INFORMATION AND WAR

PSC/IR 265: CIVIL WAR AND INTERNATIONAL SYSTEMS
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AGENDA

NO MORE TALKING

INTUITION

- BEFORE, THE REBEL GROUP AND GOVERNMENT KNEW ALL THE IMPORTANT FACTS ABOUT WAR.
  - PROBABILITY OF VICTORY
  - R'S COST
  - G'S COST

INTUITION

- BUT SOMETIMES ONE SIDE MIGHT NOT KNOW IMPORTANT FACTORS.

- WE ARE GOING TO SIMULATE UNCERTAINTY ABOUT THE PROBABILITY OF VICTORY IN WAR.

THE GAME

- YOU ARE THE GOVERNMENT. I AM A REBEL GROUP SEEKING CONCESSIONS FROM YOU.

- YOU MUST OFFER ME A DIVISION OF $10. IF I LIKE IT, I WILL ACCEPT. IF NOT, I WILL REJECT AND FIGHT A WAR.

THE GAME

- LIKE LAST TIME, WAR DISTRIBUTES $8 INSTEAD OF $10.
- THE TWIST: YOU DON'T KNOW HOW POPULAR I AM BUT I DO.
  - 50% CHANCE I AM UNPOPULAR => 25% CHANCE OF WINNING.
  - 50% CHANCE I AM POPULAR => 75% CHANCE OF WINNING.

THE GAME

- ON A PIECE OF PAPER, WRITE YOUR NAME AND MAKE ME AN OFFER.

- AS BEFORE, I AM ONLY GOING TO MAXIMIZE MY SHARE OF THE MONEY.

PLEASE PASS THEM UP

QUESTION

- SPEND THE NEXT COUPLE OF MINUTES DISCUSSING HOW YOU ARRIVED AT YOUR PROPOSAL.

QUESTION

- SPEND THE NEXT COUPLE OF MINUTES DISCUSSING HOW YOU ARRIVED AT YOUR PROPOSAL.

- WHAT DO YOU GUYS THINK?

THE TRICKY PART

- THIS IS A GAME OF INCOMPLETE INFORMATION.
  - ONE ACTOR (ME) KNOWS SOMETHING ABOUT THE PAYOFFS THAT THE OTHER ACTOR (YOU) DOES NOT KNOW.
  - HERE, I KNOW WHAT MY PAYOFF FOR WAR IS BUT YOU DO NOT.

WHO WINS?

MY DECISION

- IF I'M UNPOPULAR, MY PAYOFF FOR WAR IS ($8)(.25) = $2

- IF I'M UNPOPULAR, MY PAYOFF FOR WAR IS ($8)(.75) = $6

MY DECISION

- SO IF THE OFFER IS AT LEAST $6, I ACCEPT REGARDLESS OF MY POPULARITY.

- IF THE OFFER IS BETWEEN $2 AND $6, I ACCEPT IF AND ONLY IF I AM UNPOPULAR.

- IF THE OFFER IS LESS THAN $2, I REJECT REGARDLESS OF MY POPULARITY.

AGENDA

YOUR DILEMMA

- GREATER OFFERS ARE MORE LIKELY TO BE ACCEPTED.
  - GOOD FOR YOU BECAUSE NO WAR.
  - BAD FOR YOU BECAUSE THEY ARE LARGER OFFERS.
- SMALLER OFFERS ARE LESS LIKELY TO BE ACCEPTED.
  - BAD FOR YOU BECAUSE WAR MIGHT OCCUR.
  - GOOD FOR YOU WHENEVER THE SMALL OFFER IS ACCEPTED.

RISK-RETURN TRADEOFF

- BEING AGGRESSIVE IS BENEFICIAL WHENEVER THE AGGRESSION WORKS, BUT IS COSTLY WHENEVER IT FAILS.

- BEING CONSERVATIVE IS ALWAYS COSTLY.

- SMART DECISIONS WEIGH THE RELATIVE RISKS TO THE RELATIVE REWARDS.

EXAMPLE: LEAVING FOR WORK

- YOU LIVE THREE FREEWAY EXITS AWAY FROM YOUR JOB.

- IT TAKES 5 MINUTES TO GET TO WORK IF THERE ARE NO ACCIDENTS BUT 30 MINUTES WHEN THERE ARE.

- WHAT DETERMINES WHETHER YOU LEAVE 5 MINUTES BEFORE WORK OR 30?

INCENTIVES

- SOMETIMES, YOU HAVE INCENTIVES TO PLAY IT SAFE.

- SOMETIMES, YOU HAVE INCENTIVES TO TAKE RISKS.

  - RISKS IMPLY BAD OUTCOMES.

  - BUT YOU ARRIVE AT THE BAD OUTCOME RATIONALLY SINCE THEY ARE THE RESULT OF A RANDOM PROCESS.

INCENTIVES

- SAME THING WITH WAR.

- WHEN YOU DON'T KNOW WHETHER THE OTHER SIDE IS WEAK OR STRONG, YOU MIGHT SOMETIMES OFFER AN AMOUNT THAT WILL ONLY APPEASE THE WEAK TYPE.

