

STATA AND THE ONE-ARMED BANDIT

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FEATURES OF THE GERMAN 6/49 LOTTERY GAME

- Punters choose 6 out of 49 Integers on Game Board, pay 75 Eurocents (\approx 1 US-\$)
- Separately: Super Number from 0 to 9
- Parimutuel Lottery: Winnners get fixed share of stakes bet
 - Win if at least 3 out of 6 correct
 - Jackpot: 6 out of 6 correct + Super Number

- Number of Combinations:

$$= 10 \cdot \text{comb}(49, 6) = 139,838,160$$

$$\binom{49}{6} * 10 = 139,838,160$$

- Draw is pure random event
- \Rightarrow Maximize payoff conditional on having won

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INTRODUCTION II I

1	2	3	✖	5	✖	7
8	9	10	11	✖	13	14
15	16	17	✖	19	20	21
22	23	✖	25	26	27	28
29	✖	31	32	33	34	35
36	37	38	39	40	41	42
43	44	45	46	47	48	49
5	4	9	0	2	3	1

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✖	30	31	32	33	✖	35
36	37	38	39	40	41	42
✖	44	✖	46	47	✖	49
5	4	9	0	2	3	1

FIGURE 1: Game Board German 6/49 Lotto

INTRODUCTION III



FIGURE 2: Median Stakes Bet in German 6/49 Lotto

PROBLEM SETUP

- Problem: Data on lottery reside on the internet in two zip-files.
- How can data be retrieved using Stata w/o any human intervention?

SETTING UP THE RETRIEVAL

- Data are renewed on Monday and Thursday around noon.
- Instruct Stata to retrieve them automatically, save with date in filename.
- Step one: Write `retrieve.ado`, containing retrieval instructions
- Step two: Write `myretrieval.do`-file, call your `ado`-file from there, add instructions to `save`
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AUTOMATIC RETRIEVAL I

STEP ONE, USEFUL COMMANDS FOR AUTOMATIC RETRIEVAL

- `copy` retrieves data from internet (instead of firing up browser, right-click, save as)
- `unzipfile` lets you unpack zipped archives from inside Stata
 - \Rightarrow No Third-Party Software necessary
 - Status below undocumented ?
- `copy http://www.../lottosa.zip lottosa.zip`
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`unzipfile lottosa.zip`
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- `infile lottowed.txt, clean (destring, rowsort from ssc, mdy())` for date of draw) and save to tempfile
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AUTOMATIC RETRIEVAL II

STEP TWO, WRITE MYRETRIEVAL.DO-FILE

- ```
*call your retrieve.ado
retrieve
*save with current date
tokenize `c(current_date)'
save
C:/Users/`c(username)'/Documents/Lotto`1'`2'`3'
```

## STEP THREE, SET UP TASK SCHEDULER

- Instruct Windows Task Scheduler to call Stata, execute do-file
- Consult [GS], chap. C.6, for Stata in Batch Mode

