whether social welfare improvements offset labor disincentives, admin costs

Reducing cost of welfare — Targeting

- Relying on earnings imperfect as it creates work disincentives.
- Why not target based on other characteristics? Ideally,
  - they should be strongly related to low earnings capacity
  - they should be immutable
- Examples: blindness, single mothers.
- Potential problems:
  - few truly immutable characteristics
  - missing people who do not fall in the right category

Reducing cost of welfare — in-kind programs

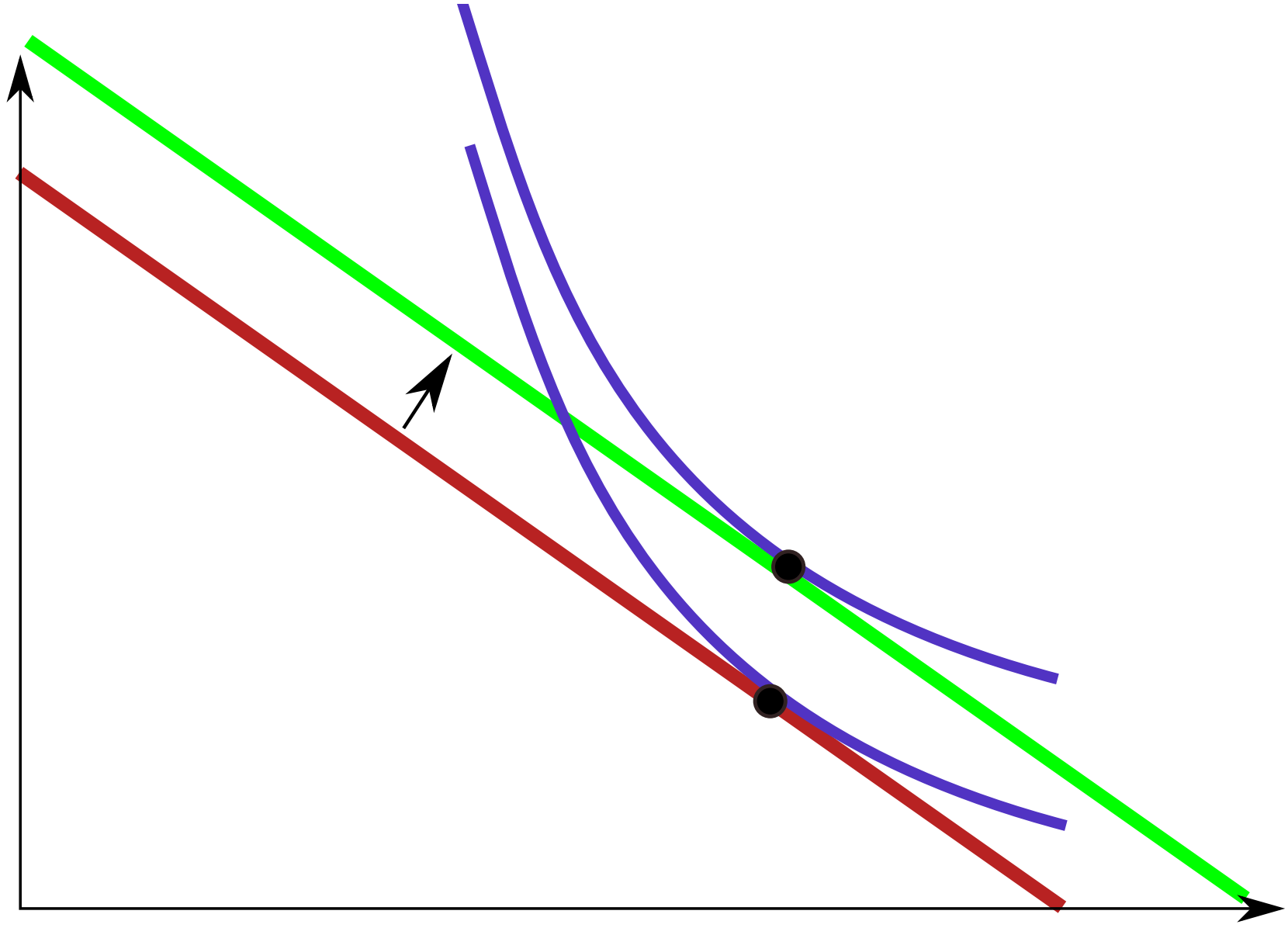
Non-cash benefits or cash benefits earmarked for specific goods/services, typically untaxed and not counted as income