MODEL

- GOVERNMENT MAKES AN OFFER TO THE REBEL GROUP, WHICH ACCEPTS OR REJECTS.
  - REBEL GROUP IS WEAK (Q) OR STRONG (1 – Q).
    - IF WEAK, REBELS WIN WITH PROBABILITY P_R.
    - IF STRONG, REBELS WIN WITH PROBABILITY P_R', WHERE $P_R' > P_R$.
- COSTS REMAIN C_R, $C_G > 0$.

WEAK REBELS' DECISION

- PAYOFF FOR WAR: $P_R - C_R$.
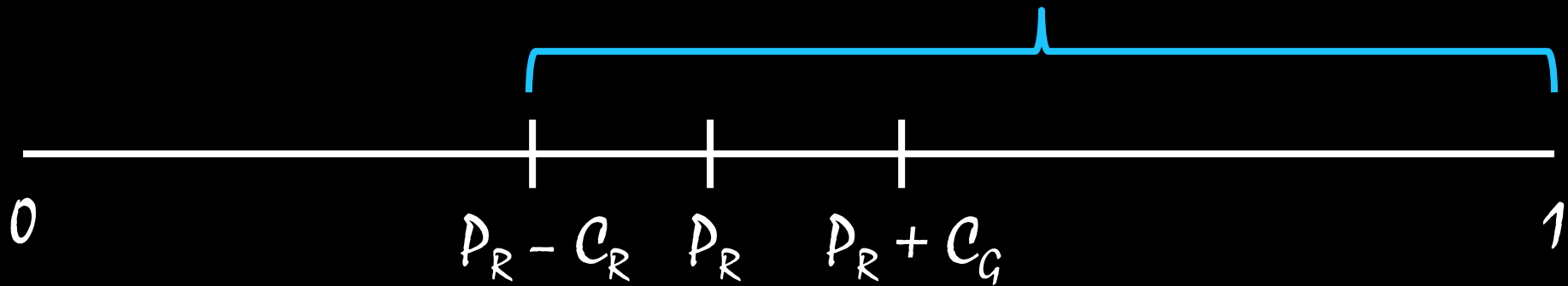 - THEREFORE, ACCEPT $X \geq P_R - C_R$.

STRONG REBELS' DECISION

- PAYOFF FOR WAR: $P_R' - C_R$.
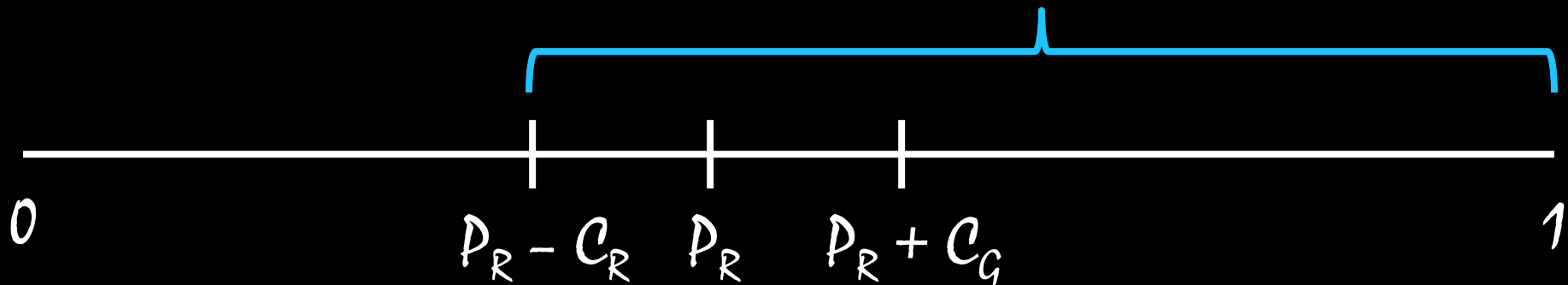 - THEREFORE, ACCEPT $X \geq P_R' - C_R$.

