Public Economics: Lecture 10
Welfare Programs in the U.S.

Cameron LaPoint

Columbia University

July 26, 2017

U.S. low income support

- Many public welfare programs offer support to low-income individuals
- Most programs are guaranteed by federal mandates but implemented at the state level (variation in generosity and eligibility standards across states)

- We will focus on examples of four main types of transfer programs:
  1. Negative income tax: Temporary Aid for Needy Families (TANF)
  2. Work-for-welfare (labor subsidy): Earned Income Tax Credit (EITC)
  3. Categorical anti-poverty programs: Supplemental Security Income (SSI) for elderly blind/disabled
  4. In-kind transfers: Supplemental Nutrition Assistance Program (SNAP), WIC, public housing, Medicare/Medicaid
- All programs feature a trade-off between efficiency costs due to taxation and asymmetric information vs. promoting equality

Facts about U.S. cash transfer programs

- TANF: in 2015 $31.7 billion in total expenditures
  - Available to low income families with children
  - Benefits only available on a temporary basis – no more than 5 years over a lifetime and no more than 2 years in a row
  - Eligible head of households must work or participate in work-related activities for a minimum number of hours each month
  - Benefits are means-tested – reduction rate as income grows varies between 50 and 100% (functions like an implicit tax)

- SSI: benefits available to the elderly blind/disabled who are not already receiving up to a maximum in Social Security/Disability Insurance benefits
  - $56.7 billion in expenditures from 10/2014 – 9/2015 serving over 8.3 million recipients

SNAP ("food stamps")

- Federal assistance program of the U.S. Department of Agriculture (USDA) for low-income households
- Participants receive monthly vouchers of a pre-determined value that can be exchanged for any food item (with few exceptions)
- Benefits received on a pre-specified day of the month that differs across states (1st of the month in many states)
- Means-tested in three ways...
  - Gross income must be at or below $\approx$ 130% of the poverty line
  - Net income after deductions must be at or below the poverty line
  - Value of assets must fall below a certain threshold ($2,250 in 2016)
- Average monthly benefit per recipient of $125.51 in 2016; cost $70.9 billion in FY 2016

Nutritional Program for Women, Infants and Children

- WIC is another USDA nutritional assistance program aimed at mothers and their young children below 185% of the poverty line
- Monthly vouchers are exchanged at retail grocers for a pre-specified set of foods (e.g. milk, cheese, eggs)
- USDA selects eligible items based on what vitamins are lacking in the diets of pregnant women, young moms, and their children
- Auto-enrollment policy: in some states if the mother already receives TANF, Medicaid, or SNAP, she automatically receives WIC
- States still switching from paper check system towards an electronic benefits transfer (EBT) system that functions like a debit card
- WIC food sales totaled \$6.7 billion in 2010, with an average monthly benefit of \$56.80 per recipient; covered 53% of infants in 2016

The Earned Income Tax Credit (EITC)

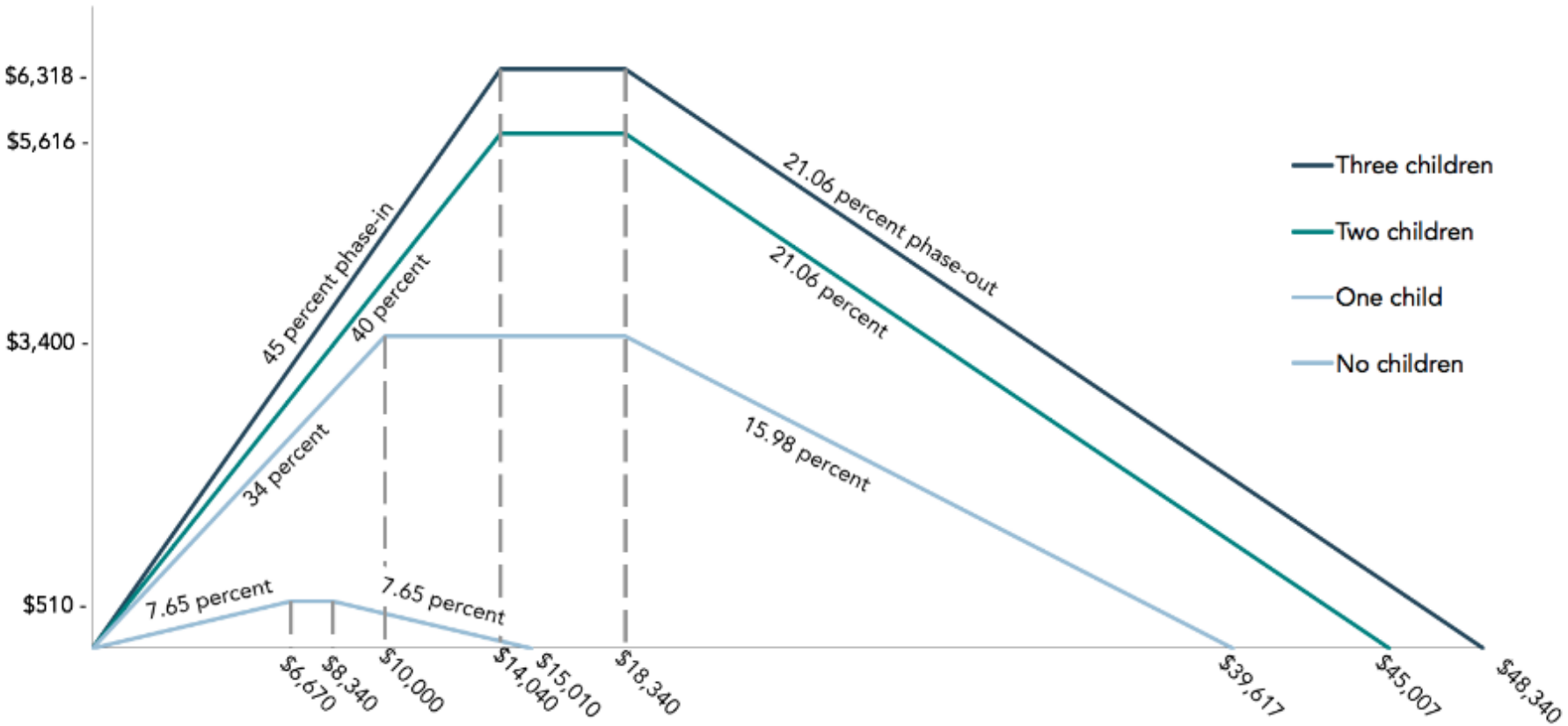
- Unlike other low-income transfer programs, implemented via the tax system, so not determined at the state level
- Amount of benefits depends on the amount of earnings, marital status, and the number of children
- Structured as a work subsidy – three "regions" of the benefits schedule: phase-in, plateau, and phase-out
- Benefits are linearly eliminated at higher income levels (phase-out) to restrict the not so needy from receiving funds

- No benefits for single parents with two kids when adjusted gross income (AGI) $\geq$ \$45,007 or for married couple with two kids when AGI $\geq$ \$50,597 in 2017
- Main problem: who qualifies as a child?

FIGURE 1

Earned Income Tax Credit
2017

Credit amount



Source: Tax Policy Center, IRS Rev. Proc. 2016-55.
Note: Assumes all income comes from earnings. Amounts are for taxpayers filing a single or head-of-household tax return. For married couples filing a joint tax return, the credit begins to phase out at income $5,590 higher than shown.

