

Topic: Peer Effects and Bullying



Introduction

- Many economists are using creative methods to study peer effects
 - Peer effects may have external costs or benefits
 - But we can have altruistic peer effects such as ‘leading by example’
- Bullying creates negative externalities: the bully doesn’t care about the person he/she hurts
 - We will document the effects of bullying
 - How much is society willing to pay to prevent bullying?
 - Could there be a market solution to the bullying problem?



Peer Effects

- Charles Manski suggested that peers could affect my behavior in two ways:
 - Peer *characteristics* could affect me
 - Peer *behavior* could affect me
- In addition, our behavior could be *correlated* by common random influences
- Consider an example of school achievement of a teenage youth
 - Socio-economic characteristics of the school might affect my achievement
 - The study habits of other students might affect my achievement
 - My achievement could be correlated with that of other students because we share the same family background or have the same teachers

Charles Manski, "Identification of Exogenous Social Effects: The Reflection Problem," *Review of Economic Studies*, 60 (1993), 531-542



Clark and Lohéac's Study

- Adolescents may be especially susceptible to peer effects
- How strong are peer effects in the consumption of marijuana, alcohol and tobacco by American adolescents?
- A typical equation in other studies would be:

$$Y_{it} = \beta_0 + \beta_1 X_{it} + \beta_2 PEER_{it} + u_{it}$$

Y_{it} = behavior of person i at time t

X_{it} = personal characteristics

$PEER_{it}$ = peer behavior

- Two problems: Y_{it} and $PEER_{it}$ may be related to common unobserved variables; and Y_{it} may affect $PEER_{it}$



Their Solutions

- Use peer behavior from last year (less likely to be influenced by Y_{it})
- Define the peer group as students in next higher grade in same school (older students less likely to be influenced by younger ones)
 - I'm not entirely convinced by this fix
 - Results were similar to those using peers from the same grade
 - I would have expected some differences
- Include school fixed effects to control for common environmental factors
- Strong point: they split the sample into males and females and included male and female peer behavior
- Results for participation show that both boys and girls follow the peer influence of boys

Andrew Clark and Youenn Lohéac, "It Wasn't Me, It Was Them!" Social Influence in Risky Behavior by Adolescents," Journal of Health Economics, 26 (2007), 7763-784



Peer Effects in Adolescent BMI

- Does peer behavior among secondary school students in Spain influence students' BMI?
- This study is based more closely on Manski's distinction between peer characteristics, peer behavior, and correlated behavior
 - They control for peers' average characteristics
 - They control for correlated behavior with school and neighborhood fixed effects
 - They use instrumental variables (IV) estimation to solve the endogeneity problem (my behavior may influence my peers' behavior)
 - The instruments are characteristics of respondents' friends-of-friends who are not friends with the respondents

Toni Mora and Joan Gil, "Peer Effects in Adolescent BMI: Evidence from Spain," Health Economics, 22 (2013), 501-516



Data and Estimation

- Data came from a survey of secondary school students in Catalonia
- Students could nominate as many close friends as they wished, from which several peer groups could be defined (e.g. all of my friends or only 'mutual' friends who name each other)
- The model was:

$$BMI_{ijcs} = \beta_0 + \beta_1 BMI_{jcs} + \beta_2 X_{ics} + \beta_3 Z_{jcs} + \beta_4 X_{cs} + \lambda_s + \lambda_n + \varepsilon_{ijcs}$$

BMI_{ijcs} = body mass index of student i with peer group j in class c at school s

BMI_{jcs} = BMI of my peer group

X_{ics} = my personal characteristics

Z_{jcs} = average characteristics of my peers

X_{cs} = average characteristics of my class

λ_s and λ_n = school and neighborhood fixed effects



Results

- The peer effect (β_1) in different subsamples:

Sample	Friends' Influence
Boys	NS
Girls	.431
Students who kept same friends as last year	.453
Students who stayed in the same school for the last three years	.534
Students who said they had no leadership role	.339

