

# AGENDA

1. ULTIMATUM GAME
2. EXPERIMENT #2
3. RISK-RETURN TRADEOFF
4. MEDIATION, PREDICTION, AND BLACK MARKETS
5. INCENTIVES TO MISREPRESENT
6. EXPERIMENT #3
7. THE CONVERGENCE PRINCIPLE
8. FIGHTING WITH NO INTENTION TO WIN

NO MORE TALKING

# INTUITION

- BEFORE, WAR WAS "GAME ENDING"
  - IF NEGOTIATIONS BROKE DOWN, THAT WAS IT. WAR INSTANTLY ENDED.
  - RICHER MODEL: BARGAINING CONTINUES WHILE FIGHTING.

# THE GAME

- I AM A REBEL SEEKING SOME OF YOUR \$10 PRIZE.
- YOU MAKE ME AN OFFER. IF I ACCEPT, WE IMPLEMENT THAT DIVISION. IF I REJECT, WE FIGHT.

# THE GAME

- IF I WIN THE FIRST BATTLE, YOU MAKE ME ANOTHER OFFER THAT I ACCEPT OR REJECT. IF I ACCEPT, WE IMPLEMENT THAT DIVISION. IF I REJECT, WE FIGHT A SECOND BATTLE. WINNER KEEPS THE MONEY THAT REMAINS.
- IF I LOSE THE FIRST BATTLE, YOU KEEP THE MONEY THAT REMAINS.

# THE GAME

- FIGHTING IS COSTLY. WE WILL REMOVE \$1 FROM THE POOL EACH TIME WE FIGHT.

# THE GAME

- YOU DON'T KNOW HOW STRONG I AM.
  - 90% OF THE TIME, I AM WEAK AND YOU WILL WIN EVERY BATTLE WE FIGHT.
  - 10% OF THE TIME, I AM STRONGER AND WIN THE BATTLES WE FIGHT 40% OF THE TIME.
    - EACH BATTLE IS AN INDEPENDENT DRAW.

# THE GAME

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

# SOLUTION

- THE ONLY WAY WE CAN REACH THE SECOND STAGE IS IF I AM NOT THE WEAK TYPE.
- I WILL WIN THE NEXT FIGHT 40% OF THE TIME.
  - THUS, YOU MUST OFFER ME  $(\$8)(.4) = \$3.20$
  - KEEPING \$5.80 FOR YOURSELF IS BETTER THAN FIGHTING, SO YOU OFFER ME THAT AMOUNT.

# SOLUTION

- TWO OPTIONS IN THE FIRST STAGE:
  - 1) OFFER ENOUGH TO APPEASE JUST THE WEAK TYPE.
  - 2) OFFER ENOUGH TO APPEASE BOTH TYPES.

# PLEASING JUST THE WEAK TYPE

- THE WEAK TYPE CAN NEVER WIN, SO YOU CAN OFFER \$0 AND STILL INDUCE COMPLIANCE.
  - THE STRONG TYPE WILL CERTAINLY REJECT. IF YOU WIN THE FIGHT, YOU WILL OFFER HIM \$3.20 AND HE WILL ACCEPT.

# PLEASING JUST THE WEAK TYPE

- $(\$10)(.9) + (\$5.80)(.1)(.6) = \$9.3492$

# PLEASING BOTH TYPES

- IF THE STRONG TYPE REJECTS, IT EARNS \$3.20 IN THE NEXT PERIOD WITH PROBABILITY .4.
- SO YOU MUST OFFER  $(\$3.20)(.4) = \$1.28$  TO INDUCE ACCEPTANCE.
  - YOU RECEIVE \$8.72.



# WHICH IS BETTER?

- IF YOU PLEASE BOTH TYPES, YOU EXPECT TO RECEIVE \$8.72.
- IF YOU PLEASE JUST THE WEAK TYPE, YOU EXPECT TO RECEIVE \$9.3492.
- SO YOU SHOULD GO AGGRESSIVE.

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# A COUPLE QUESTIONS

- WHY DOES WAR BEGIN IN THE PREVIOUS GAME?

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  - INCOMPLETE INFORMATION. THE RISK WAS WORTH THE RETURN, SO GAMBLING IS OPTIMAL. SOMETIMES IT BACKFIRES.

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- WHY DOES FIGHTING END AFTER THE FIRST BATTLE?