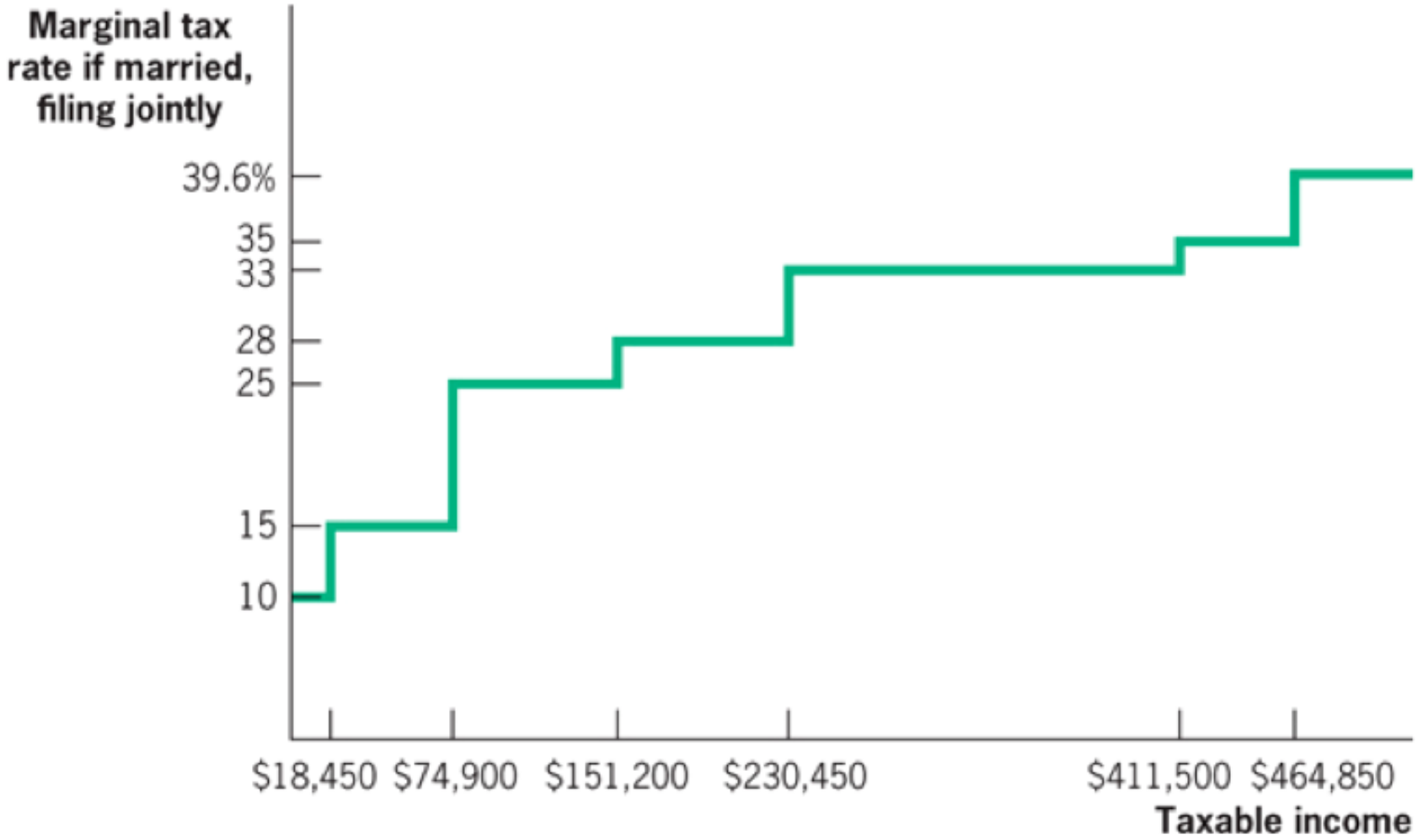
Average vs. marginal tax rates

- Average tax rate (ATR) is the percent of total income paid in taxes

$$\text{ATR} = \frac{\text{total tax payments}}{\text{gross income}}$$

- Marginal tax rate (MTR) is the percent of taxes paid on *one more dollar* of income
- Taxpayers in the U.S. fall into 7 tax brackets with MTRs: 10%, 15%, 25%, 28%, 33%, 35% or 39.6%
- Example: a couple earned $200,000 in 2015, but after adjustments, deductions exemptions, taxable income is $145,000
  - total tax bill $= 0.1(18,450) + 0.15(74,900 - 18,450) +$ 0.25(145,000 - 74,900) $=$ $27,837.50
  - average tax rate $= 27{,}837.50/200{,}000 \approx 0.139$
  - The couple pays an ATR of 14% per dollar of gross income

U.S. MTR schedule for married filing jointly, 2015



Source: Gruber, *Public Finance and Public Policy*, Figure 18.3

Implicit marginal tax rates

- The *effective* marginal tax rate schedule a household faces is the sum of two sets of tax rates
  - MTR on their income as determined by their tax bracket
  - MTRs *implied* by any transfers/benefits received from government
  - When individuals qualify for transfers that depend on their earnings level, there are implicit marginal tax rates on their income

- Implicit MTRs between any income range $[\ell, h]$ can be computed by

$$\frac{T_\ell - T_h}{Y_h - Y_\ell}$$

- If we were to plot how the benefit amount varies with earnings, this formula would be the slope between any two points on the graph

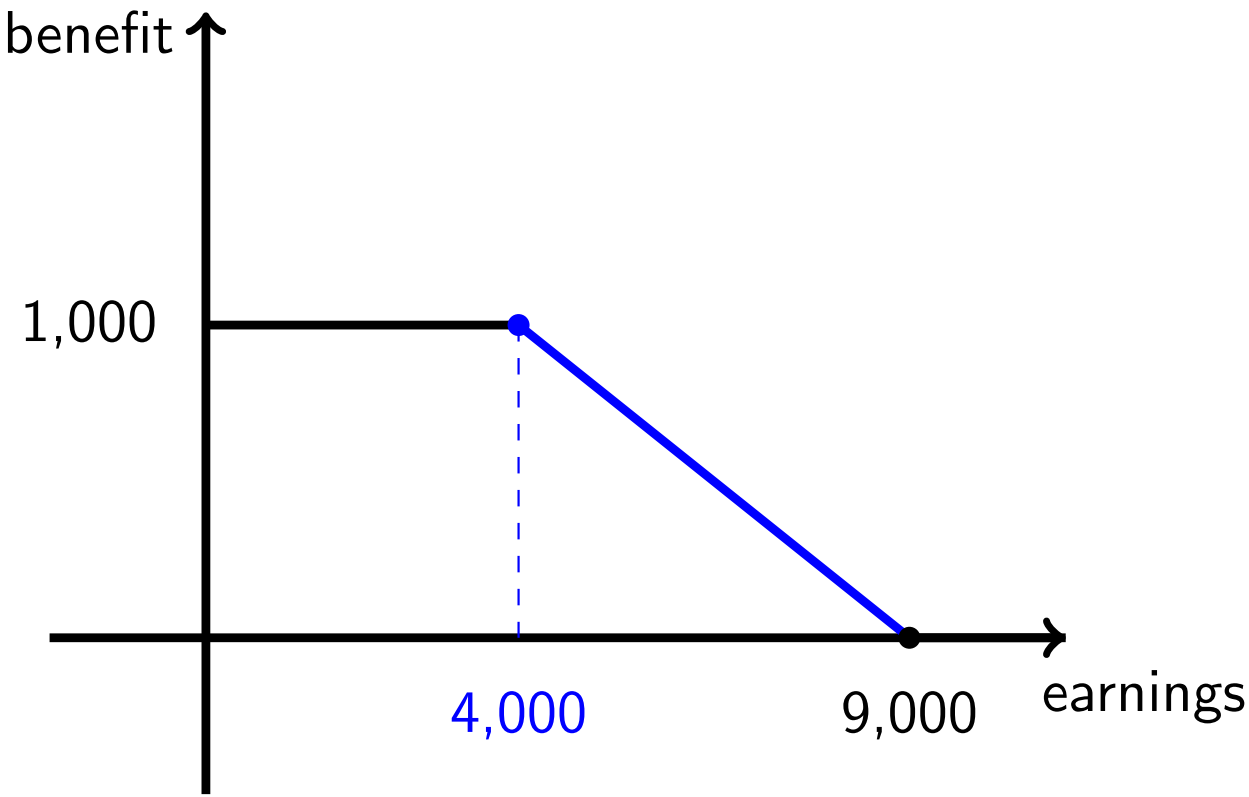
Example: computing implicit MTRs

- Suppose there are two programs that apply to individuals with relatively low earnings and an income tax:
  1. Transfer of \$1,000 to those with earnings below \$4,000 that is linearly eliminated between earnings of \$4,000 and \$9,000
  2. Subsidy to work equal to zero for those with no earnings, but linearly increases to \$3,000 for those with earnings equal to \$6,000; the subsidy stays at \$3,000 for earnings between \$6,000 and \$8,000 before being linearly phased-out between \$8,000 and \$18,000
  3. A 30% income tax on earnings greater than \$10,000
- What is the effective MTR at various earnings levels from the combination of all three programs?

Example program 1: conditional transfer

$$\text{For } 0 \leq Y \leq 4,000: \qquad MTR = \frac{1000 - 1000}{4000 - 0} = 0$$

$$\text{For } 4,000 \leq Y \leq 9,000: \quad MTR = \frac{1000 - 0}{9000 - 4000} = 0.2$$