CLAIM

- THE OPTIMAL OFFER FOR G IS EITHER $X = P_R' - C_R$ OR $X = P_R - C_R$.
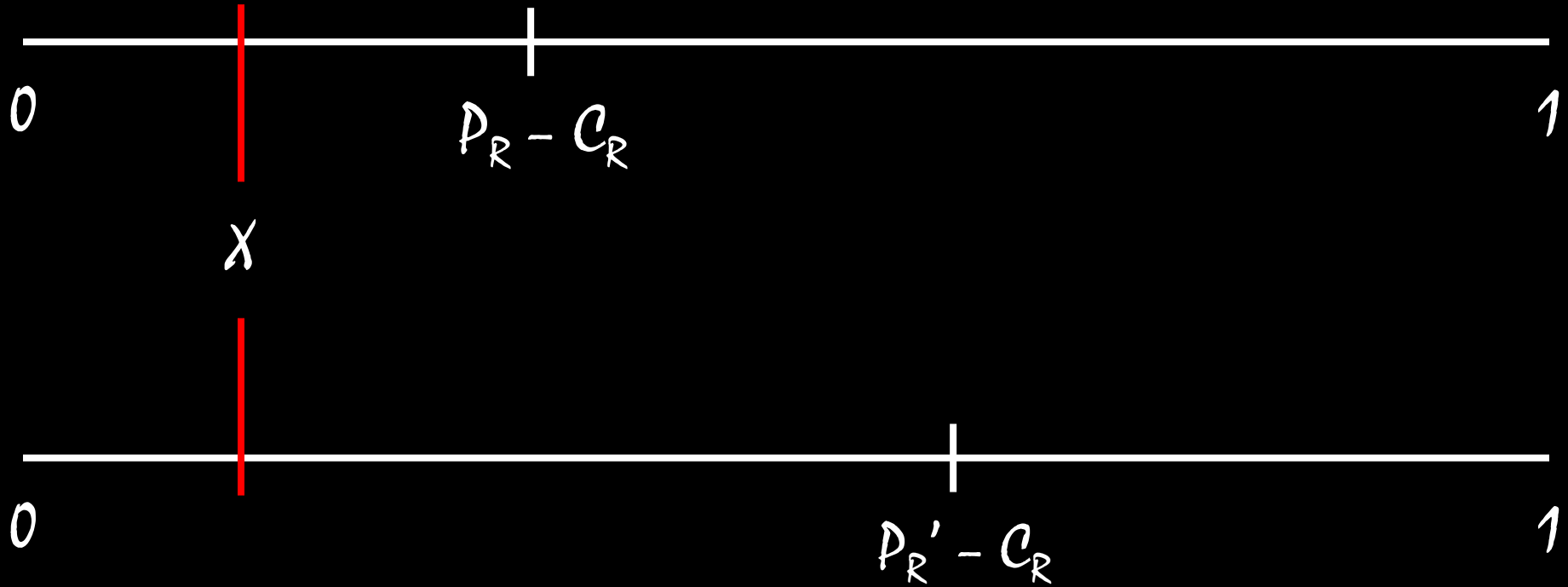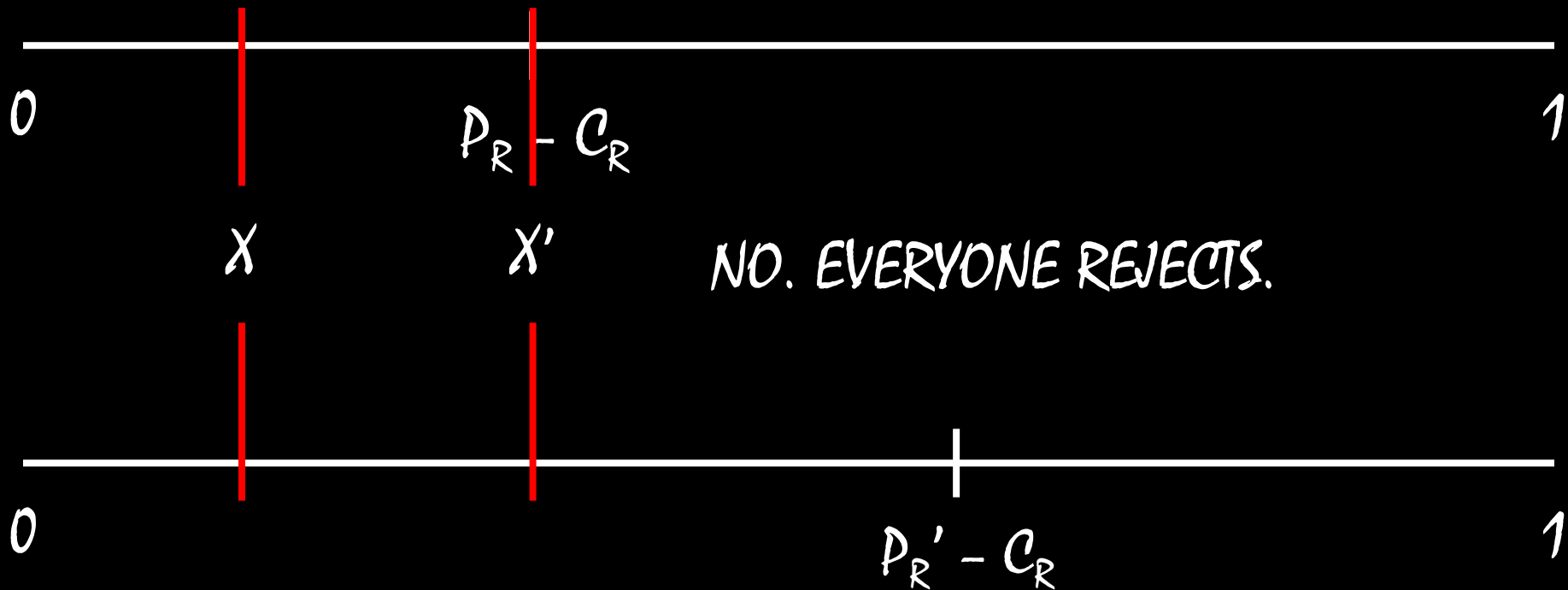
SETTLEMENTS WEAK REBELS ACCEPT