- Peer effects matter for girls
- They matter more for students who kept same friends as last year or stayed in same school for the last 3 years
- They matter less for self-described leaders



Peer Effects & Alcohol Use

- A common approach in peer group studies among college students is to use random assignment of roommates to define peers
- Two requirements: (1) Conditional on observed variables such as age and sex, assignment must be random; and (2) Roommate behavior must be measured prior to college entry (so it is not influenced by my behavior)
- Kremer and Levy looked at the effect of roommate drinking on students' grades
 - Results show that males' grades fell significantly when their roommates drank in high school
 - No effects for females
 - Effects for males were concentrated among students whose predicted grades based on non-drinking variables (e.g. academic background) were in the bottom 10% of the distribution
 - Students who drank frequently in high school were most susceptible to peer effects



Policy Responses

- Some universities (e.g. University of Minnesota) have established 'substance-free' residence halls
- But is this a good policy?
- Pairing two drinkers (DD) and two non-drinkers (NN) leads to worse overall grades than mixing (DN and DN)
- How should society balance the overall good of mixing against the harm done to N's who are paired with D's?
 - Offer a discount for N's to room with D's
 - Charge more for D's who want to live with a sober roommate
 - D's might be willing to pay for this 'commitment mechanism'

Michael Kremer and Dan Levy, "Peer Effects and Alcohol Use Among College Students," *Journal of Economic Perspectives*, 22:3 (2008), 189-206



Bullying and Abuse

- Bullying and abuse are recognized as major social problems
- We'll focus on child bullying
 - Bullying is hard to define, but it includes both physical and verbal aggression
 - 30% of U.S. adolescents reported at least one moderate bullying experience, as the bully, victim, or both
 - A British cohort study showed that school bullying had an adverse effect on educational attainment and earnings up to age 42
- Many schools are creating programs to reduce school bullying, but there is little evidence regarding their effects
- Also, we don't know how much society is willing to pay to reduce school bullying

Sarah Brown and Karl Taylor, "Bullying, Education, and Earnings: Evidence from the National Child Development Study," Economics of Education Review, 27 (2008), 387-401



The Swedish Study

- An interesting paper that shows how to measure social willingness to pay to reduce school bullying
- How did they do it?
 - Ask people how much they would be willing to pay in extra taxes to implement an unidentified anti-bullying program in city schools that would reduce bullying by 3 levels for 5 different costs (15 total choices)
 - Would you be in favor of program X at cost Y?
- Statistical analysis of the answers

Mattias Persson and Mickael Svensson, "The Willingness to Pay to Reduce School Bullying," Economics of Education Review, 35 (2013), 1-11



Results

$$WTP(\textit{yes / no})_{ij} = \beta X_j + \gamma Y_i + \mu_i + v_{ij}$$

Attributes of choice j
including cost and risk
reduction

Attributes of
person i

Fixed effect for
person i's propensity
to favor or not favor
programs

- Social WTP = $-\beta_{\text{risk reduction}} / \beta_{\text{cost}}$
- We need the negative sign because β_{cost} is negative and we want to express WTP as a positive number
- Results in Swedish Kroner: $-\beta_{\text{risk reduction}} / \beta_{\text{cost}} = -0.4 / -0.046 = 8.7$ KR per episode
- This is about \$1.25 or a bit over 1€ per episode



An Application

- Suppose your city has a taxpayer population of 100,000
- The total willingness to pay to avoid one episode of bullying would be 870,000 KR
- This is extremely high, but it suggests that a costly anti-bullying program would be justified if it prevents only a few cases of bullying