- Medicaid (70.8M recipients, $909B in FY2024)
- Housing assistance – like vouchers (2.3M recipients, $32.3B in FY2024)
- Food assistance
  - Special Supplemental Nutrition Program for Women, Infants and Children (WIC) (6.2M recipients, $7.2B in FY2024)
    - Benefits as an electronic benefit transfer (EBT) card
    - Targeted to pregnant women, infants, and children
  - Supplemental Nutrition Assistance Program (SNAP or Food Stamps) ($79.8B in FY2024, 42.3M recipients)
    - Benefits as an electronic benefit transfer (EBT) card
    - Targeted to low-income individuals and families

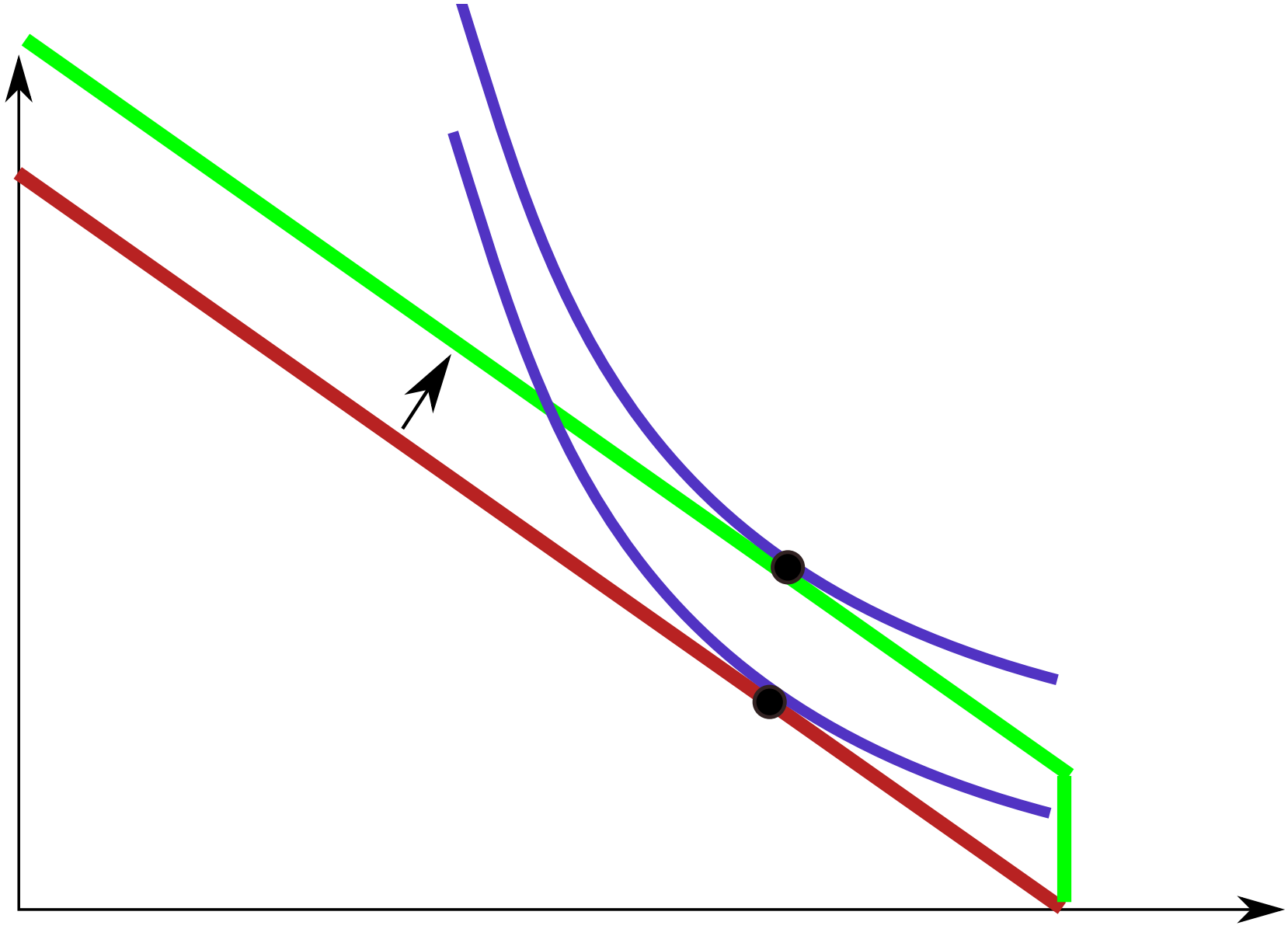
Reducing cost of welfare — in-kind transfers