0 $P_R - C_R$ P_R $P_R + C_G$ 1

SETTLEMENTS WEAK REBELS ACCEPT

0      $P_R - C_R$ P_R $P_R + C_G$ 1

SETTLEMENTS STRONG REBELS ACCEPT
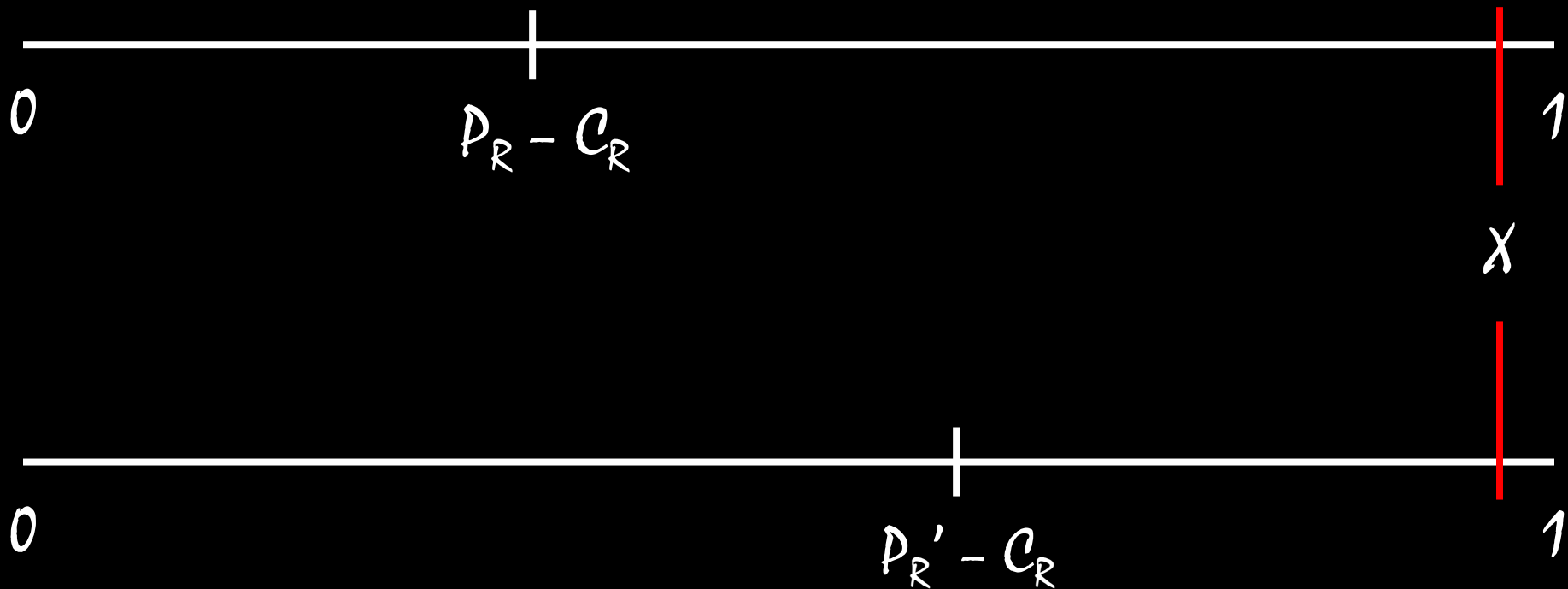
0      $P_R' - C_R$ P_R' $P_R' + C_G$ 1

IS $X < P_R - C_R$ OPTIMAL?

0   1

X

$P_R - C_R$

0   1

$P_R' - C_R$

IS $X < P_R - C_R$ OPTIMAL?

0                                    $P_R - C_R$ 1

X X' NO. EVERYONE REJECTS.

0   1

$P_R' - C_R$

IS $X > P_R' - C_R$ OPTIMAL?

0 $P_R - C_R$ 1

X

0 $P_R' - C_R$ 1

IS $X > P_R' - C_R$ OPTIMAL?

0       $P_R - C_R$ X'   X   1

NO. SLIGHTLY LESS IS BETTER.

0       $P_R' - C_R$ 1

IS $X > P_R' - C_R$ OPTIMAL?

0       $P_R - C_R$ X'' X' 1

NO. SLIGHTLY LESS IS BETTER.

0       $P_R' - C_R$ 1

IS $X > P_R' - C_R$ OPTIMAL?

0         $P_R - C_R$ X''' X'' 1

NO. SLIGHTLY LESS IS BETTER.

0            $P_R' - C_R$ 1

IS $X > P_R' - C_R$ OPTIMAL?

0

$P_R - C_R$

NO. SLIGHTLY LESS IS BETTER. X'''' X'''

0

$P_R' - C_R$

1

1

IS $P_R - C_R < X < P_R' - C_R$ OPTIMAL?

0    $P_R - C_R$ 1

X

0    $P_R' - C_R$ 1

IS $P_R - C_R < X < P_R' - C_R$ OPTIMAL?

0     $P_R - C_R$ X'   X   1

NO. STRONG TYPE REJECTS AND
WEAK TYPE ACCEPTS. MIGHT AS
WELL MAKE THE OFFER SMALLER.

