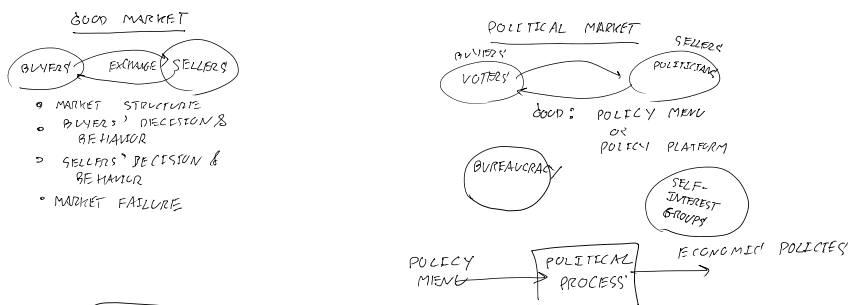


PUBLIC CHOICE : ECONOMIC ANALYSIS OF POLITICAL MARKET

HERE, WE USE OUR ECONOMIC TOOLS & FRAMEWORK TO DESCRIBE/EXPLAIN/UNDERSTAND "POLITICAL MARKET" WHICH COMPOSES OF SEVERAL GROUPS OF PLAYERS IN THE MARKET



REPRESENTATIVE DEMOCRACY

PREFERENCE AGGREGATION → VIA "ELECTION" → OUTCOME WILL DETERMINE WHO WILL BE IN THE OFFICE.

VOTING RULES

- UNANIMITY RULE: EVERYONE MUST AGREE
- MAJORITY VOTING RULE: MORE THAN HALF OF VOTERS MUST AGREE SO THAT A PROJECT GETS IMPLEMENTED.
- LOG ROLLING OR VOTE TRADING: I VOTE FOR YOUR PROJECT AND YOU VOTE FOR MY PROJECT.

LET'S START W/ PREFERENCE AGGREGATION VIA MAJORITY VOTING RULE

(MVR)

CONSIDER 3 PEOPLE. THEY ARE ABOUT TO CHOOSE "LEVEL OF MISSILE PROVISION":

S: SMALL AMOUNT OF PROVISION

M: MEDIUM " " " "

L: LARGE " " " "

CHOICE	NUT	MEW	MAX
1 ST RANK	S	L	M
2 ND RANK	M	M	L
3 RD RANK	L	S	S

LET'S USE PAIRWISE-VOTING:

S vs. M: M WINS (2:1)

M vs. L: M WINS (2:1)

M vs. L: M WINS (2:1)

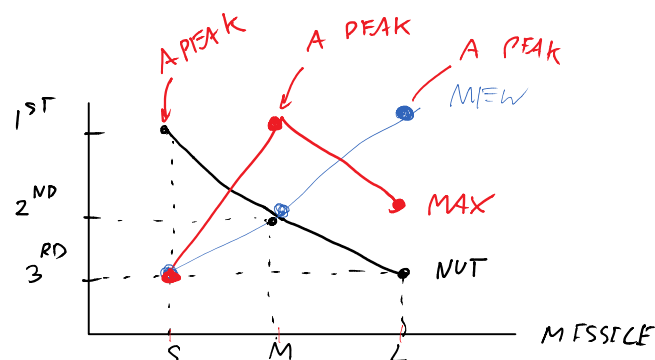
M vs. S: M WINS (2:1)

S vs. L: L WINS (2:1)

L vs. M: M WINS (2:1)

CONCLUSION, REGARDLESS OF HOW VOTING IS ARRANGED, "MEDIUM" IS THE "CLEAR WINNER"

SO, IN THIS CASE, MAJORITY VOTING RULE DELIVERS CONSISTENT RESULT/OUTCOME.



ARRANGEMENT ①

ARRANGEMENT ②

ARRANGEMENT ③

A PEAK: THE CHOICE THAT A VOTER PREFERS AT

A SINGLE-PEAKED PREFERENCES: TO HAVE SINGLE-PEAKED PREFERENCE UTILITY MUST FALL CONSISTENTLY WHEN MOVING AWAY FROM HIS/HER MOST PREFERRED OUTCOME.