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- WHY DOES FIGHTING END AFTER THE FIRST BATTLE?
  - WAR ONLY STARTED BECAUSE OF INCOMPLETE INFORMATION. FIGHTING REVEALED THAT INFORMATION AND THUS MADE FURTHER FIGHTING UNNECESSARY.

IF WAR RESULTS FROM  
DISAGREEMENT ABOUT RELATIVE  
STRENGTH, THEN IT ENDS WHEN  
OPPONENTS LEARN ENOUGH  
ABOUT EACH OTHER.



# GENERALIZABLE?

- IN THE EXPERIMENT, YOU KNEW THE OPPONENT WAS STRONG IN THE SECOND BARGAINING STAGE.
  - ONLY THE STRONG TYPE CAN WIN A BATTLE.
  - DOES THIS RESULT HOLD IF WEAK TYPE COULD WIN AS WELL (BUT NOT AS OFTEN AS THE STRONG TYPE)?



# GENERALIZABLE? YES.

1. CALCULATE HOW MUCH YOU'D HAVE TO GIVE TO THE STRONG TYPE AFTER FIGHTING ONCE.
2. IN THE FIRST BARGAINING STAGE, OFFER THE REBELS THE AMOUNT THE WEAK TYPE WOULD RECEIVE IN EXPECTATION IF IT FOUGHT A BATTLE.
  - WEAK TYPES WILL ACCEPT.
  - STRONG TYPES WILL REJECT.
3. OFFER THE AMOUNT IN (1) IF THE REBELS REJECT.

# SCREENING

- THE BARGAINING PROCESS **SCREENS** WEAKER TYPES.
  - WEAKER TYPES ACCEPT OFFERS EARLIER.
  - STRONGER TYPES PROVE THEIR STRENGTH BY REJECTING OFFERS AND FIGHTING.

# PRINCIPLE OF CONVERGENCE

- THE PROCESS OF REJECTING OFFERS AND FIGHTING BATTLES CREDIBLY REVEALS INFORMATION, **CONVERGING** EXPECTATIONS ABOUT THE EVENTUAL OUTCOME OF THE WAR.

# PRINCIPLE OF CONVERGENCE

- ONCE THE SIDES HAVE LEARNED ENOUGH ABOUT EACH OTHER, FURTHER FIGHTING CEASES TO BE USEFUL. THE PARTIES NEGOTIATE A SETTLEMENT TO NOT PAY FURTHER COSTS OF WAR.

# WHY CREDIBLE?

- ACTUAL BATTLE REVEALS INFORMATION ABOUT THE STRENGTH OF PARTIES.
- REJECTING OFFERS INDICATES WILLINGNESS TO FIGHT (BOTH IN TERMS OF RESOLVE AND MILITARY STRENGTH).

# WHY CREDIBLE?

- "CHEAP TALK": INCENTIVES TO LIE.
- COSTLY FIGHTING: COSTS OF WAR AND RISK OF LOSING  
INCENTIVIZE TRUTH TELLING.
  - WEAKER TYPES ARE NOT AS WILLING TO PAY THOSE COSTS  
AND SUFFER THOSE RISKS.

# SOURCES OF INFORMATION

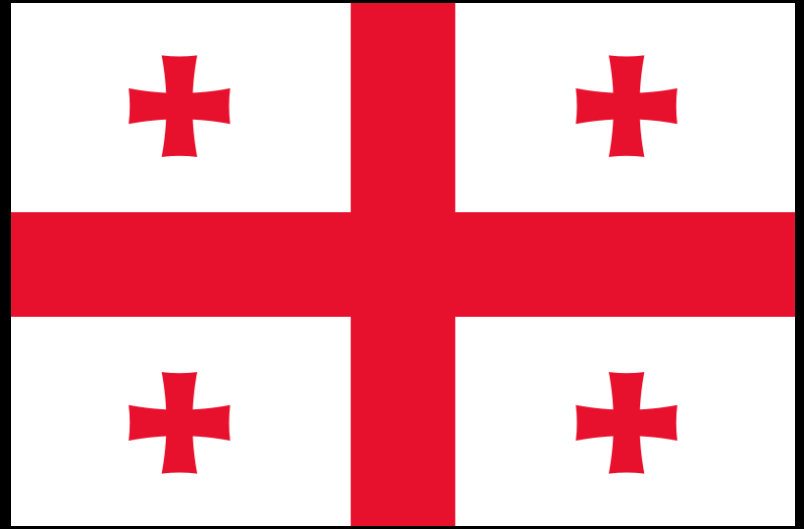
- BARGAINING: WEAK TYPES ACCEPT SMALLER AMOUNTS THAN STRONGER TYPES.
- FIGHTING: STRONG TYPES WIN BATTLES MORE FREQUENTLY THAN WEAKER TYPES.