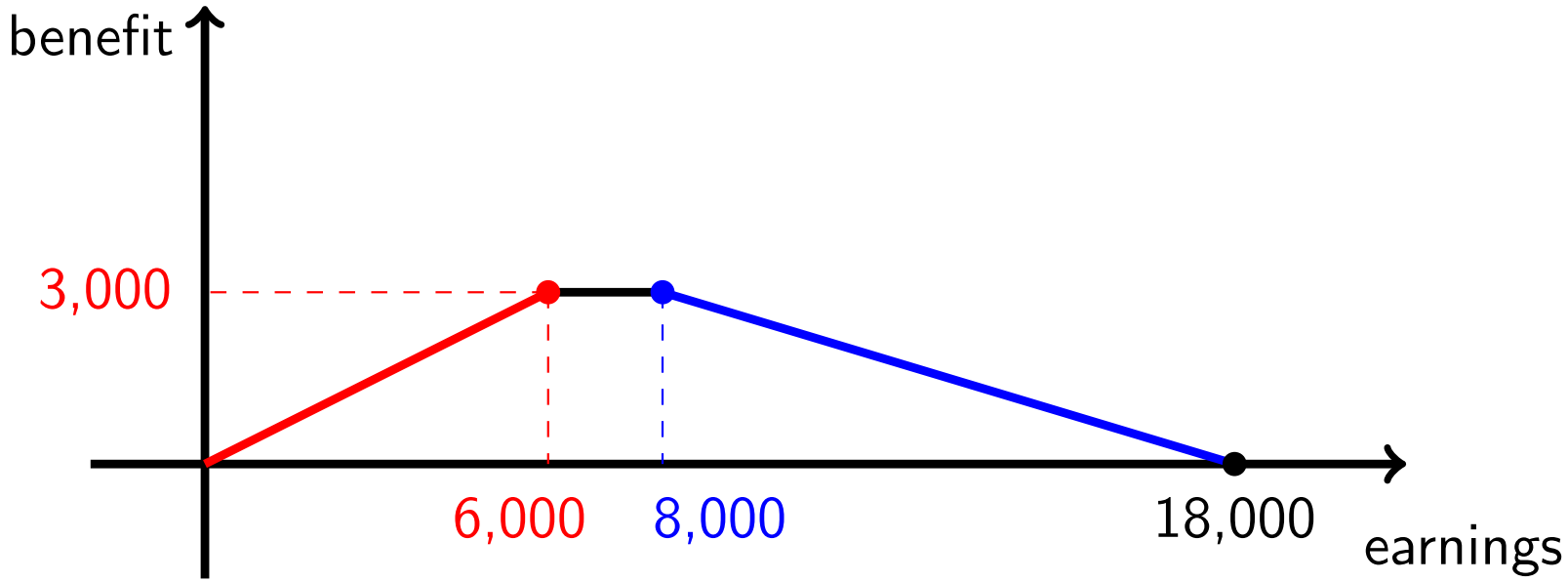


Example program 2: work subsidy/EITC

For $0 \leq Y \leq 6,000$: $MTR = \dfrac{0 - 3000}{6000 - 0} = -0.5$

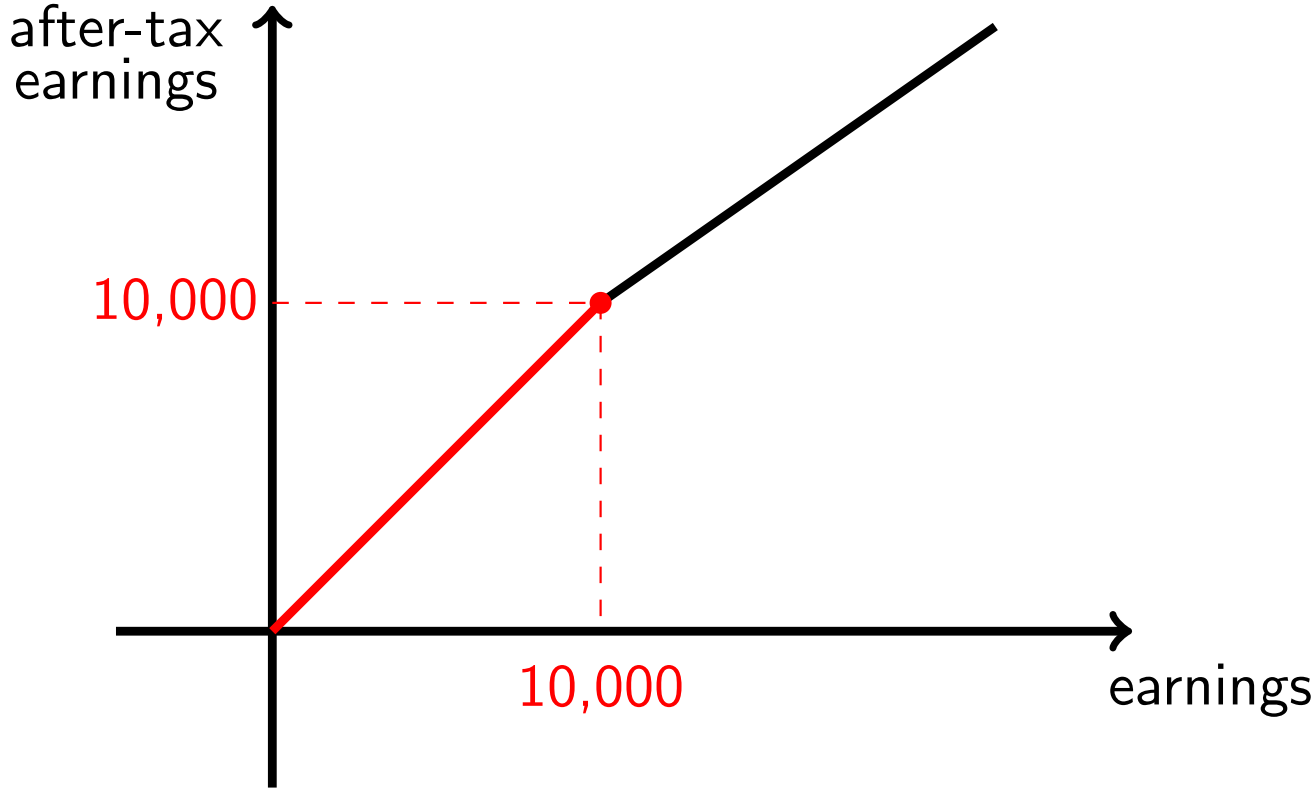
For $6,000 \leq Y \leq 8,000$: $MTR = \dfrac{3000 - 3000}{8000 - 6000} = 0$

For $8,000 \leq Y \leq 18,000$: $MTR = \dfrac{3000 - 0}{18000 - 8000} = 0.3$



Example program 3: income tax

For the income tax, the only kink in the after-tax earnings schedule occurs once earnings reach $10,000 and the MTR becomes 0.3



Example: effective MTRs by income range

Income Range	Transfer	Work Subsidy	Tax	Total
\$0-4,000	0	-0.5	0	-0.5
\$4,000-6,000	0.2	-0.5	0	-0.3
\$6,000-8,000	0.2	0	0	0.2
\$8,000-9,000	0.2	0.3	0	0.5
\$9,000-10,000	0	0.3	0	0.3
\$10,000-18,000	0	0.3	0.3	0.6
\$18,000+	0	0	0.3	0.3

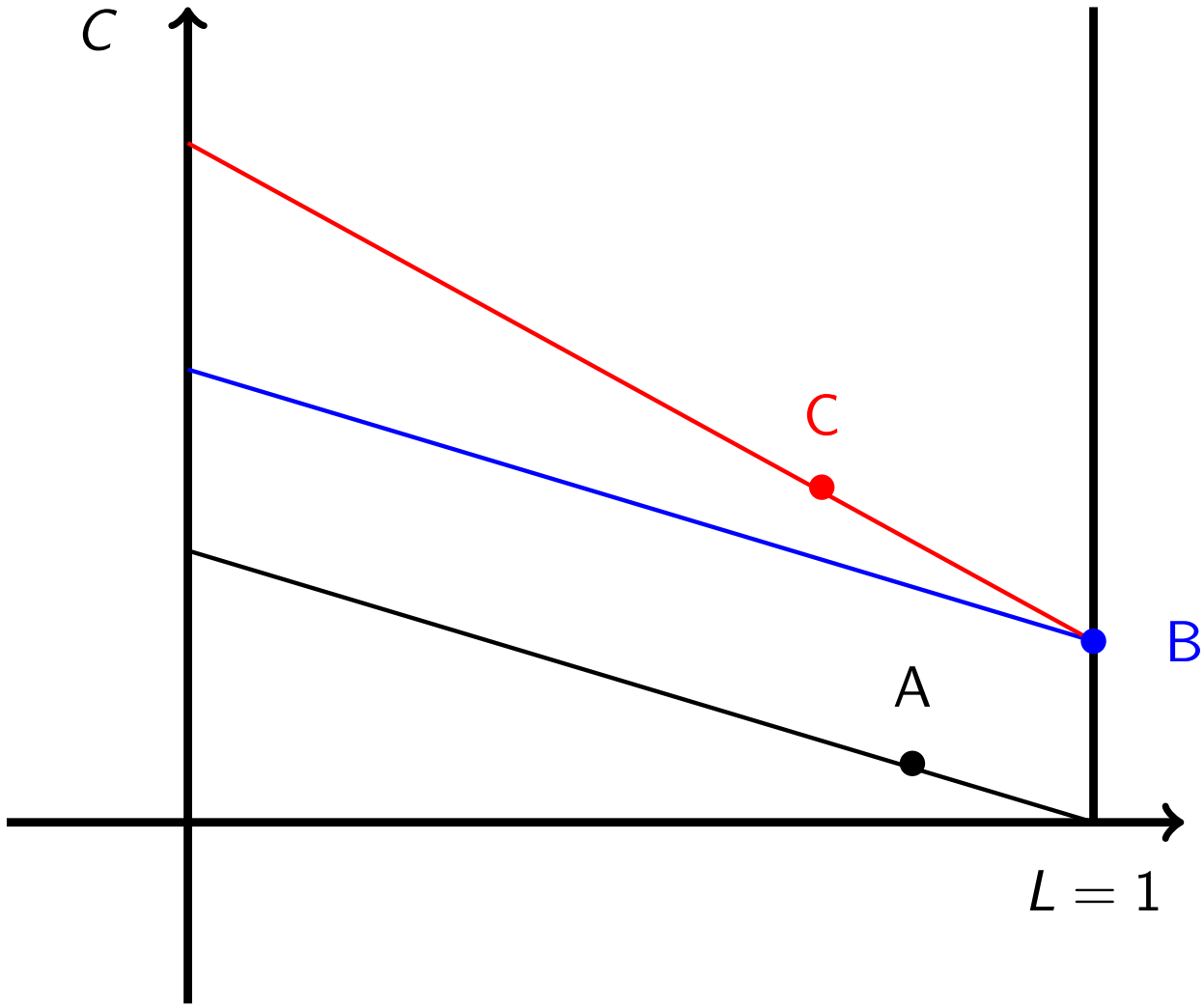
- Negative MTR in any income range implies that the household receives a net marginal subsidy
- In this case for people on the margin of working or not working (i.e. very low earnings), the work subsidy encourages work