0     $P_R' - C_R$ 1
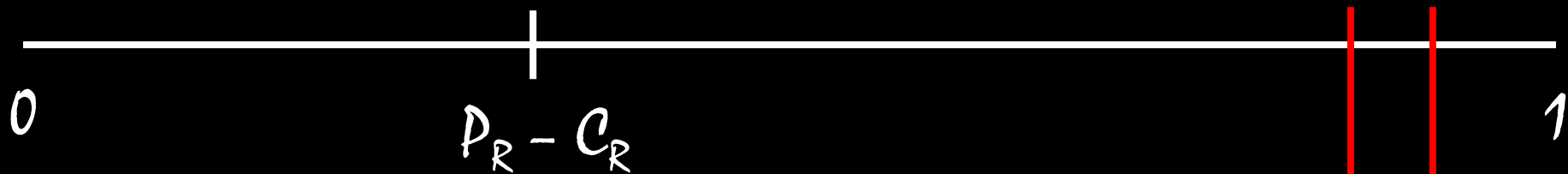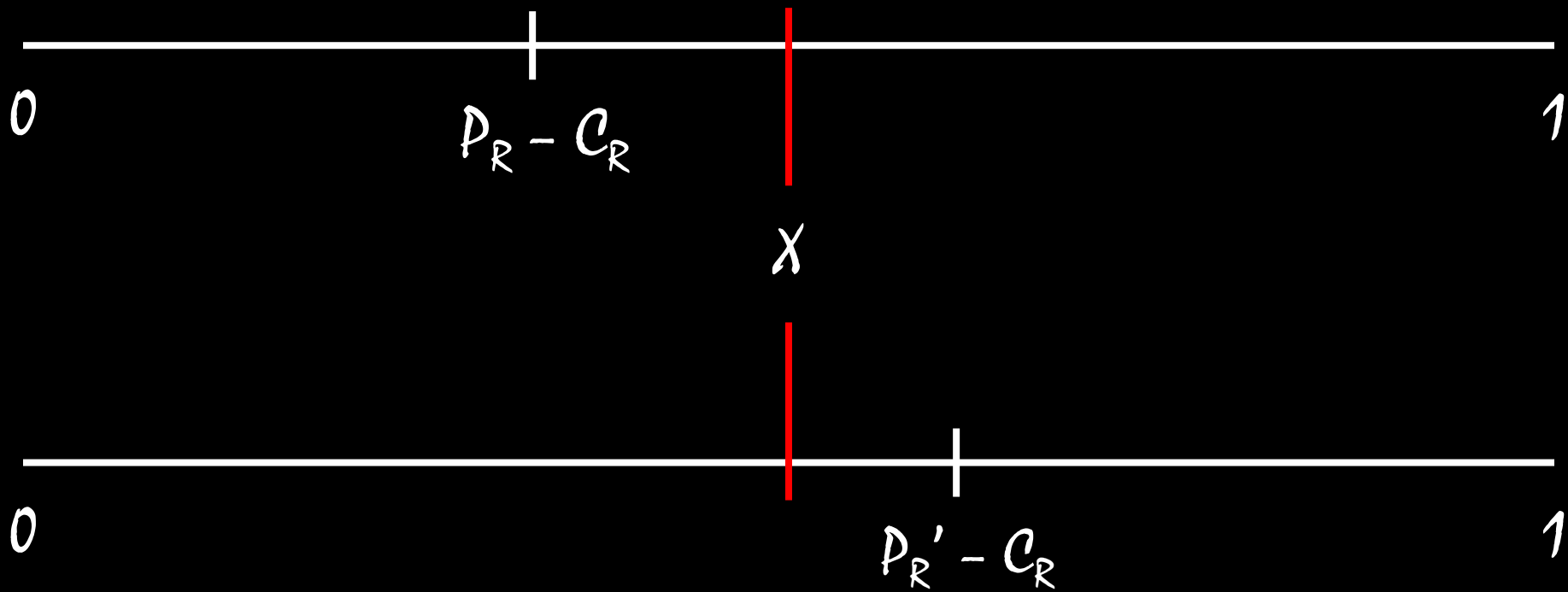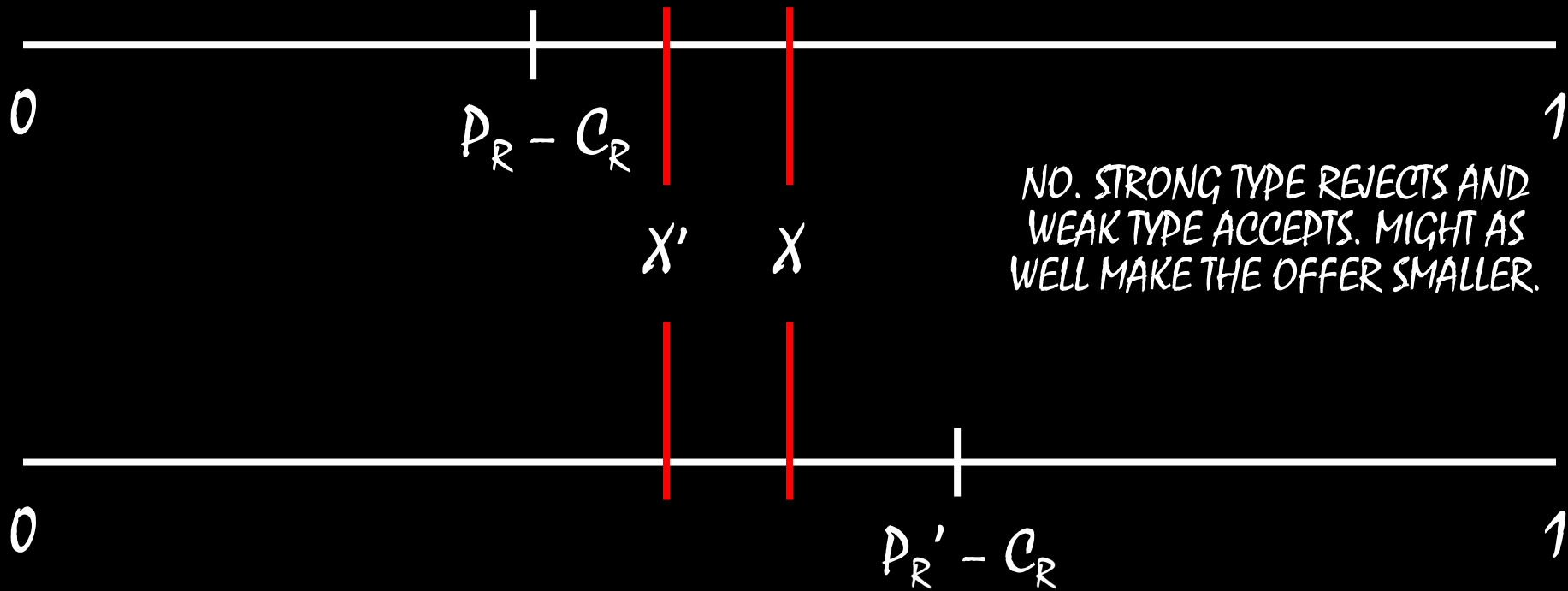
CLAIM