(DOUBLE-PEAKED PREFERENCES)

ER
MOST

A
E,

M
EFFORTED

✓ 1

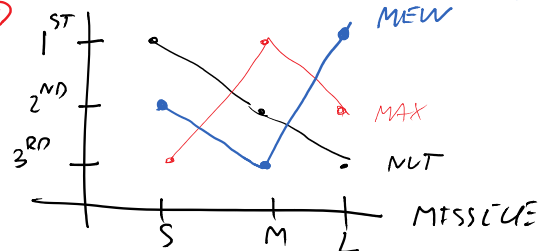
• SO, IN THIS CASE, MAJORITY VOTING RULE (PLURALITY)

CONSISTENT RESULT/OUTCOME.

(DOUBLE-PEAKED PREFERENCE

NOW, HOW ABOUT THE FOLLOWING TABLE?

	NUT	MEW	MAX
1 ST	S	L	M
2 ND	M	S	L
3 RD	L	M	S



LET'S USE PAIRWISE VOTING AGAIN TO AGGREGATE THEIR PREFERENCES.

S VS. M : S WINS (2:1)

ARRANGEMENT (1)

S' VS. L : L WINS (2:1)

M VS. L : M WINS (2:1)

ARRANGEMENT (2)

M VS. S : S WINS (2:1)

S VS. L : L WINS (2:1)

ARRANGEMENT (3)

L VS. M : M WINS (2:1)

① HERE, MVR FAILS TO DELIVER A CONSISTENT RESULT!
THE RESULT/OUTCOME DOES DEPEND ON HOW VOTING IS ARRANGED.

THIS SITUATION IS SO CALLED "VOTING PARADOX"

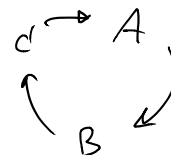
② PROBLEM OF AGENDA MANIPULATION ARISES!

AGENDA MANIPULATION : A PROCESS OF ORGANIZING THE ORDER IN WHICH VOTES ARE TAKEN TO ENSURE A FAVORABLE OUTCOME.

③ "VOTE CYCLING" ARISES : VOTING PROCEDURE CAN CONTINUE FOREVER W/O FINDING A CLEAR WINNER.

EX:

A VS. B : A WINS
A VS. C : C WINS
C VS. B : B WINS
B VS. A : A WINS



s)

\$
HIER
OUTCOME,
DOWN
UP AGAIN!

LET'S DISCUSS MORE ABOUT "DOUBLE-PEAKED PREFERENCES"?

MEW

1 ST	LARGE SPENDING (L)
2 ND	SMALL SPENDING (S)
3 RD	MEDIUM SPENDING (M)

$L \succ S \succ M$

Q: IN REALITY, IS "DOUBLE-PEAKED PREFERENCES" PLAUSIBLE?

A: IT IS PLAUSIBLE. LET'S SEE

POSSIBLE + REASONABLE

SUPPOSE COMMUNITY IS ABOUT TO SPEND MONEY ON BUILDING A PUBLIC PARK. THERE ARE 3 CHOICES: L, M, S
NEXT, TAX SHARE THAT A MEMBER MUST CONTRIBUTE DEPENDS ON THE SIZE OF THE PARK.
WE FURTHER SUPPOSE THAT MEW HAS PRIVATE SUBSTITUTES: HER OWN GARDEN AT HOME.

SO, MEW MIGHT PREFER TO USE HER OWN GARDEN IF LARGE PARK IS NOT BUILT. SO DOUBLE-PEAKED PREFERENCES MIGHT EMERGE WHEN PRIVATE SUBSTITUTE IS AVAILABLE!

OTHER CONSIDERATION FOR THE OCCURANCE OF DOUBLE-PEAKED PREF.

OBSERVE THAT THE CHOICES HERE HAS A SINGLE DIMENSION OR CHARACTERISTIC: SIZE OR QUANTITY,

LARGE
MEDIUM
SMALL } SINGLE DIMENSION OF THE CHOICE

HOWEVER, IF THE CHOICES/ ISSUES COMMUNITY WANTS TO VOTE HAVE MULTIPLE DIMENSION, MULTI-PEAKED PREFERENCE MIGHT OCCUR.