Welfare and incentives to work

- We can compute the direct cost of a transfer program absent any change in behavior that may result
- But any increase in the cost of the program due to people responding by changing their behavior is a moral hazard
- Key MH problem with transfers: providing transfers to those who do not currently work may lead to not working at all
- This is the rationale for the work subsidy at the bottom of the distribution provided by the EITC

- Empirical evidence suggests labor force participation (*extensive margin*) responds to incentives much stronger than hours of work (*intensive margin*) in response to benefits receipt

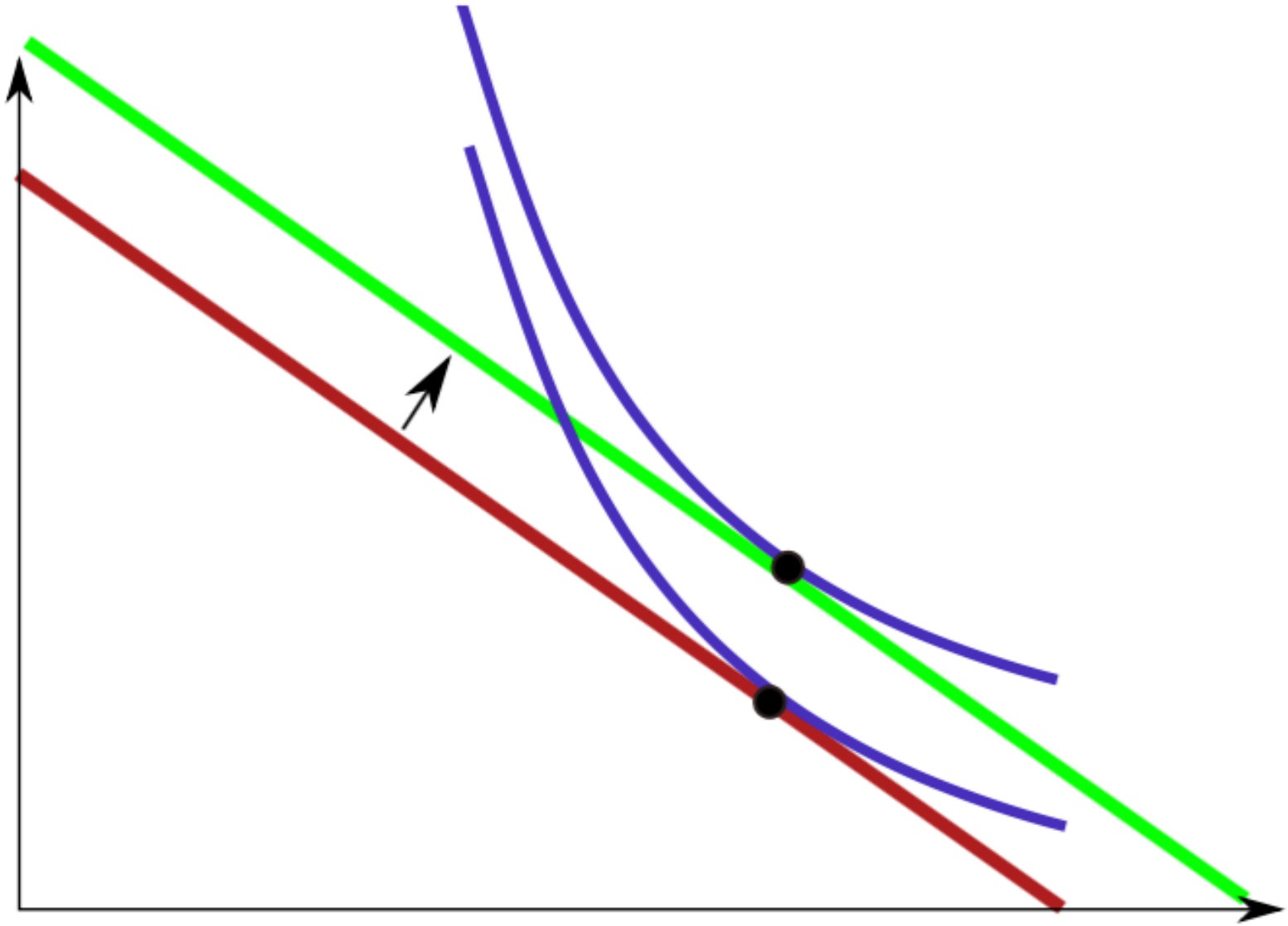
Effects of the work subsidy at the bottom



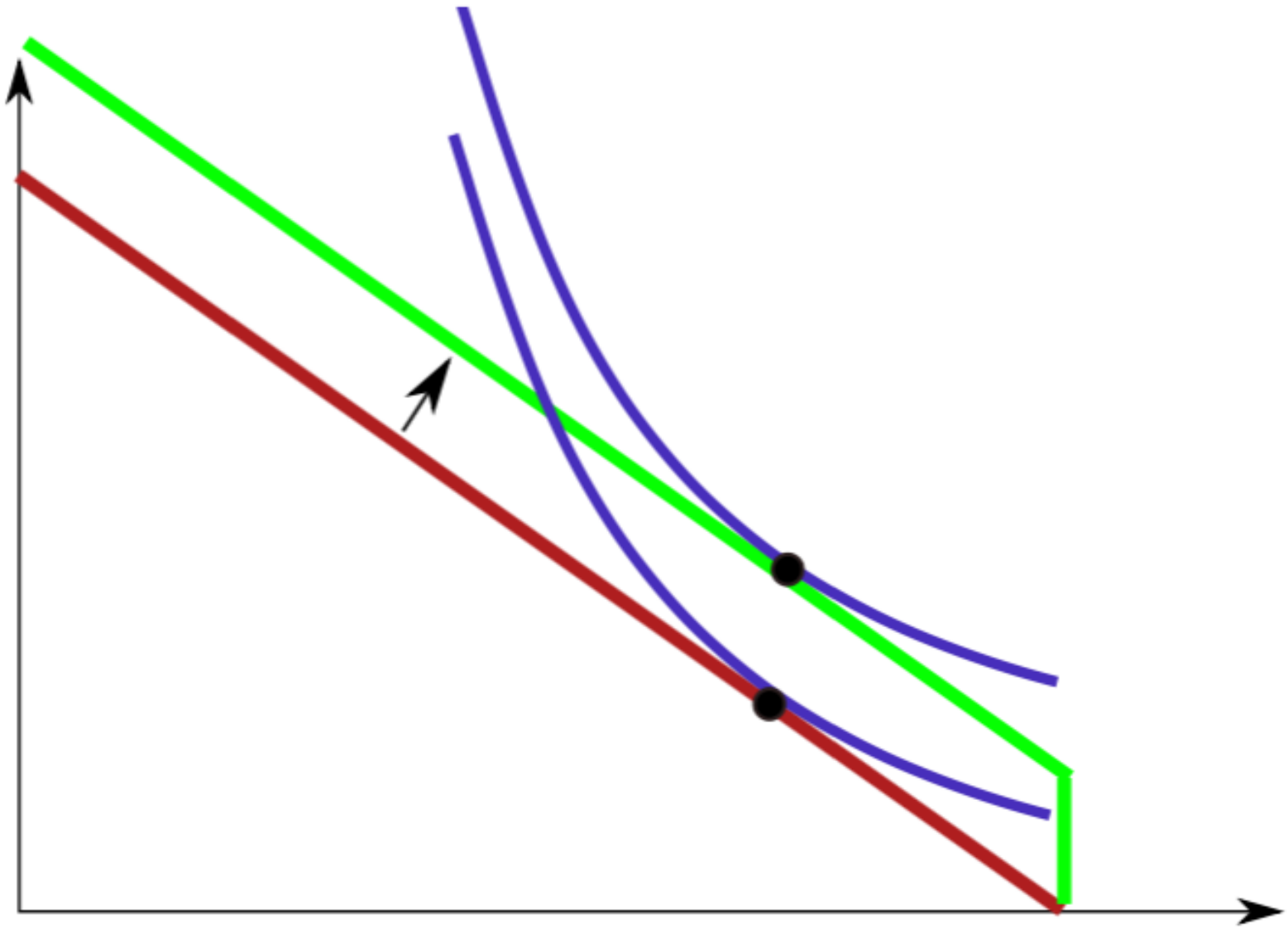
Cash vs. in-kind transfers

- Cash transfers provide benefits in a dollar amount
- In-kind transfers provide a good or service directly (e.g. WIC provides vouchers for baby formula but no cash benefit)
- Both types of transfers shift budget constraints outward, but in-kind transfers cannot be resold or converted into another good
  - Relative to cash transfers, in-kind transfers generate more restrictive budget constraints
  - For this reason, recipients always weakly prefer cash transfers to in-kind transfers (but most recipients are indifferent)
  - Inefficient in-kind transfers: overprovision occurs because people would consume less of the in-kind good if they were instead given cash