- THE OPTIMAL OFFER FOR G IS EITHER $X = P_R' - C_R$ OR $X = P_R - C_R$.
  - TRUE.
  - SO WE CAN FIGURE OUT WHAT IS BEST BY SIMPLY COMPARING G'S PAYOFF FOR THESE TWO OFFERS.

OFFER #1: $P_R' - C_R$

- BOTH STRONG AND WEAK TYPES ACCEPT.
- G RECEIVES THE REMAINDER: $1 - P_R' + C_R$

OFFER #2: $P_R - C_R$

- WEAK TYPE ACCEPTS AND STRONG TYPE REJECTS.
- $(Q)(1 - P_R + C_R) + (1 - Q)(1 - P_R' - C_G)$

GAMBLE IF...

- $(Q)(1 - P_R + C_R) + (1 - Q)(1 - P_R' - C_G) > 1 - P_R' + C_R$

  $Q > (C_G + C_R)/(P_R' - P_R + C_R)$

GAMBLE IF...

- $(Q)(1 - P_R + C_R) + (1 - Q)(1 - P_R' - C_G) > 1 - P_R' + C_R$

  $Q > (C_G + C_R)/(P_R' - P_R + C_R)$

- SO IF THE LIKELIHOOD THAT R IS SUFFICIENTLY HIGH, G MAKES THE SMALL OFFER.

- WAR OCCURS WITH POSITIVE PROBABILITY.

WINNING CONCESSIONS

- IF $Q < (C_G + C_R)/(P_R' - P_R + C_R)$, G MAKES THE LARGE OFFER AND BOTH ACCEPT.

- WEAK TYPE DOES WELL—IT RECEIVES MORE THAN IT WOULD EXPECT TO FROM WAR.

AGENDA

MEDIATION

- WARRING PARTIES OFTEN GO TO THIRD PARTY MEDIATORS TO RESOLVE THEIR CONFLICTS.

- IF WAR OCCURS BECAUSE OF UNCERTAINTY, WHEN CAN WE EXPECT MEDIATION TO RESULT IN PEACE?