- Cash transfers should be preferred by the recipients to in-kind transfers of the same value
- ...but many transfers in practice are in-kind: Why?
- Discouragement from reliance on welfare:
  - making welfare less attractive reduces the incentive to "pretend" to be poor (ordeal mechanisms)
  - Examples: low quality health insurance, soup kitchens, complicated application process
- Ethical stance on how welfare should be spent
- "Commodity egalitarianism"
  - certain goods (not welfare) should be distributed equally
- Easier to provide/use in-kind transfers (e.g. homeless shelters)

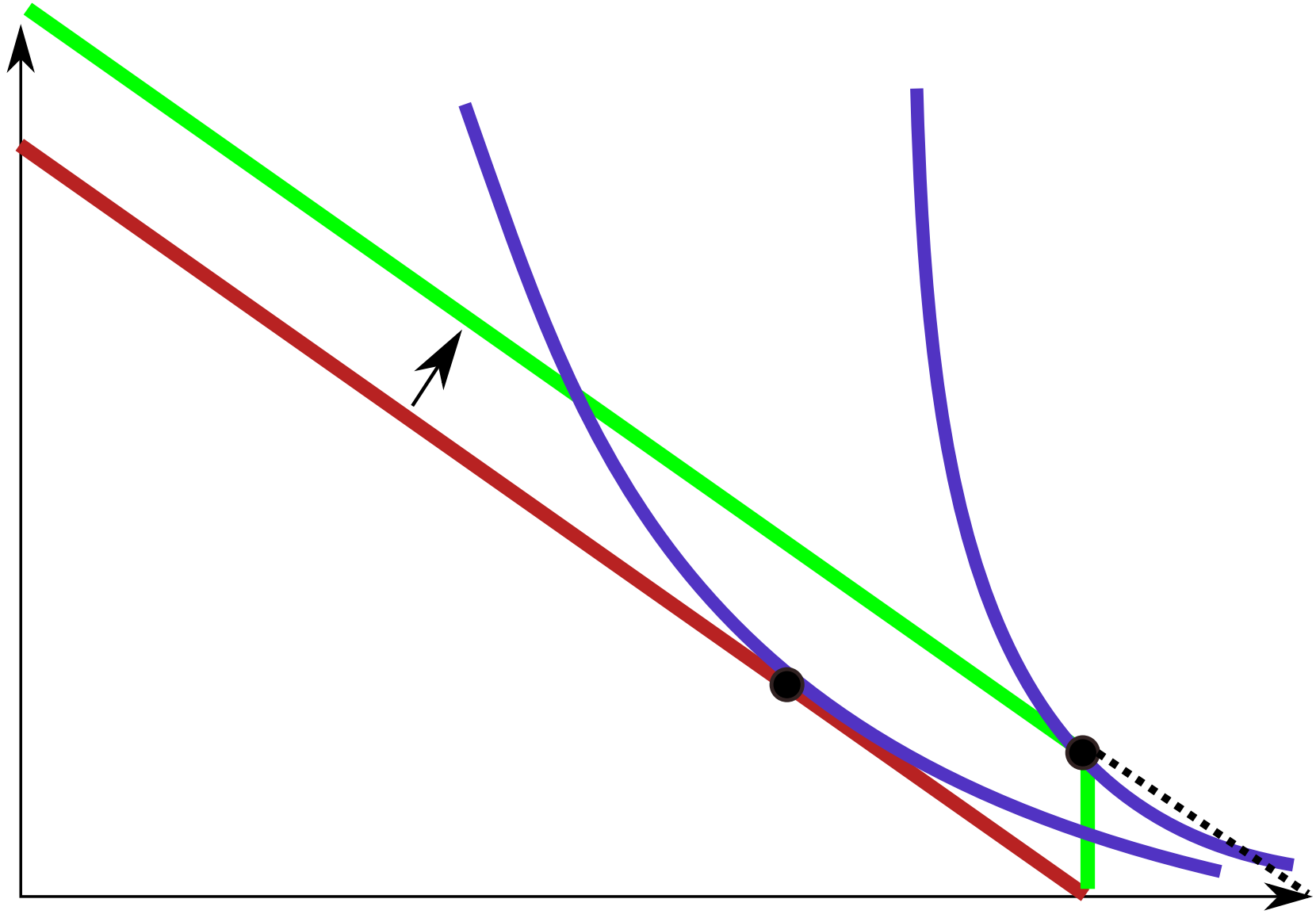
Cash transfer



In-kind transfer



Inefficient in-kind transfer



Section 8 Housing Choice Vouchers

In 1974, HUD introduced housing choice vouchers, managed by Public Housing Agencies (PHAs):

- Voucher use improves housing stability, education, and labor market outcomes relative to public housing units
  - Eligibility: family size, income, immigration status
  - Covers rent exceeding 30% of tenant income, up to a Fair Market Rent calculated by HUD and adjusted locally
  - Waitlists common due to high demand
- Complicated application process:
  1. Fill out lengthy application and be picked off waitlist
  2. Find a landlord that will partner with the PHA in limited time
  3. Pass housing inspection and rent reasonableness test
  4. Lease between landlord and tenant, contract between PHA and landlord
- Only 60% of vouchers used, fewer for families with children
- Some advocate for direct rental assistance (DRA) cash

Sources: https://www.huduser.gov/portal/periodicals/cityscape/vol26num2/ch15.pdf

PHLHousing+ RCT on DRA

Outcomes	Post-Baseline Survey Time	Control Rate	Voucher Rate	Voucher Difference Compared to Control	Cash Rate	Cash Difference Compared to Control