# RUSSIA-GEORGIA WAR OF 2008





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# BRIEF HISTORY

- GEORGIA IS A FORMER SSR.
- AFTER THE FALL OF THE SOVIET UNION, WAR!
  - SOUTH OSSETIA WAR (1991-1992)
  - WAR IN ABKHAZIA (1992-1993)
- BOTH END IN GEORGIAN DEFEAT AND DE FACTO INDEPENDENCE.

# THE 2008 WAR

- 8/8: GEORGIA TRIES TO RECLAIM SOUTH OSSETIA
- 8/9: RUSSIA DEPLOYS FORCES
- 8/10-8/11: RUSSIA AND ABKHAZIA OPEN UP A WESTERN FRONT
- 8/12: CEASEFIRE

# RESULTS

- 171 GEORGIANS KILLED; 101 KILLED FROM RUSSIA/SOUTH OSSETIA/ABKHAZIA.
- CIVILIAN CASUALTIES ON BOTH SIDES.
- GEORGIA LOSES 25% OF ABKHAZIA AND 40% OF SOUTH OSSETIA IT USED TO CONTROL.
- 20% OF GEORGIA IS NOT CONTROLLED BY GEORGIA.

# SIMPLE EXPLANATION

- GEORGIA WAS UNCERTAIN ABOUT RUSSIAN COMMITMENT TO SOUTH OSSETIA.
- INITIATED THE WAR UNDER THE BELIEF THAT RUSSIA WOULD NOT INTERVENE HEAVILY.
- INTERVENTION CREDIBLY SIGNALLED RUSSIAN PREFERENCES.
- WAR ENDED BECAUSE THE CAUSE (INFORMATION PROBLEM) CEASED TO EXIST.

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# WHY THE "WEAK" FIGHT

- IT IS PUZZLING THAT WEAK ACTORS WITH VERY LITTLE HOPE OF ACHIEVING MILITARY VICTORY OFTEN FIGHT MUCH, MUCH MORE POWERFUL ACTORS.



# EXAMPLE: VIETNAM

## NORTH VIETNAM

- FORCES: ~781,000
  - 287,000 NORTH VIETNAMESE
  - 320,000 CHINESE
- NAPALM: NO
- AIR FORCE: NOT REALLY
- NUKES: NO
- GUNS: AK-47<sub>1</sub>

## SOUTH VIETNAM

- FORCES: ~1,830,000
  - 1,500,000 SOUTH VIETNAMESE
  - 536,000 AMERICAN
- NAPALM: YES
- AIR FORCE: THE BEST
- NUKES: NO
- GUNS: M-16<sub>1</sub>

# WHY THE "WEAK" FIGHT

- BUT THE POINT OF WARS ISN'T TO WIN. IT'S TO RESOLVE THE ORIGINAL CAUSE OF THE WAR.

# WHY THE "WEAK" FIGHT

- BUT THE POINT OF WARS ISN'T TO WIN. IT'S TO RESOLVE THE ORIGINAL CAUSE OF THE WAR.
  - "WEAK" ACTORS MAY THEREFORE FIGHT TO PROVE THEY AREN'T EVEN WEAKER.