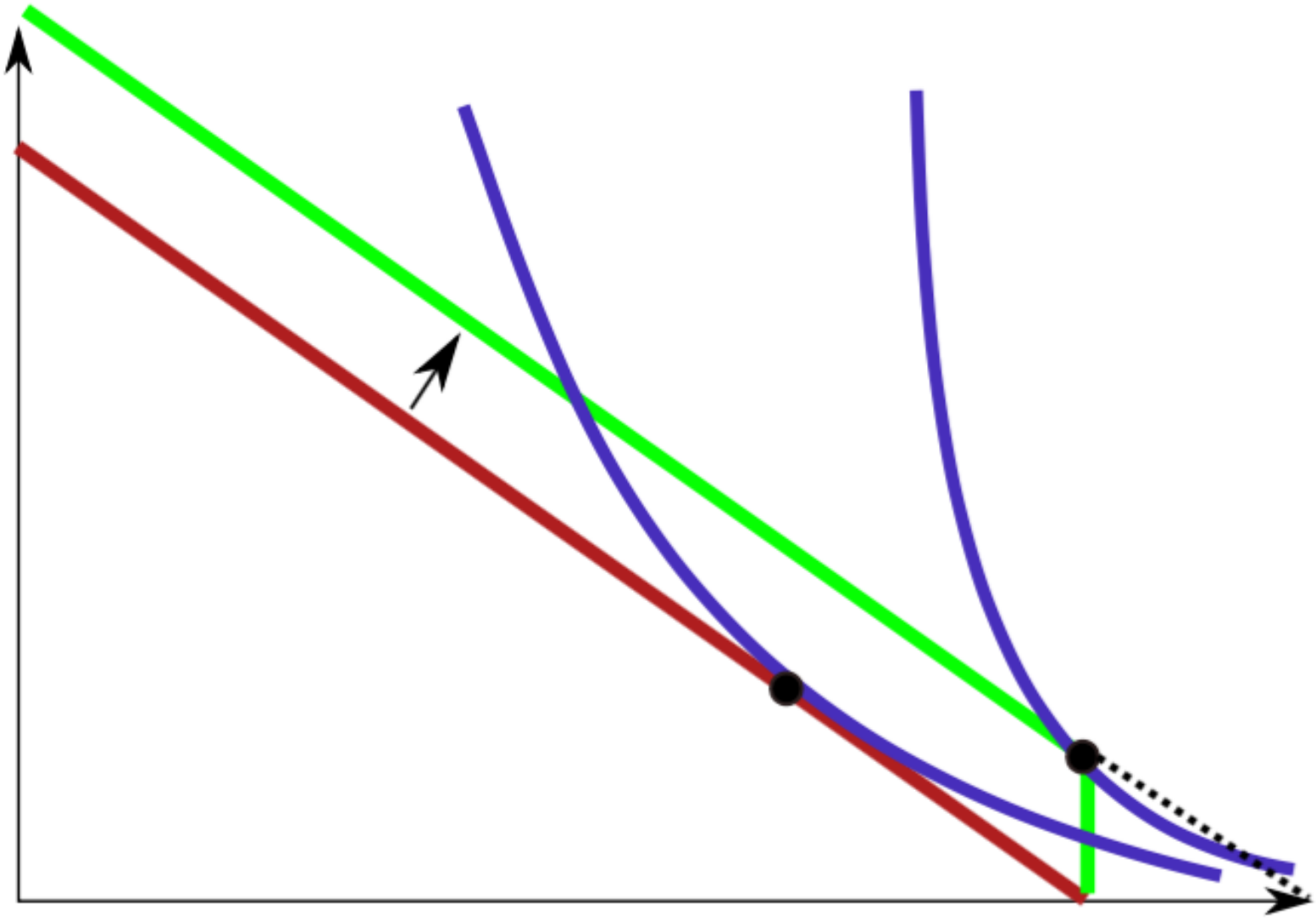
Cash transfers – illustration



In-kind transfers – illustration



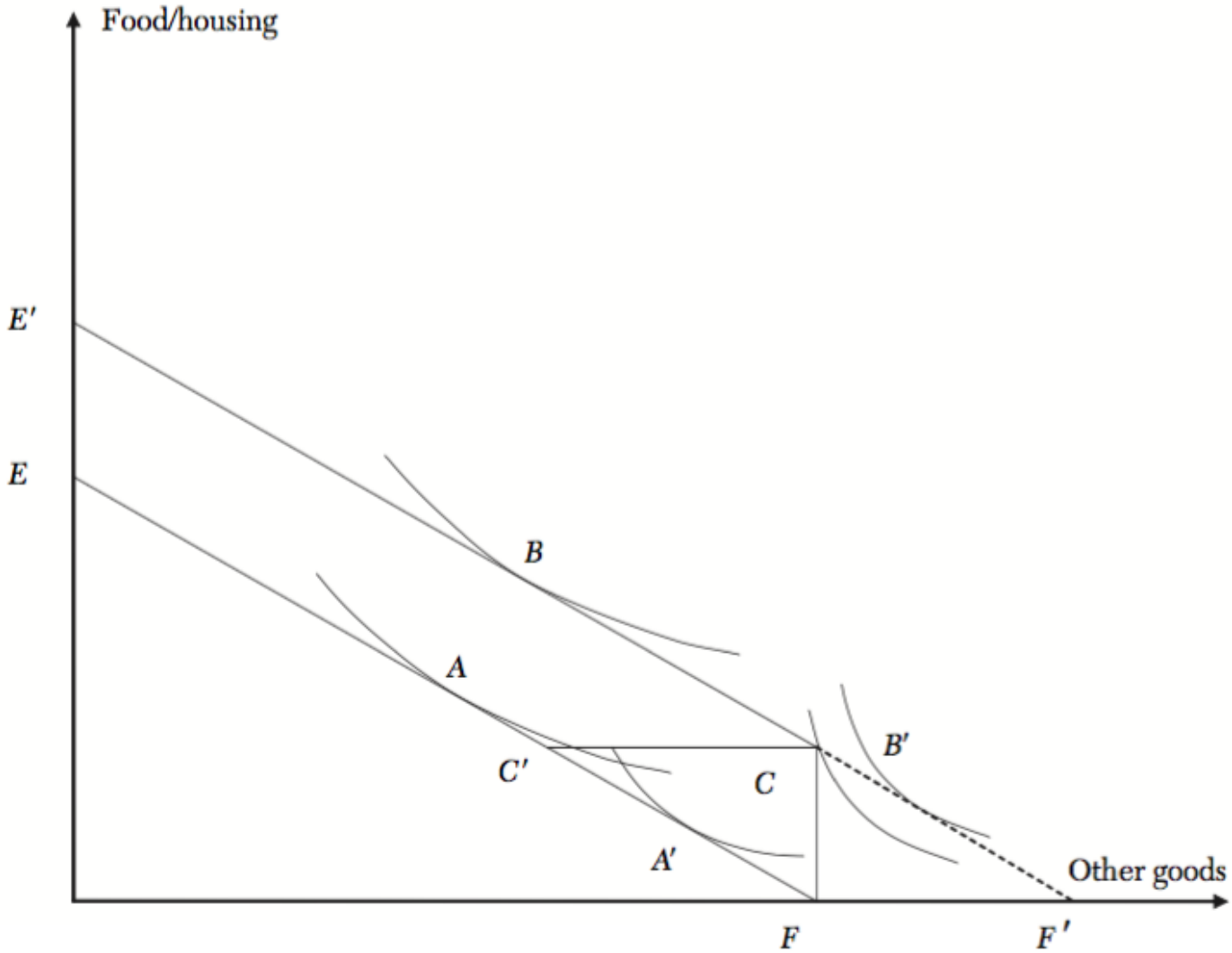
Inefficient in-kind transfers – illustration



Cash vs. in-kind transfers – additional considerations

- Inefficiencies due to in-kind transfers if some recipients would prefer a cash transfer of equivalent value
- So why not just give everyone cash?
- In-kind benefits help limit abuse of welfare programs by ineligibles
  - Example: single men are unlikely to steal a WIC voucher because what use would they have for baby formula? (difficult to resell)
- Other considerations: government might have purely paternalistic reasons for restricting budget constraints through in-kind benefits
  - Promote healthy diets by excluding junk food from WIC item list (still possible to buy junk food using SNAP)
  - Alcohol and tobacco purchases not allowed with EBT

Cash vs. in-kind transfers – one graph



Source: Currie & Gahvari (2008), "Transfers in Cash and In-Kind: Theory Meets the Data," *Journal of Economic Literature*

Tagging

- Relying on earnings to identify who is deserving of welfare introduces work disincentives
- Alternative idea: assign eligibility based on tags – immutable characteristics correlated with ability to pay taxes
  - Examples: blindness, age, disability, single motherhood
- Problems with this idea...
  - Few truly immutable characteristics (e.g. people can lie or fake illness)
  - How do you determine the appropriate number of tags for eligibility?
- Tags make it difficult to achieve horizontal equity – notion that people with similar income and assets should face same tax liability

Should we tax tall people?