Forced Moves	6 months	3.3 per 100	9.0 per 100	170%	3.4 per 100	1%
	12 months	5.5 per 100	4.6 per 100	- 17%	2.0 per 100	- 63%
	18 months	6.1 per 100	2.6 per 100	- 57%	1.7 per 100	- 72%
	24 months	6.2 per 100	2.3 per 100	- 64%	1.5 per 100	- 75%
Homelessness	12 months	8.3 per 100	5.9 per 100	- 29%	5.3 per 100	- 36%
	18 months	7.8 per 100	6.3 per 100	- 19%	2.5 per 100	- 67%
	24 months	6.9 per 100	4.2 per 100	- 39%	3.0 per 100	- 57%
Housing Quality	6 months	36.3 per 100	32.4 per 100	- 11%	28.6 per 100	- 21%
	12 months	34.0 per 100	30.2 per 100	- 11%	28.5 per 100	- 16%
	18 months	36.7 per 100	32.4 per 100	- 12%	26.9 per 100	- 27%
	24 months	33.3 per 100	23.1 per 100	- 31%	26.1 per 100	- 22%

Figure: PHLHousing+ randomized DRA vs. HCV vs. no assistance. 100% take-up for DRA with a median time of 21 days vs. 75% with a median time of 110 days for HCV, reduced homelessness and forced moves, but housing quality better under HCV.

What else would you want to test about DRA?

- I am working an RCT on DRA in Lewiston, Maine with a former Bates colleague and the Lewiston PHA
- Slightly smaller sample size expected, but we are exploring different questions to ask about DRA
- What might you ask?

Ordeal/hassle mechanisms

- Ordeal/hassle mechanisms make it more burdensome (usually time-consuming) to receive welfare
- Essentially, people who have a higher opportunity cost of time will be less likely to apply for welfare
- Higher earners do not apply
- Those with less need drop out of the application process
- Can see this in a utility framework where there is a time cost of applying
- But empirical support is limited here: see Deshpande and Li (2019) and PHA study