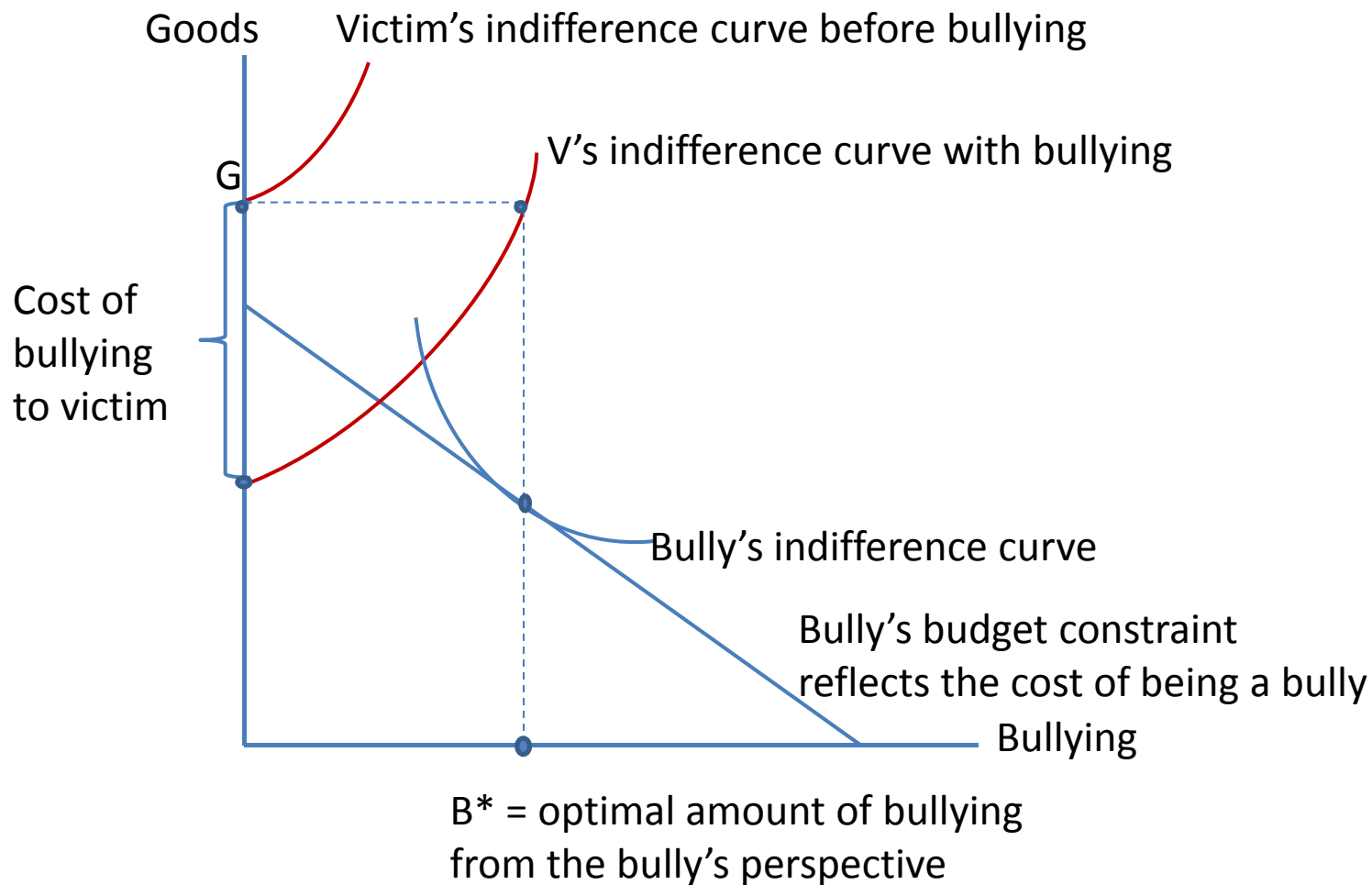


Strategies to Prevent Bullying

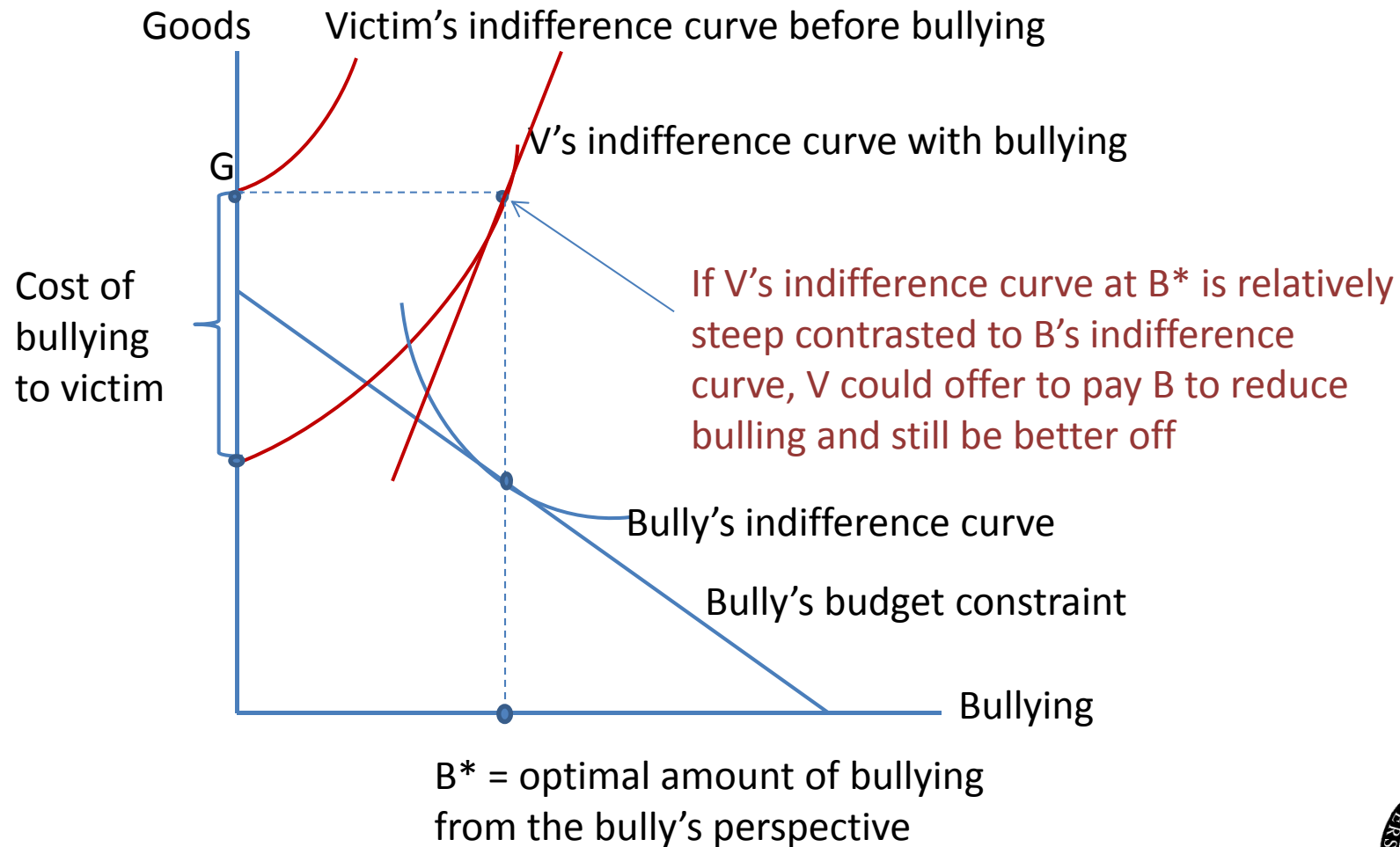
- The Swedish study did not ask if anti-bullying programs were effective – only how much people would be willing to pay to reduce bullying
- I haven't found any evaluations of anti-bullying programs, but it seems they could fall into 4 categories:
 1. Change the bully's preferences (find better ways to work off your aggression)
 2. Raise the cost of bullying (kick them out of school)
 3. Teach potential victims how to avoid bullying situations
 4. Pay the bully to stop
- The last option is similar to 'protection rackets' that organized crime runs in the U.S.
- It may not be popular, but could we imagine a 'market' for bullying?