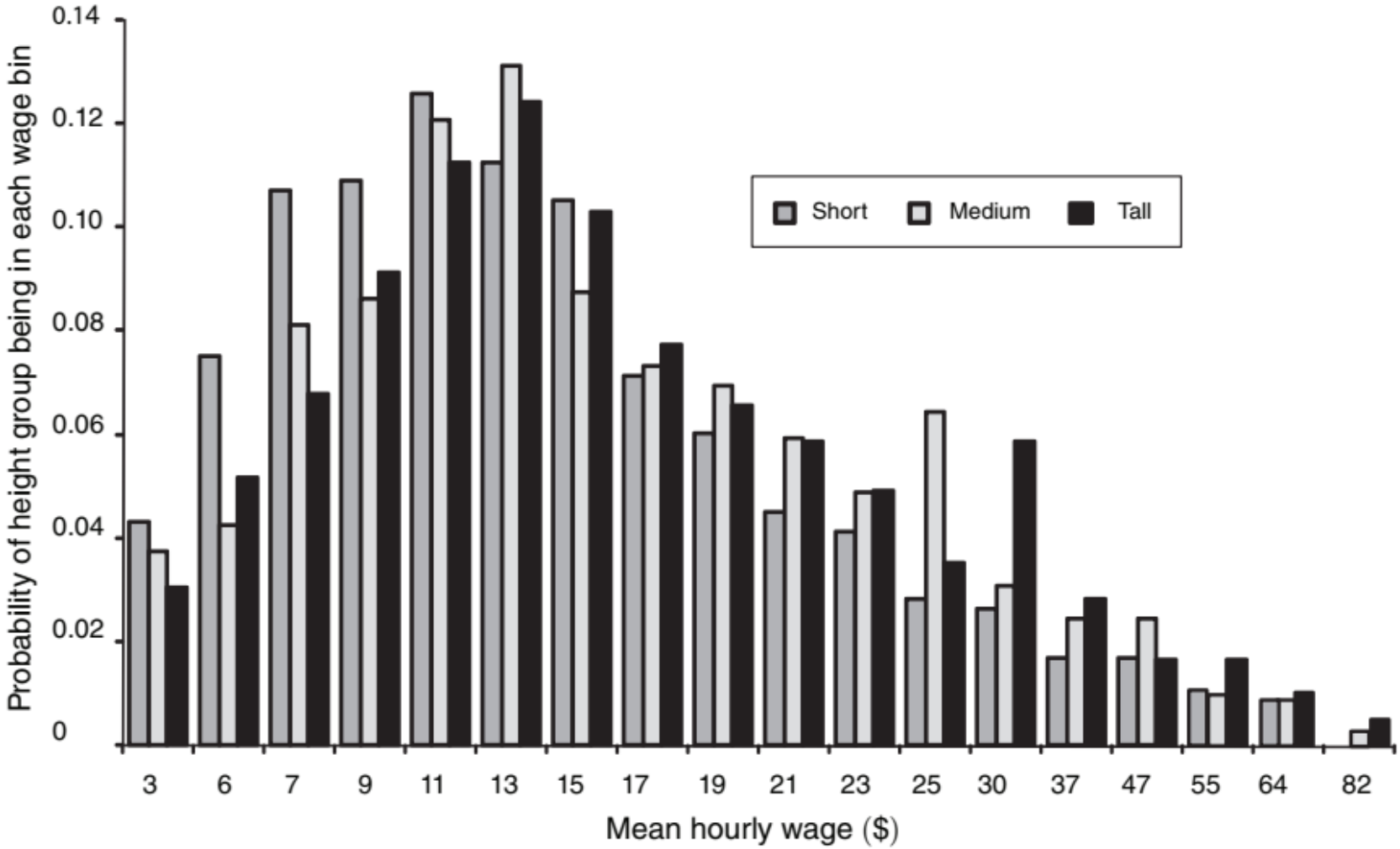


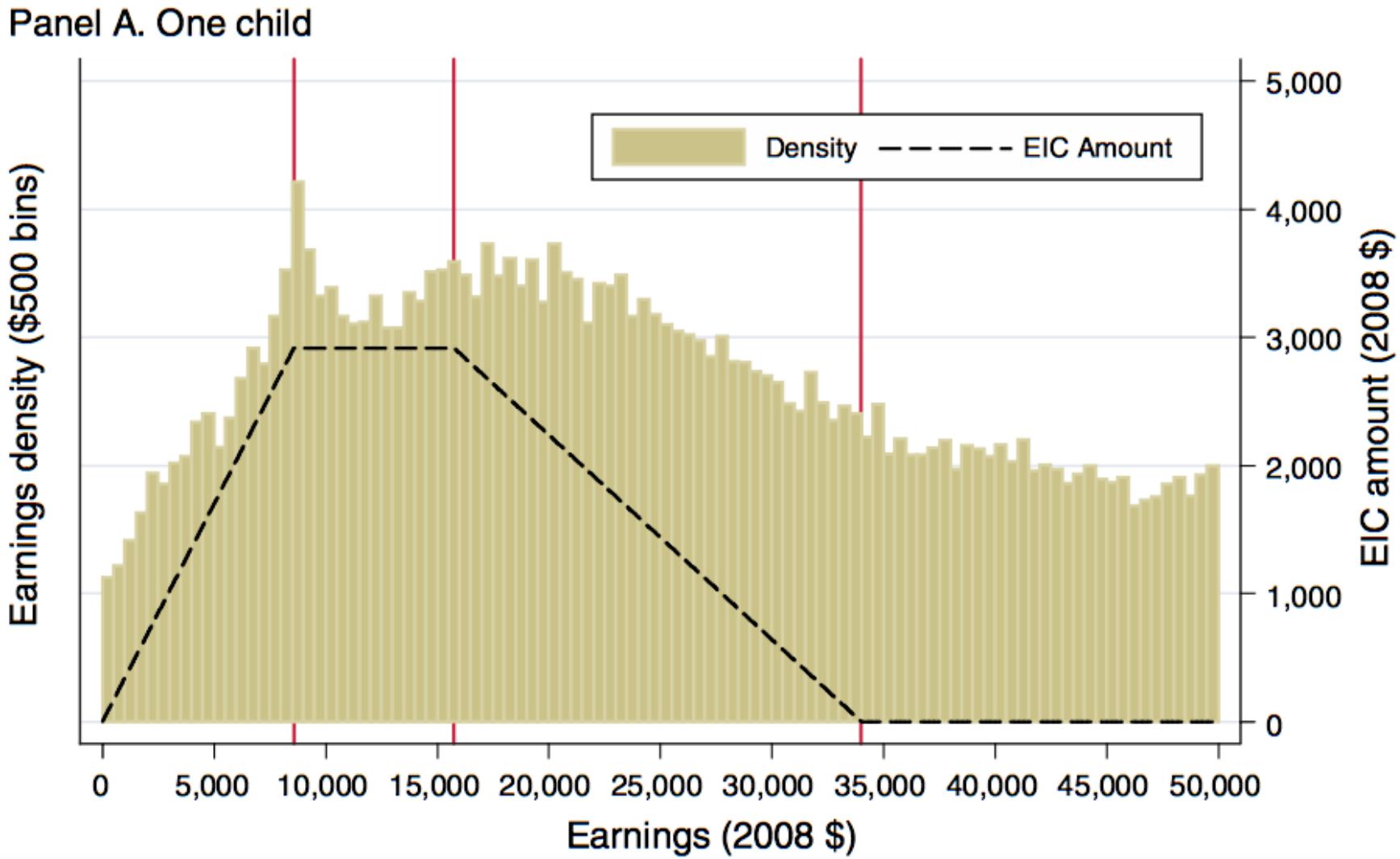
FIGURE 1. WAGE DISTRIBUTION OF ADULT WHITE MALES IN THE UNITED STATES BY HEIGHT

Source: Mankiw & Weinzierl (2010), "The Optimal Taxation of Height: A Case Study of Utilitarian Income Redistribution, *American Economic Journal: Economic Policy*