EX:

COMMON AREA DOWNSTAIRS

- ① STUDENT LOUNGE
- ② POOL
- ③ FITNESS ROOM

LET'S TURN TO THE CASES WHERE ALTERNATIVES CAN BE RANKED ON A SINGLE CHARACTERISTIC, LIKE SIZE OR QUANTITY.

THE MEDIAN VOTER: THE VOTER WHOSE PREFERENCES LIE IN THE MIDDLE OF THE SET OF ALL VOTERS' PREFERENCES.

THE MEDIAN VOTER THEOREM: AS LONG AS ALL PREFERENCES ARE SINGLE-PEAKED, THE OUTCOME OF MAJORITY VOTING WILL REFLECT THE PREFERENCES OF THE MEDIAN VOTER.

EX:

PREFERRED LEVEL OF RUB-NONG EXPENDITURE.

VOTER	EXPENDITURE (BAHT)
A	50,000
B	100,000
C	150,000
D	160,000
E	200,000

LET'S VOTE:

MOVING FROM 0 → 50,000: ALL VOTER AGREED W/ THIS MOVE (5:0)
MOVING FROM 50,000 → 100,000: B, C, D, E SAY "YES"
A SAYS "NO"

MOVING FROM 100,000 $\rightarrow$ 150,000 :
 SO, 100,000 WOULD WIN W/ 45%
 C, D, E SAY "YES"
 A, B SAY "NO"

MOVING FROM 150,000 $\rightarrow$ 160,000 :
 SO, 150,000 WOULD WIN W/ 3:2
 D, E SAY "YES"
 A, B, C SAY "NO"
 SO, 150,000 WOULD WIN W/ 3:2

"150,000" IS THE CLEAR WINNING CHOICE FROM MAJORITY VOTING.

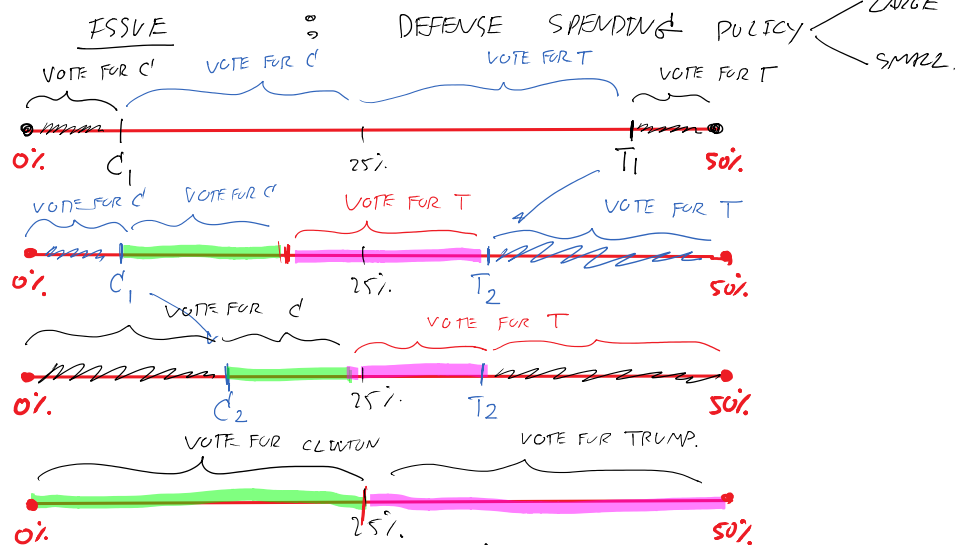
WE CLEARLY SEE THAT 'THE OUTCOME OF THE VOTING' IS EXACTLY EQUAL TO THE PREFERENCE OF THE MEDIAN VOTER, MR. D!

IN POLITICAL COMPETITION

EX: 2 POLITICIANS :

REPUBLICAN
 (T)
 DONALD TRUMP

DEMOCRATS
 (C)
 HILLARY CLINTON



OUTCOME ?
 BOTH POLITICIANS WILL SUPPORT THE OUTCOME PREFERRED BY THE MEDIAN VOTER AND GET THE SAME NUMBER OF VOTES.