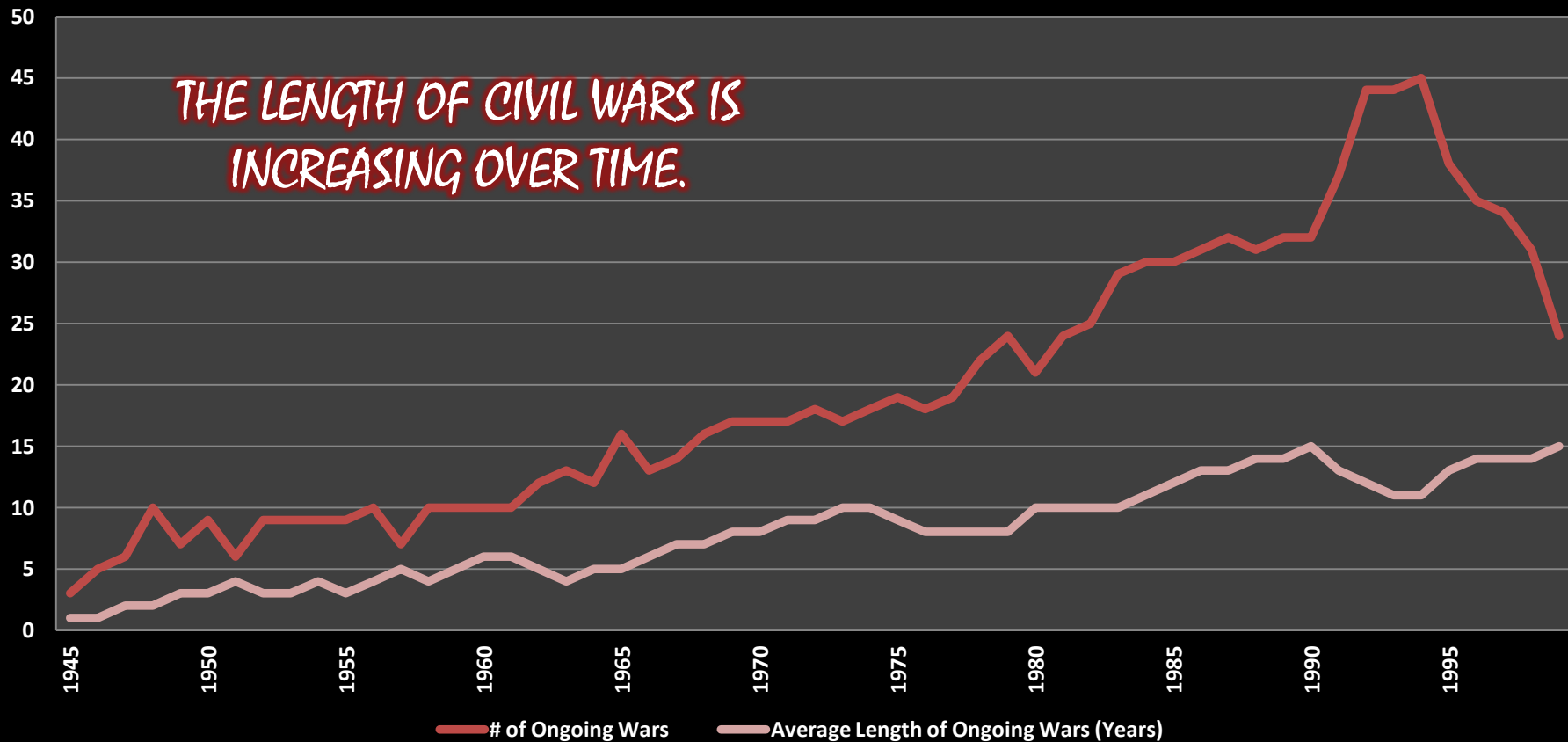
# NOTE

- MOST ANALYSIS OF WAR IS FOCUSED ON INITIATION.
- BUT WAR TERMINATION IS JUST AS IMPORTANT.
  - WE CAN'T UNDERSTAND WHY WARS START UNLESS WE UNDERSTAND WHY THEY END.
  - WHATEVER ENDS THE FIGHT HAS TO HAVE RESOLVED WHATEVER CAUSED THE FIGHT IN THE FIRST PLACE.

# ONE SLIGHT DETAIL...

- MOST INTERSTATE WARS END IN NEGOTIATED SETTLEMENT SHORT OF COMPLETE MILITARY DEFEAT OF ONE SIDE.
- MOST CIVIL WARS **DON'T**.

THE LENGTH OF CIVIL WARS IS  
INCREASING OVER TIME.



# ONE SLIGHT DETAIL...

- MOST INTERSTATE WARS END IN NEGOTIATED SETTLEMENT SHORT OF COMPLETE MILITARY DEFEAT OF ONE SIDE.
- MOST CIVIL WARS **DON'T**.
  - WE WILL EXPLAIN WHY NEXT WEEK.