Complexity

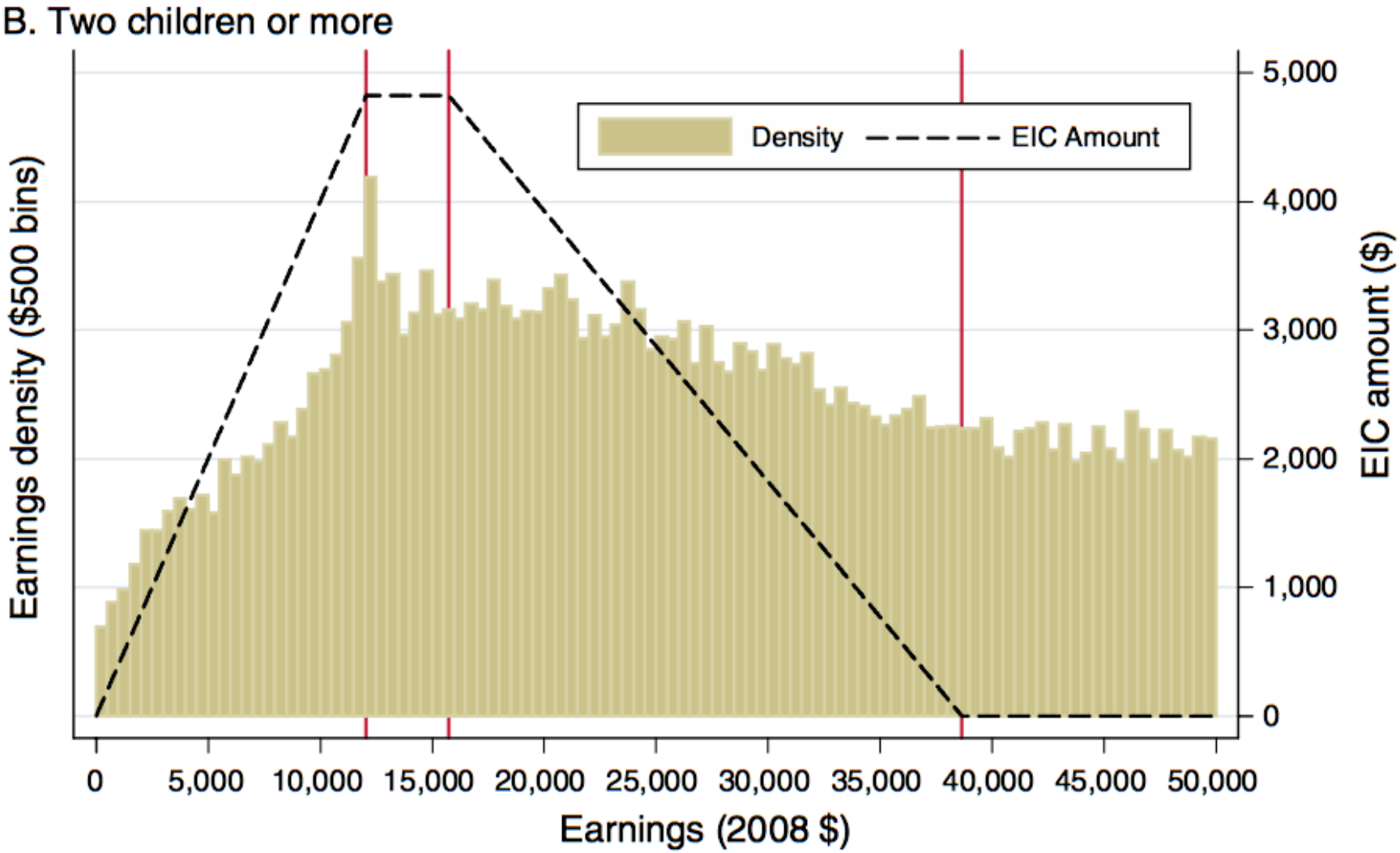
- Kleven & Kopczuk (2011): increasing tagging increases complexity and reduces take-up
- Third parties involved in providing benefits can potentially simplify the process for welfare applicants
  - Examples: tax preparers for EITC, hospitals signing pregnant women for Medicare, stores that participate in WIC/SNAP
  - But using third parties to implement transfer policies can also introduce moral hazard problems (e.g. reimbursement fraud)
- Bunching at the beginning of the EITC plateau indicates how knowledgeable people are about the program
- Chetty & Saez (2013): randomized experiment where participants receive info about EITC program from H&R Block tax preparers
  - Increased bunching at the first kink point after receiving information, but effect mostly due to the self-employed

Bunching in the EITC



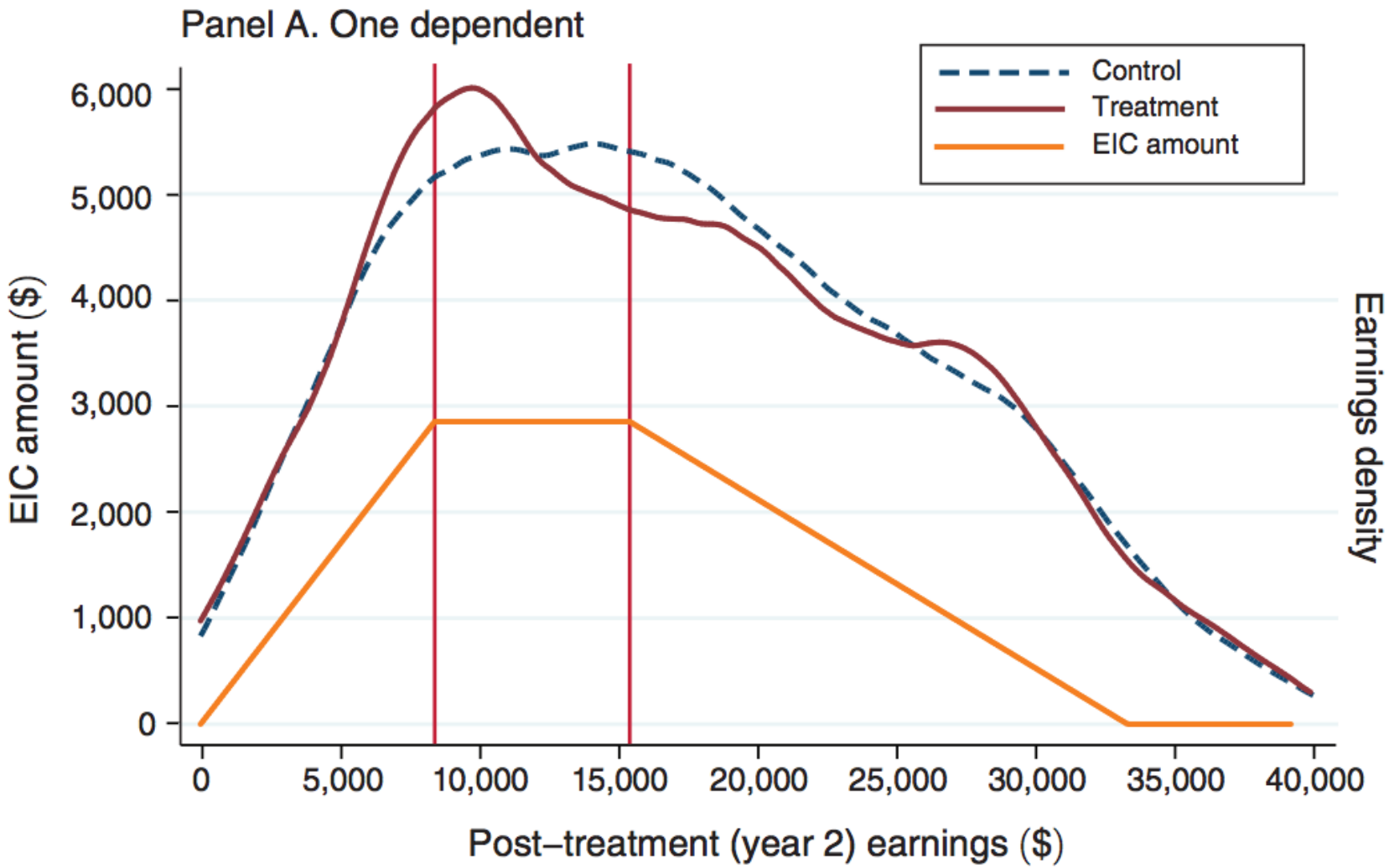
Source: Saez (2010), "Do Taxpayers Bunch at Kink Points," *American Economic Journal: Economic Policy*

Bunching in the EITC



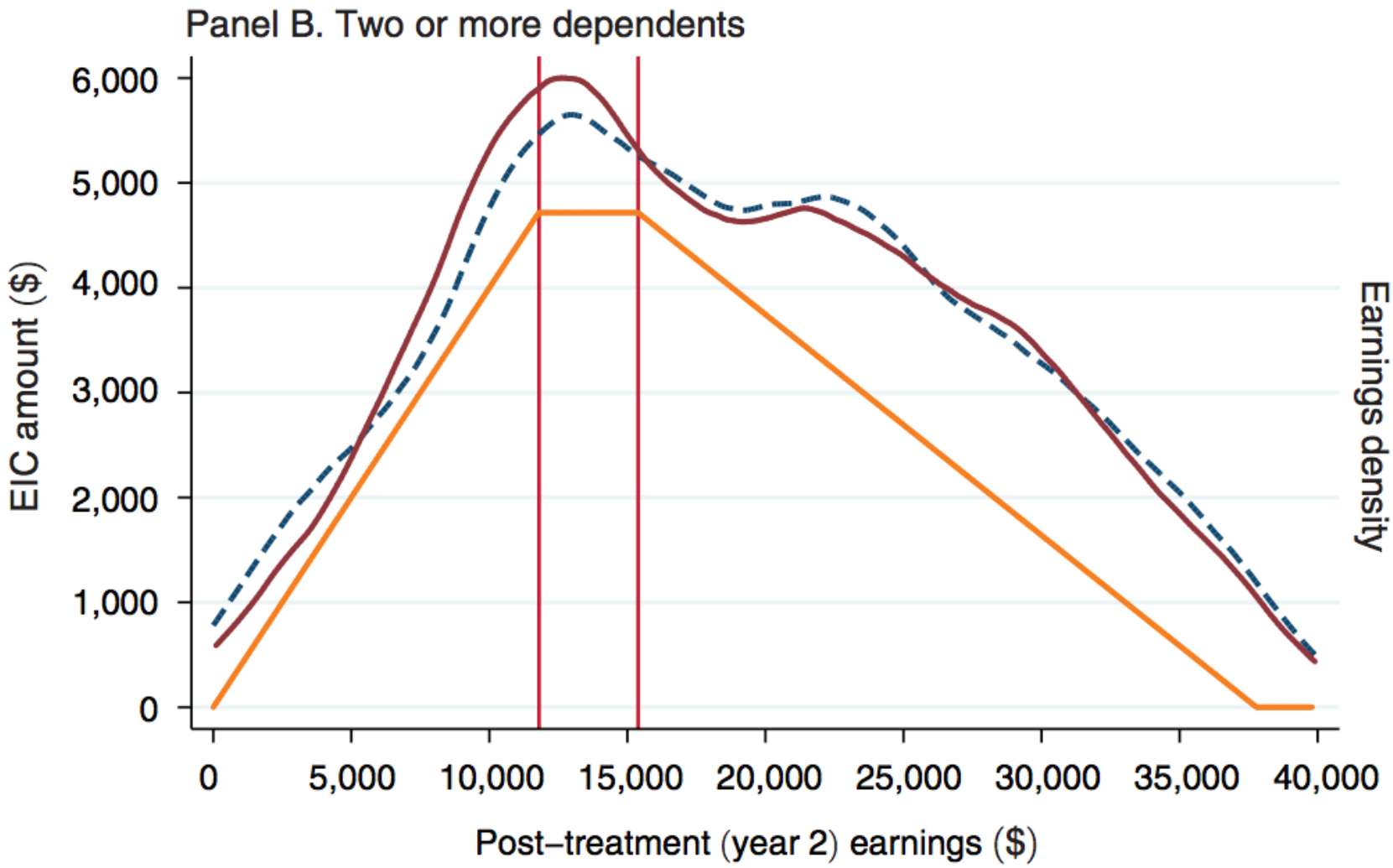
Source: Saez (2010), "Do Taxpayers Bunch at Kink Points," *American Economic Journal: Economic Policy*