LESSON LEARNED

NOTICE THAT THE TWO POLITICIANS 'HERE' DO NOT NEED TO KNOW THE ENTIRE POPULATION'S PREFERENCES IN ORDER TO "PREDICT" THE OUTCOME OF THE VOTING. ALL THEY NEED TO UNDERSTAND IS PREFERENCES OF THE MIDDLE-OF-THE-ROAD VOTER! (= MEDIAN VOTER)

PIVOTAL
 VOTER

A FLAW IN MEDIAN VOTER THEOREM : OBSERVE THAT TO GET

A WINNING OUTCOME, THE OUTCOME IS DETERMINED BY RANKING OF VOTERS, I.E, WHO GOT HIGHER AMOUNT OF VOTES, NOT BY "INTENSITY OF PREFERENCES"

(EX:)

$N = 1001$ VOTERS

COST OF BUILDING A MONUMENT = 40,040 BAHIT
(= EACH VOTER MUST CONTRIBUTE 40 BAHIT)

LET'S VOTE: SUPPOSE 500 VOTERS ACKNOWLEDGE YOUR CONTRIBUTION TO THE COMMUNITY AND WILLING TO PAY AT MOST 100 BAHIT EACH TO FINANCE THIS MONUMENT PROJECT.

501 VOTERS FAIL TO SEE YR CONTRIBUTION AND NOT WILLING TO PAY AT ALL.

VIA MAJORITY VOTING RULE, THE PROJECT WILL NOT PASS

HOWEVER,

SOCIAL MARGINAL BENEFIT OF THIS PROJECT	>	SOCIAL MARGINAL COST
$500 \cdot 100 + 501 \cdot 0$		40,040
= 50,000		

NOTICE THAT IT IS SOCIALLY EFFICIENT TO BUILD THE MONUMENT
SINCE SOCIAL MARGINAL BENEFIT > SOCIAL MARGINAL COST.
(50,000) (40,040)

HOWEVER, THE MONUMENT DOES NOT GET BUILT SINCE
THE MEDIAN VOTER DOES NOT WANT TO MAKE IT!

THEREFORE, SOCIALLY INEFFICIENT OUTCOME MAY ARISE
BECAUSE MVT DOES NOT "REFLECT"
"INTENSITY OF PREFERENCES"

HOW STRONG/WEAK COMMUNITY AS A
WHOLE OR MEMBERS FEEL ABOUT
AN ISSUE.

LOGROLLING: A SYSTEM THAT ALLOW PEOPLE TO TRADE VOTES AND THEREFORE REGISTER HOW STRONGLY THEY "FEEL" ABOUT VARIOUS ISSUES.

PUNCTUATION OF THIS LOGROLLING SOMETIMES IMPROVE SOCIAL WELFARE AND SOMETIMES IT DOES NOT.

CONSIDER A COMMUNITY W/ THREE MEMBERS:

	ANNA	BOB	CINDY		NUMBERS: BENEFITS RECEIVED
PROJECT	ANNA	BOB	CINDY	TOTAL	NET BENEFITS
HOSPITAL	200	-50	-55	95	
LIBRARY	-40	150	-30	80	
POOL	-120	-60	400	220	

FACT #1 ALL PROJECTS ARE SOCIALLY DESIRABLE (WHY?) SINCE TOTAL NET BENEFITS ARE POSITIVE.

FACT #2 UNFORTUNATELY, W/ MAJORITY VOTING RULE, ALL PROJECTS WILL BE REJECTED.

FACT #3 LET'S ALLOW THEM TO DO VOTE TRADING OR LOGROLLING:

- LET'S ANNA TALKS W/ BOB: ANNA VOTES FOR LIBRARY AND, IN RETURN, BOB VOTES FOR HOSPITAL.