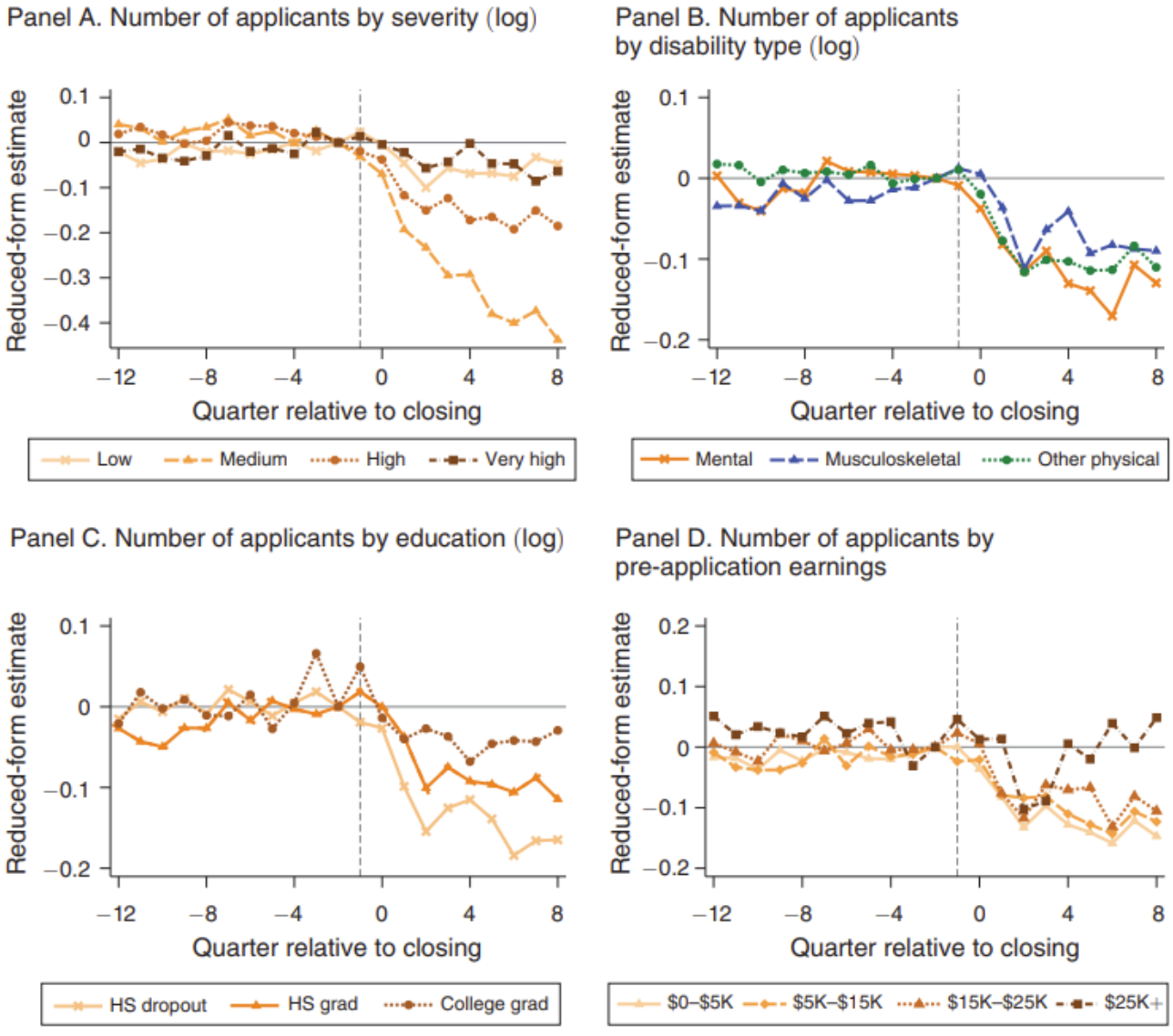


FIGURE 4. EFFECT OF CLOSINGS ON NUMBER OF DISABILITY APPLICATIONS, BY SUBGROUP

Figure: From Deshpande and Li (2019)

Conclusion

- Low-income support systems within the US fill different gaps, but create work disincentives
- Programs can interact to create extremely high implied marginal tax rates on work
- "Phase-out" of benefits at high-income levels implicitly triggers substitution away from work
  - $\Rightarrow$ Possibly a drop in welfare, definite drop in revenue
- Targeting immutable characteristics remove moral hazard affects, but these are rare
- In-kind transfers and "ordeal" mechanisms tradeoff efficiency of benefits for targeting