Teaching the tax code: H&R Block experiment



Source: Chetty & Saez (2013), "Teaching the Tax Code: Earnings Responses to an Experiment with EITC Recipients," *American Economic Journal: Applied Economics*

Teaching the tax code: H&R Block experiment



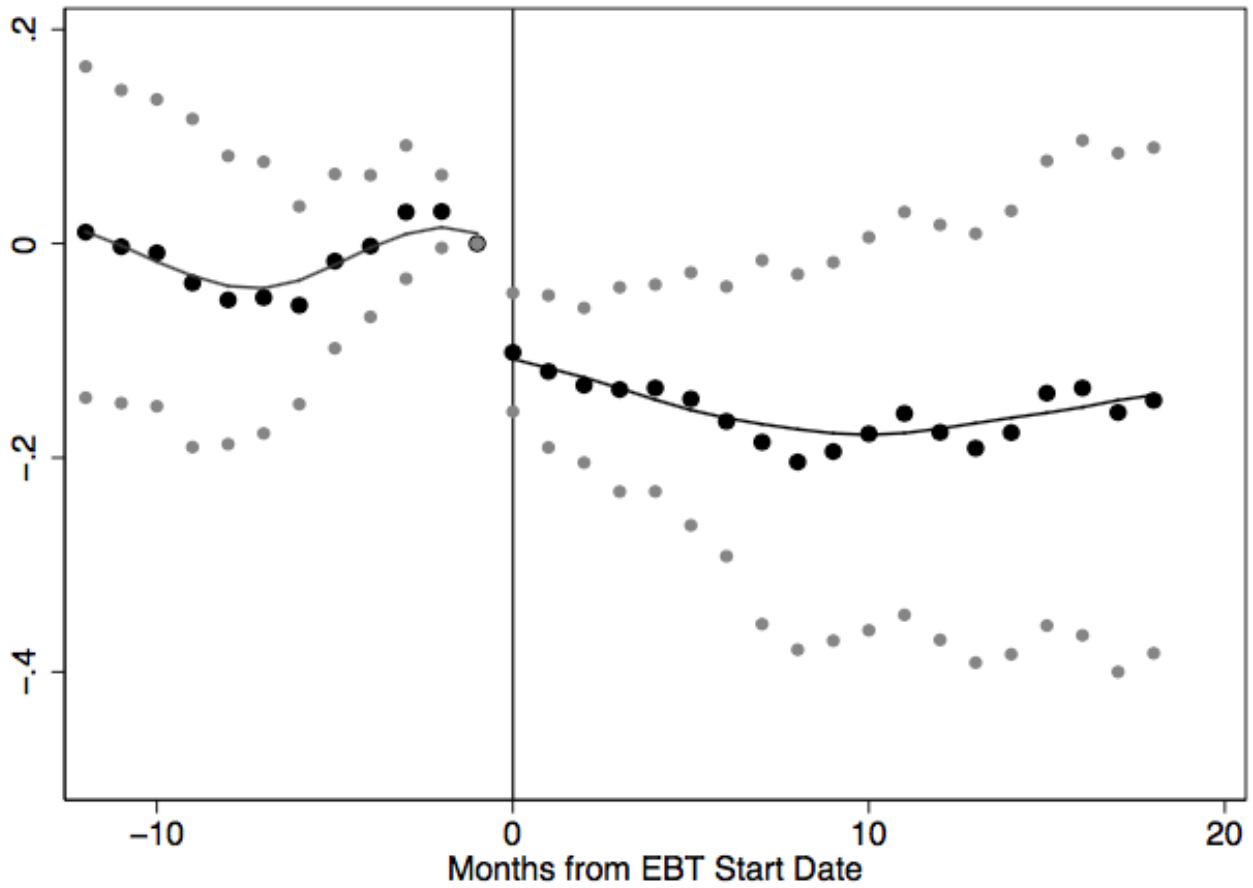
Source: Chetty & Saez (2013), "Teaching the Tax Code: Earnings Responses to an Experiment with EITC Recipients," *American Economic Journal: Applied Economics*

Vendor management issues

- In contrast to some European countries which rely on a public warehouse model of providing in-kind transfers, U.S. relies on third-party vendors for distributions
- Examples: grocery stores that accept EBT payment for SNAP/WIC participants, physicians who accept Medicare/Medicaid patients
- Third-party vendors decrease administrative costs of the system and can improve take-up, but at the expense of moral hazard costs
- In extreme cases this MH problem can constitute fraud...
  - Physicians charge Medicare/Medicaid patients higher rates than they do non-Medicare/Medicaid patients for the same services
  - Under the older paper voucher system, SNAP/WIC stores could write in higher prices on reimbursement forms than they actually charged

But fraud subsidizes vendor participation...

Independent WIC store participation and switch to EBT in Texas



Source: Meckel (2016), "Is the Cure Worse than the Disease? Unintended Consequences of Fraud Reduction in Transfer Programs," `http://people.tamu.edu/~kmeckel/kmeckel_jmp.pdf`

Ordeal mechanisms

- Difficult to set eligibility requirements so that only the truly needy receive welfare benefits
- Idea: can we design transfer programs so that only those who need it apply for the benefit?
- Ordeal mechanism: create some fixed cost of applying for the benefit so that people self-select into the needy and not so needy
- Drawback: imposing an ordeal reduces program costs but introduces an efficiency cost if the ordeal itself is unproductive

- Many examples: long lines, inconvenience, excessive screening (SSDI), low quality of benefits, work requirements
- Ordeals can also reduce moral hazard among the already insured: see Problem 1 of Problem Set 4 on ordeals and UI

Sample problem – creating an ordeal mechanism

- Suppose there are two workers – one can earn a high wage w^H and one can earn a low wage w^L
- The government wants to provide a lump-sum transfer T to the low-wage type but cannot tell the two types of workers apart
- No savings, so each type $i = H, L$ consumes $C^i = w^i(1 - L^i)$
- Each type has the same utility function $u(C, L) = \sqrt{C \cdot L}$

- If the government gives the transfer to everyone (unconditionally), the total cost of the program is $2T$
- Ordeal mechanism: introduce a useless activity that induces the high-wage types to not apply $\implies$ program costs go to T

Sample problem – introducing an ordeal

- Introduce a fixed time cost x incurred by applying for the benefit
- New budget if decide to apply: $C^i = w^i(1 - L^i - x) + T$
- At the optimum each type satisfies the tangency condition: $C^i = w^i L^i$
- Combining the tangency condition with the budget constraint, any type that applies will choose consumption and labor such that:

$$L^i = \frac{(1-x)w^i + T}{2w^i} \qquad C^i = \frac{(1-x)w^i + T}{2}$$

- Each type therefore gains utility from applying equal to

$$U(C^i, L^i) = \sqrt{\left(\frac{(1-x)w^i + T}{2}\right)\left(\frac{(1-x)w^i + T}{2w^i}\right)} = \frac{(1-x)w^i + T}{2\sqrt{w^i}}$$

- Intuition: set the fixed time cost to be higher (lower) than the relative generosity of the transfer for high (low) types

Sample problem – separating the two types

- Government wants to set the magnitude of the cost x such that only the low-wage types find it worthwhile to apply
- Incentive compatibility for high-wage types:

$$\frac{(1-x)w^H + T}{2\sqrt{w^H}} < \frac{w^H}{2\sqrt{w^H}} \implies x > \frac{T}{w^H}$$

- Incentive compatibility for low-wage types:

$$\frac{w^L}{2\sqrt{w^L}} < \frac{(1-x)w^L + T}{2\sqrt{w^L}} \implies x < \frac{T}{w^L}$$

- Combining the two conditions we find that the types separate if

$$T/w^H < x < T/w^L$$

- Successful separation of the types reduces costs from $2T$ to T!

Summary

- Many types of welfare programs offered in the U.S., each justified with a different theory and set of assumptions
  - Negative income tax: TANF
  - Work-for-welfare: EITC
  - Categorical anti-poverty (tagging): SSI
  - In-kind transfers: SNAP/WIC, public housing, Medicare/Medicaid
- Government faces an equity-efficiency trade-off: desire to redistribute resources to low-income individuals, but difficult to assess who is truly needy due to asymmetric information
- Can implement tagging, ordeal mechanisms, or in-kind transfers to deal with adverse selection and moral hazard issues, but these all carry their own efficiency costs