PREDICTION

- WHAT DOES THIS SAY ABOUT OUR ABILITY TO ACCURATELY PREDICT WHERE CONFLICT WILL START?
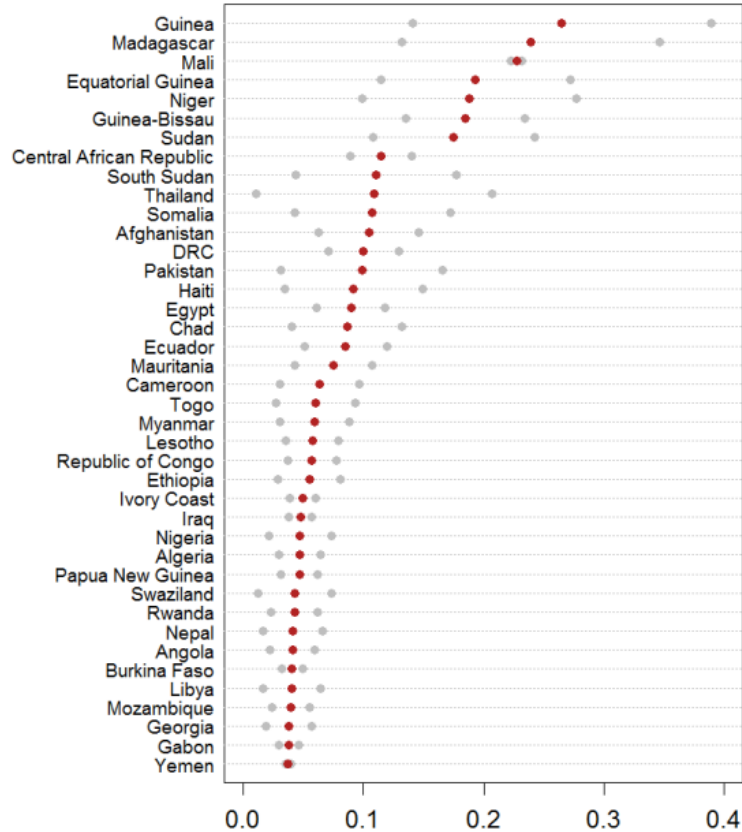
PREDICTION

- THERE ARE SOME OBSERVABLE CHARACTERISTICS THAT LEAD TO WAR.
  - ECONOMIC GROWTH
  - GDP
  - TIME SINCE PREVIOUS WAR

COUP PREDICTIONS

Risk of Any Coup Attempts in 2014

map made using rworldmap

0.000866   0.265
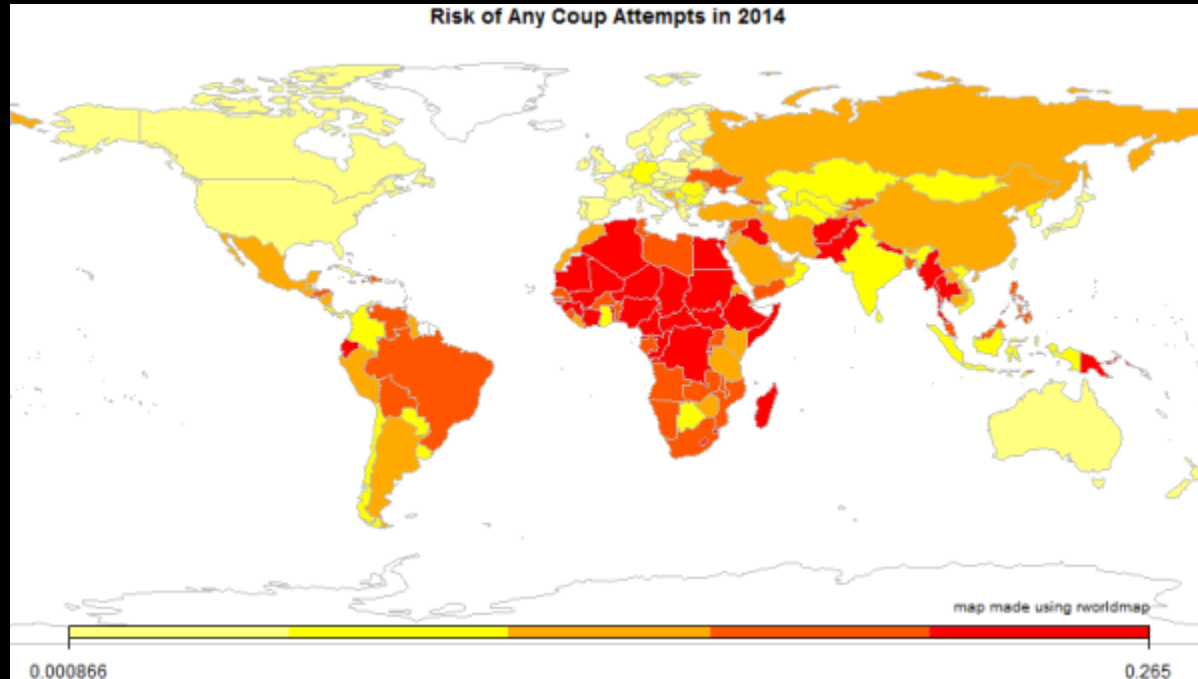
Risk of Any Coup Attempts in 2014

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THE IDEAL WEAPON?

- MANY CIVIL WARS ARE FOUGHT IN PLACES WITH ABSOLUTELY TERRIBLE CONDITIONS (I.E., JUNGLES, DESERTS).
- THE IDEAL GUN FOR THESE CONDITIONS WOULD NOT JAM EASILY.

THE IDEAL WEAPON?

- http://www.youtube.com/watch?v=3VRrc2n0NXg (START 1:49)

THE IDEAL WEAPON?