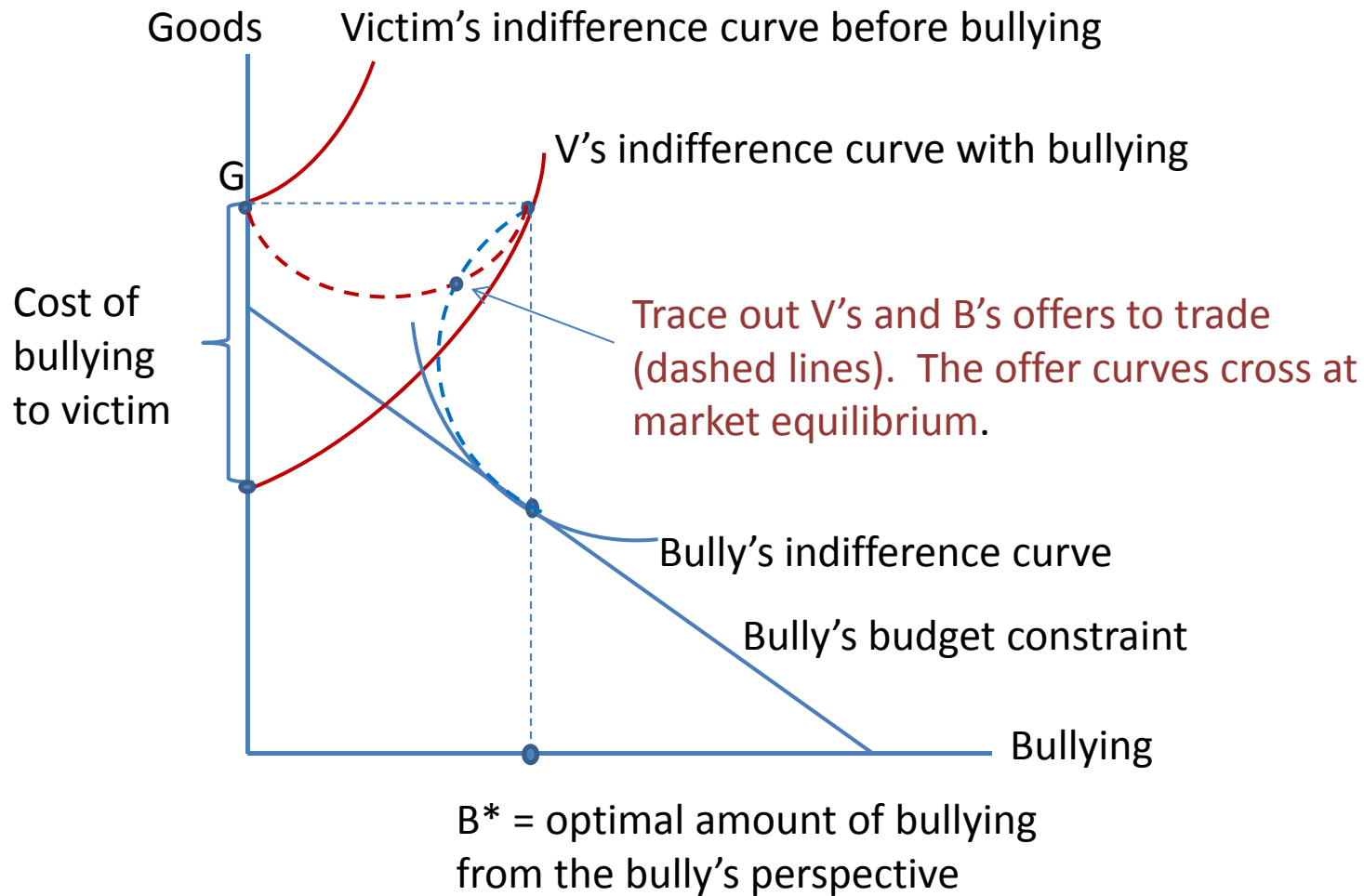
Basic Graph of the Bully's Choice



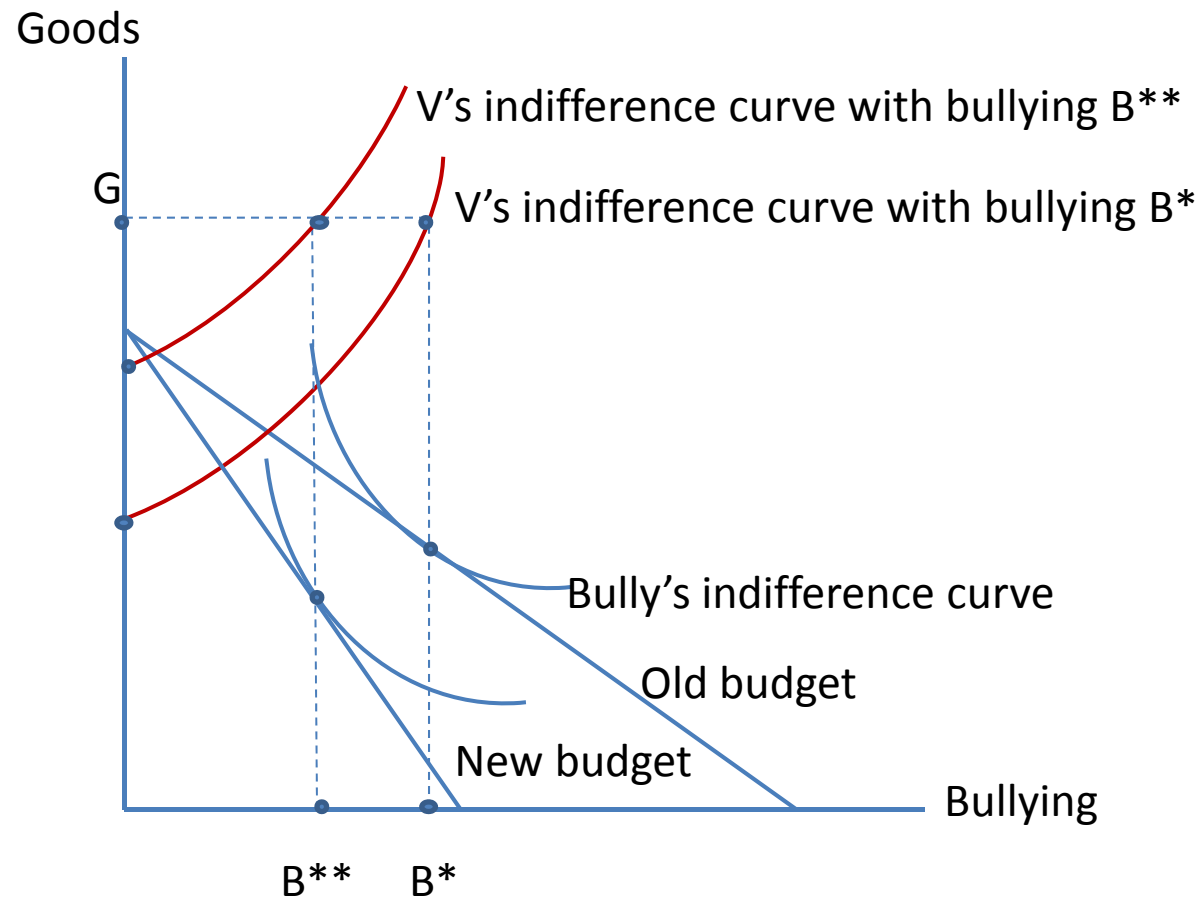
A Market for Bullying



Market Equilibrium



Punishment Increases the Price of Bullying



A Suggestion

- Punishment reduces the optimal amount of bullying from the bully's perspective
- Suppose protection is a *superior good* to the victim (they want more protection as they get wealthier)
- Then punishment and protection are substitutes
 - Harsher punishment will eventually 'kill off' the market for protection
 - For school authorities considering harsher punishment: the reduction in protection must be subtracted from the reduction in bullying due to harsher punishment to find the net effect of harsher punishment