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AUTOMATIC RETRIEVAL III

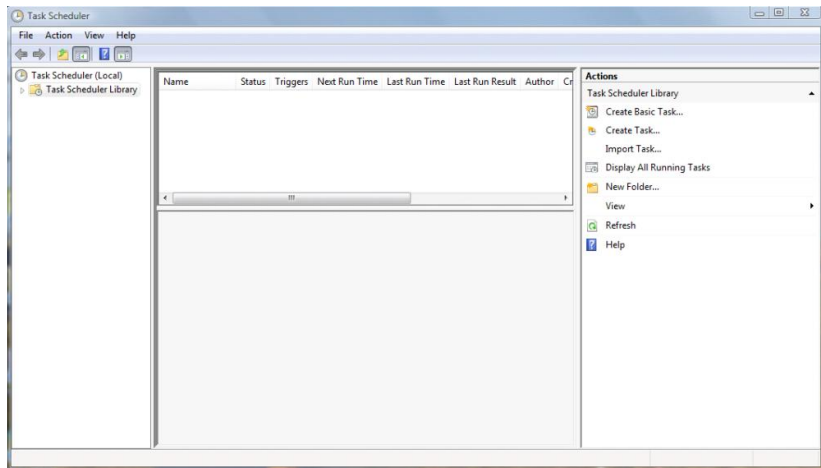


FIGURE 3: The Windows Task Scheduler

AUTOMATIC RETRIEVAL IV

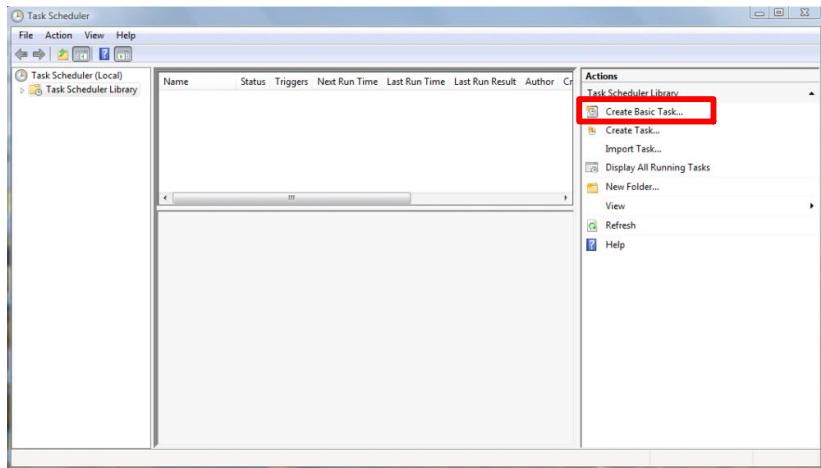


FIGURE 4: Call the Wizard in the Task Scheduler

AUTOMATIC RETRIEVAL V

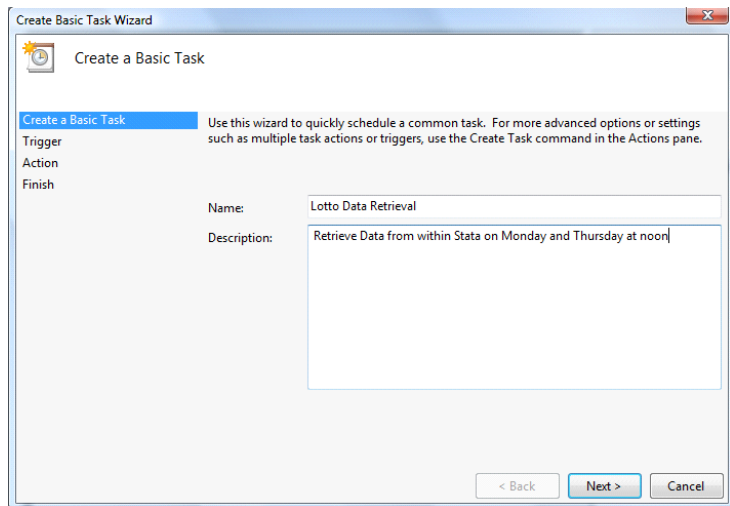


FIGURE 5: Step 1 in the Wizard

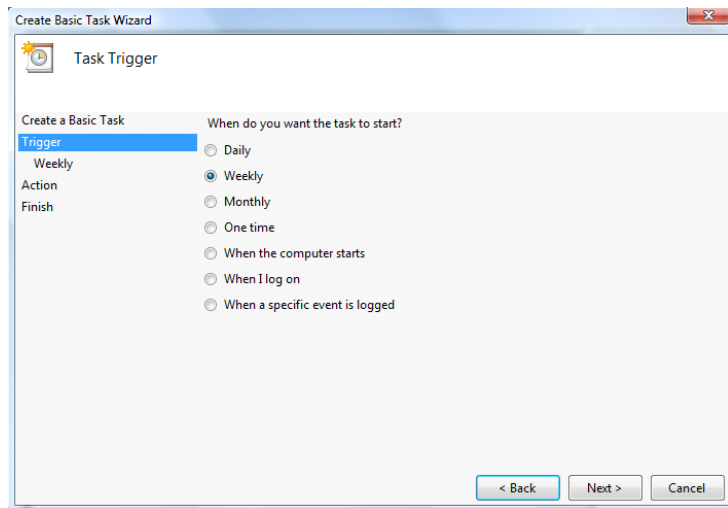


FIGURE 6: Step 2 in the Wizard

AUTOMATIC RETRIEVAL VII

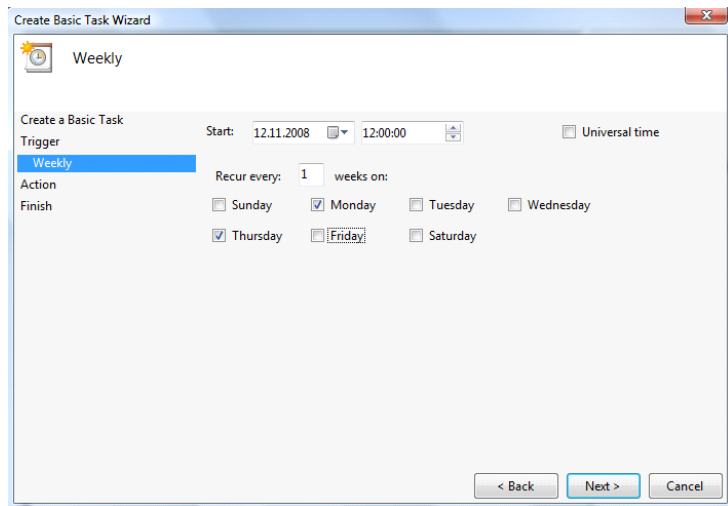


FIGURE 7: Step 3 in the Wizard

AUTOMATIC RETRIEVAL VIII

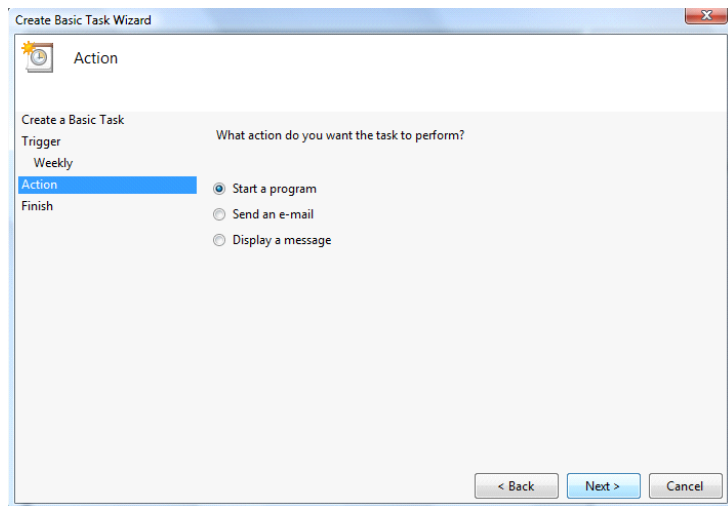


FIGURE 8: Step 4 in the Wizard

AUTOMATIC RETRIEVAL IX

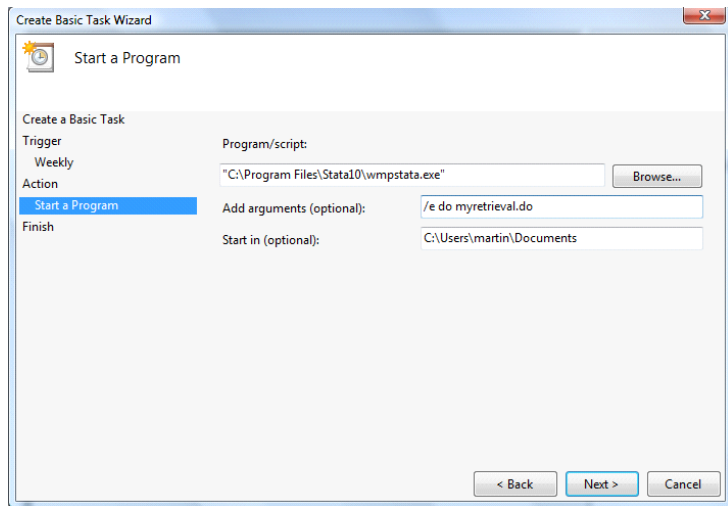


FIGURE 9: Step 5 in the Wizard

AUTOMATIC RETRIEVAL X

Create Basic Task Wizard

Summary

Create a Basic Task

Trigger

Weekly

Action

Start a Program

Finish

Name: Lotto Data Retrieval

Description: Retrieve Data from within Stata on Monday and Thursday at noon

Trigger: Weekly; At 12:00 every Monday, Thursday of every week, starting 12.11.2

Action: Start a program; "C:\Program Files\Stata10\wmpstata.exe" /e do myretri

Open the Properties dialog for this task when I click Finish

When you click Finish, the new task will be created and added to your Windows schedule.

< Back Finish Cancel

FIGURE 10: Step 6 in the Wizard

MAXIMIZING CONDITIONAL PAYOFFS...

- Henze and Riedwyl (1998) cite covariates to analyze number combinations.
 - Easy one: Number of Edge Numbers
 - Human beings tend to stay away from edges (of gameboard)
- Number of Birthday Numbers (1-31)
 - Punters tend to predict birthday numbers
 - For lack of random mechanism?
- Arithmetic Progressions
 - Punters tend to employ math to arrive at combinations
 - "Start at birthday, add 3"
 - Measured via "Arithmetic Complexity": "Number of positive differences between any two numbers in a combination, minus (6-1)" (Henze and Riedwyl, 1998, p. 52)

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ANALYSIS II: COVARIATES

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22	23	24	25	26	27	28
29	30	31	32	33	34	35
36	37	38	39	40	41	42
43	44	45	46	47	48	49