A & B

SO, H AND L GET BUILT.

$$\begin{aligned} \text{ANNA GETS} &= 200 - 40 = +160 \quad \text{😊} \\ \text{BOB GETS} &= +150 - 50 = +100 \quad \text{😊} \end{aligned}$$

- LET'S BOB TALKS W/ CINDY: BOB VOTES FOR POOL CINDY VOTES FOR LIBRARY

B & C

$$\begin{aligned} \text{BOB GETS} &= 150 - 60 = 90 \quad \text{😊} \\ \text{CINDY GETS} &= 400 - 30 = 370 \quad \text{😊} \end{aligned}$$

- LET'S ANNA TALKS TO CINDY: ANNA VOTES FOR POOL CINDY VOTES FOR HOSPITAL IN RETURN.

A & C

SO, H AND P GET BUILT.

$$\begin{aligned} \text{ANNA GETS} &= 200 - 120 = 80 \quad \text{😊} \\ \text{CINDY GETS} &= 400 - 55 = 345 \quad \text{😊} \end{aligned}$$

CONCLUSION LOGROLLING CAN IMPROVE SOCIAL WELFARE.

HOWEVER, LOGROLLING MAY ALSO LOWER SOCIAL WELFARE.

	A	B	C	TOTAL NET BENEFITS
HOSPITAL	200	-110	-105	-15
LIBRARY	-40	150	-120	-10
POOL	-270	-140	400	-10

• ALL PROJECTS SHOULD NOT GET PASSED SINCE TOTAL NET

Pool -270 -140 400 -10

• ALL PROJECTS SHOULD NOT GET PASSED SINCE TOTAL NET BENEFITS ARE **NEGATIVE**.

• W/ LOGROLLING, BAD PROJECTS MAY GET PASSED!

EX: A & B $\Rightarrow$ ANNA VOTES FOR LIBRARY &
BOB VOTES FOR HOSPITAL, IN RETURN

$$\text{ANNA GETS} = 200 - 40 = 160$$

$$\text{BOB GETS} = 150 - 110 = 40$$

$$\text{CINDY GETS} = -105 - 120 = \textcircled{-225}$$

AT THE EXPENSE
OF OTHER MEMBER
(HERBIE, CINDY)

ALL DRAWBACKS OF VOTING RULE ARE HIGHLIGHTED SO FAR.

① MAJORITY VOTING RULE MAY DELIVER INCONSISTENT RESULTS

- VOTING PARADOX
- VOTE CYCLING
- AGENDA MANIPULATION

} ORIGINATE FROM
"DOUBLE-PEAKED PREFERENCES"

② W/ MAJORITY VOTING RULE, SOCIALLY EFFICIENT PROJECT
MAY NOT BE IMPLEMENTED (EX: THINK ABOUT MONUMENT
EXAMPLE)
B/C MVT DOES NOT TAKE INTO A/C

INTENSITY OF VOTERS' PREFERENCES.

③ MVT + LOBBYING SOMETIMES REDUCE SOCIAL
WELFARE; BAD PROJECTS MAY GET IMPLEMENTED.

THEN PROFESSOR KENNETH J. ARROW (1972)
ASKED AN IMPORTANT QUESTION :

CAN WE HAVE "ANY ETHICALLY ACCEPTABLE METHOD"
FOR AGGREGATING INDIVIDUAL PREFERENCES INTO
COLLECTIVE PREFERENCES THAT IS FREE FROM
DIFFICULTIES WE DISCUSSED SO FAR?

ARROW SAID THAT "A GOOD VOTING RULE" MUST
FULFILL THE FOLLOWING PROPERTIES / CRITERIA :

- ① IT MUST PRODUCE A CONSISTENT DECISION EVEN
WE HAVE DOUBLE-PEAKED PREFERENCES OR
WHATEVER THE CONFIGURATION OF VOTERS' PREFERENCES.
- ② THE RULE MUST BE RESPONSIVE TO
INDIVIDUAL PREFERENCES. EX: IF ALL VOTERS'

IN THIS ROOM SAY THAT $A \succ B$, THE RULE MUST PRODUCE THE OUTCOME SUCH THAT $A \succ B$.

③ THE RULE MUST BE CONSISTENT:

IF $A \succ B$ AND $B \succ C$, THEN $A \succ C$.

④ NO DICTATORSHIP: SOCIAL PREFERENCES MUST NOT REFLECT PREFERENCES OF ONLY ONE INDIVIDUAL.