- SOVIET UNION FALLS IN 1991.
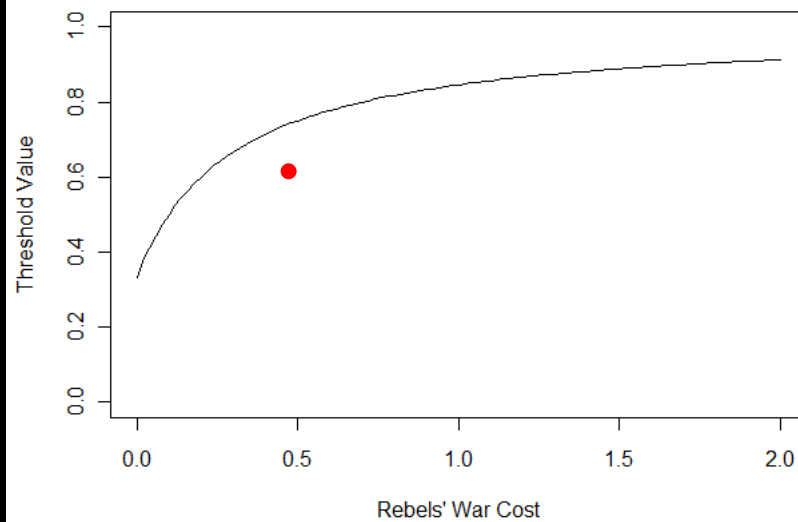 - HOW DOES THIS AFFECT AK-47 BLACK MARKET PRICES?

THE IDEAL WEAPON?

- SOVIET UNION FALLS IN 1991.
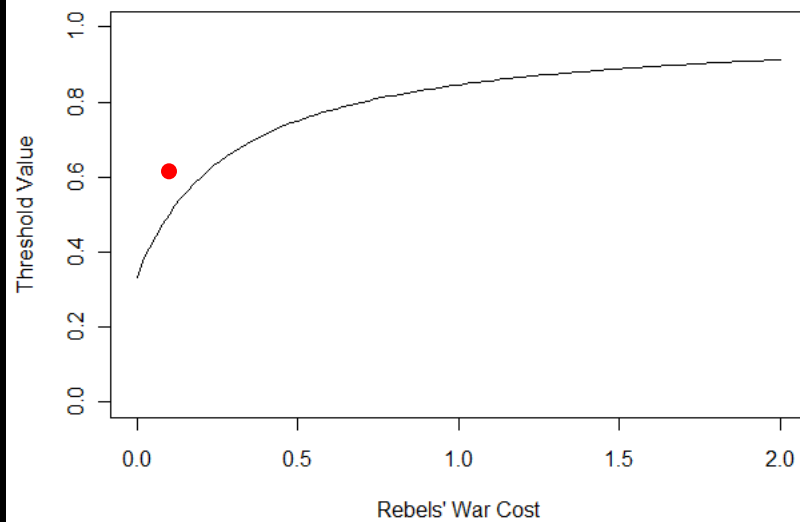- AK-47s FLOOD THE MARKET.
- BLACK MARKET PRICE PLUMMETS ~40%.

QUESTION

- HOW SHOULD THIS AFFECT THE BREAKOUT OF WAR?
  - RECALL THAT WITH INCOMPLETE INFORMATION, WAR OCCURS WITH POSITIVE PROBABILITY IF
    $Q > (C_G + C_R)/(P_R' - P_R + C_R)$

Value of Critical Threshold with Incomplete Information

Value of Critical Threshold with Incomplete Information

AGENDA

INCENTIVES TO MISREPRESENT

- INCOMPLETE INFORMATION ALONE IS NOT SUFFICIENT TO EXPLAIN WHY WAR OCCURS.
  - IF INFORMATION IS THE PROBLEM, WHY NOT REVEAL INFORMATION?

INCENTIVES TO MISREPRESENT

- PROBLEM: IT IS NOT EASY TO CREDIBLY REVEAL YOUR STRENGTH.

  - IMAGINE BOTH THE WEAK TYPE AND STRONG TYPE HONESTLY DECLARED THEIR STRENGTH,

  - G OFFERS MORE TO THE STRONG TYPE AND LESS TO THE WEAK TYPE. BOTH ACCEPT. (THERE IS COMPLETE INFORMATION.)

INCENTIVES TO MISREPRESENT

- DOES ANYONE HAVE INCENTIVE TO LIE HERE?

INCENTIVES TO MISREPRESENT

- DOES ANYONE HAVE INCENTIVE TO LIE HERE?
  - YES. THE WEAK TYPE COULD SAY IT IS THE STRONG TYPE.
  - G WOULD THEN OFFER MORE.
  - WEAK TYPE WOULD BE HAPPIER.

INCENTIVES TO MISREPRESENT

- BECAUSE STRONGER TYPES RECEIVE BETTER DEALS, WEAK TYPES HAVE INCENTIVES TO MISREPRESENT THEIR STRENGTH.

- THIS INCENTIVE MEANS THAT SIMPLE COMMUNICATION CANNOT RESOLVE INCOMPLETE INFORMATION PROBLEMS.

INCENTIVES TO MISREPRESENT

- BUT THERE IS ANOTHER WAY TO TRANSMIT INFORMATION…