EN: 1
BN: 6
AC: 1

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8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	32	33	34	✘
36	37	38	39	40	41	✘
43	44	✘	46	✘	48	49

EN: 6
BN: 2
AC: 8

	9	11	13	17	19	21
9						
11	2					
13	4	2				
17	8	6	4			
19	10	8	6	2		
21	12	10	8	4	2	

	1	6	35	42	45	47
1						
6	5					
35	34	29				
42	41	36	7			
45	44	39	10	3		
47	46	41	12	5	2	

FIGURE 11: Edge Numbers, Birthday Numbers and Arithmetic Complexity

ANALYSIS III: ARITHMETIC COMPLEXITY

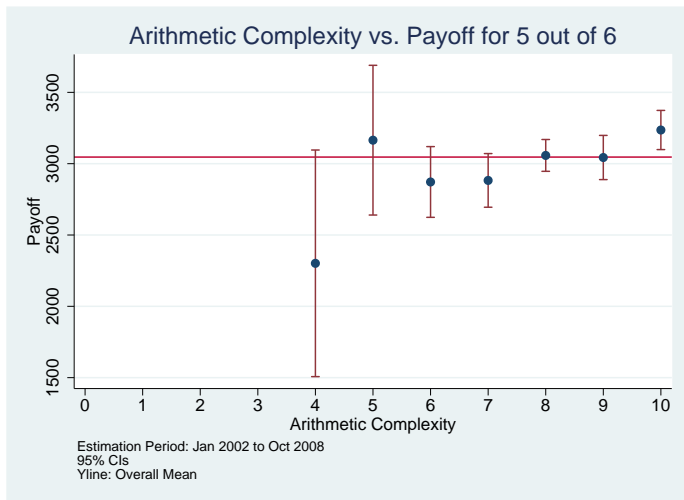


FIGURE 12: Arithmetic Complexity vs. Payoff for “5 out of 6”

ANALYSIS IV: EDGE NUMBERS

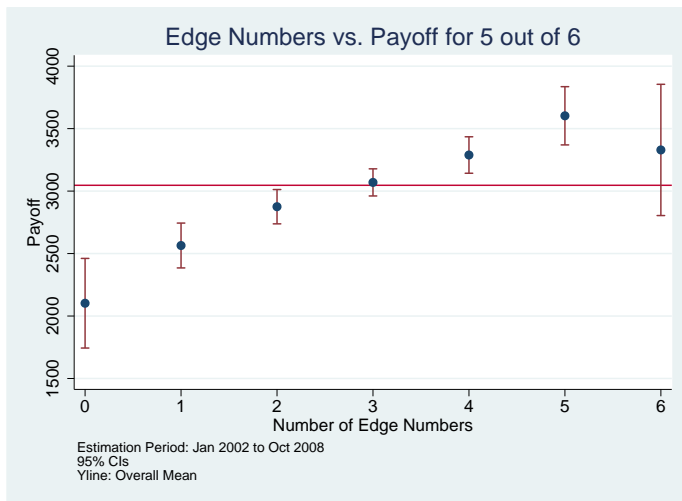


FIGURE 13: Edge Numbers vs. Payoff for “5 out of 6”

ANALYSIS V: BIRTHDAY NUMBERS

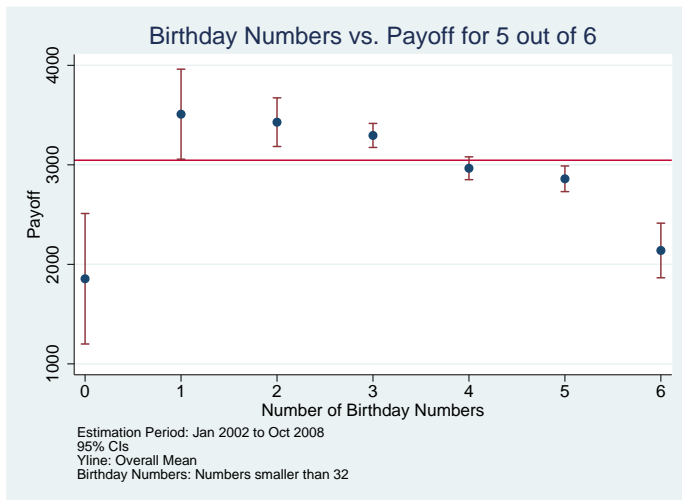


FIGURE 14: Birthday Numbers vs. Payoff for “5 out of 6”

Thank you for your attention!

Henze, N. and Riedwyl, H. (1998). How to Win More: Strategies for Increasing a Lottery Win. B&T.