STATA AND THE ONE-ARMED BANDIT

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INTRODUCTION I

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:

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. di %15.0fc comb(49,6)*10
    139,838,160
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$\binom{49}{6} * 10 = 139,838,160$
- Draw is pure random event
- $\Rightarrow$ Maximize payoff conditional on having won

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FIGURE 1: Game Board German 6/49 Lotto

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

AUTOMATION

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`
- Step three: Let OS (examples in Windows Vista Business 32-bit) call batch-mode Stata at specified time

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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
  - ⇒ No Third-Party Software necessary
  - Status below undocumented ?

- `copy http://www.../lottosa.zip lottosa.zip`
  `copy http://www.../lottowed.zip lottowed.zip`
  `unzipfile lottosa.zip`
  `unzipfile lottowed.zip`
- `infile` lottowed.txt, clean (`destring, rowsort` from ssc, `mdy()` for date of draw) and save to `tempfile`
- `infile` lottosa.txt, clean and `append tempfile`d lottowed.txt
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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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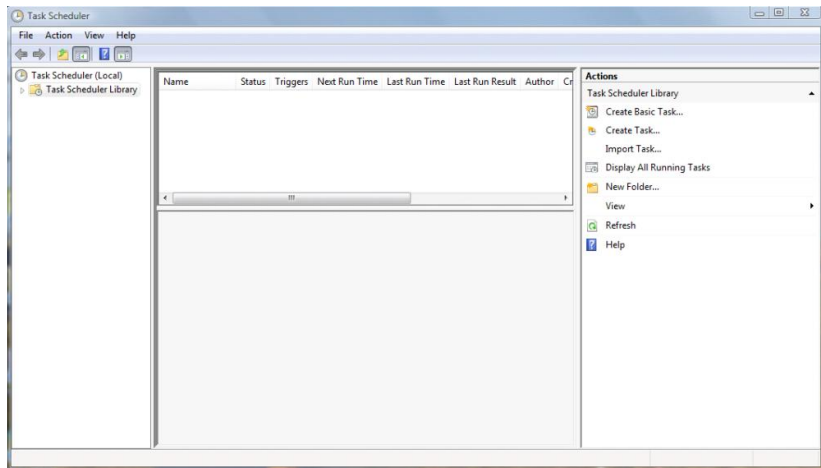* *call your retrieve.ado
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FIGURE 3: The Windows Task Scheduler
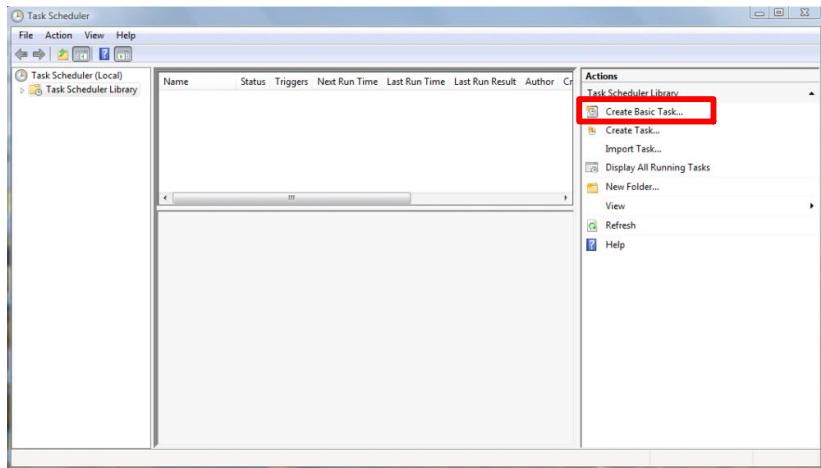
FIGURE 4: Call the Wizard in the Task Scheduler
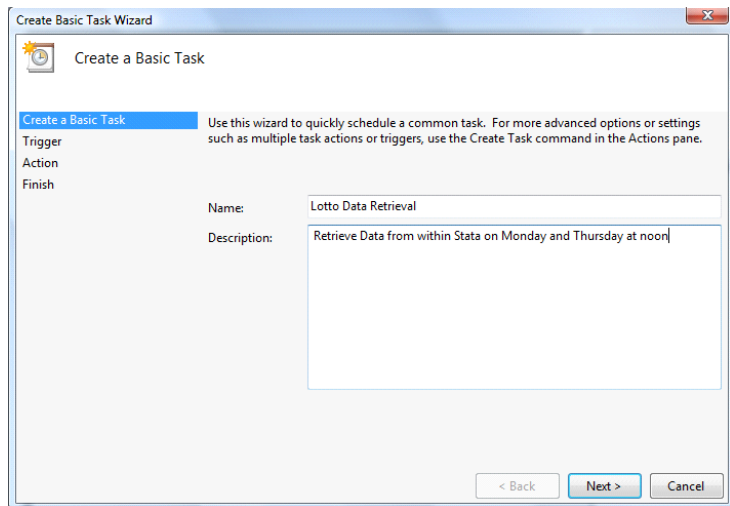
FIGURE 5: Step 1 in the Wizard
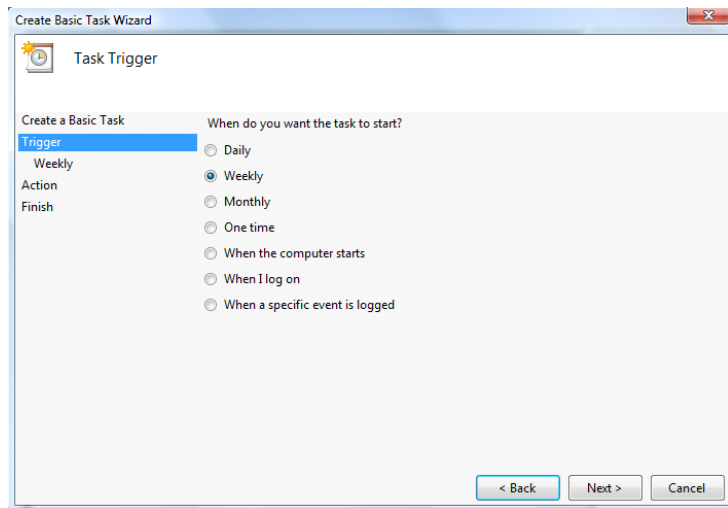
FIGURE 6: Step 2 in the Wizard
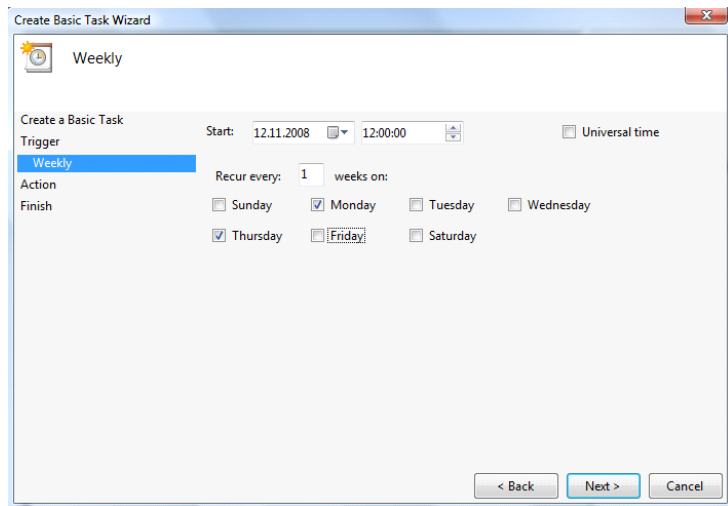
FIGURE 7: Step 3 in the Wizard
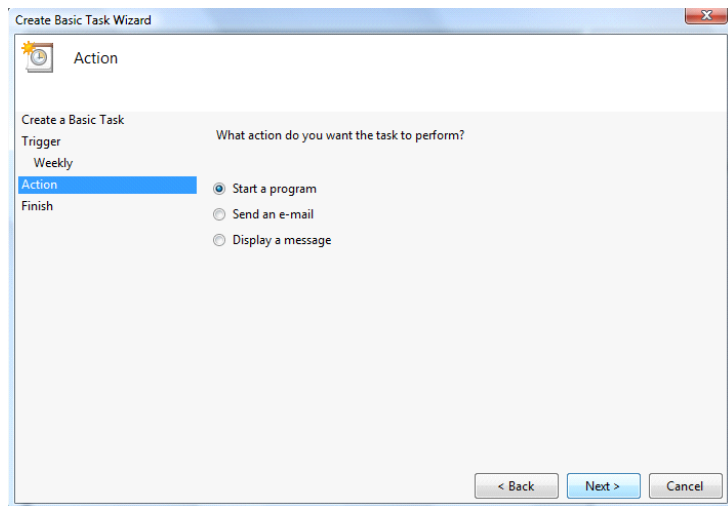
FIGURE 8: Step 4 in the Wizard
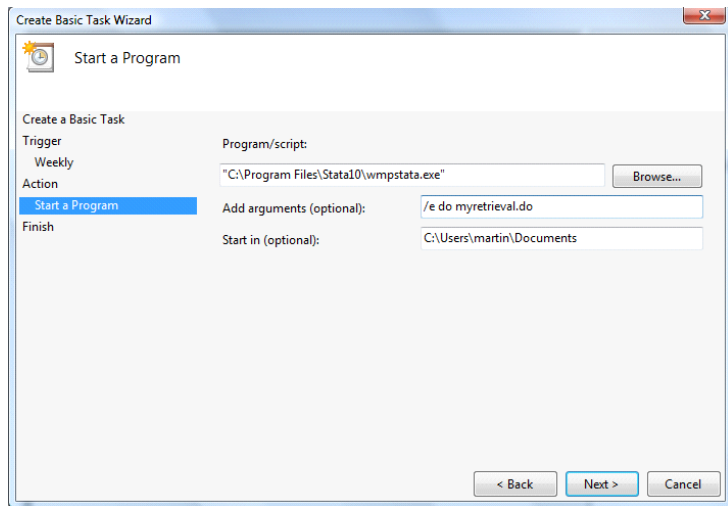
FIGURE 9: Step 5 in the Wizard

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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FIGURE 11: Edge Numbers, Birthday Numbers and Arithmetic Complexity
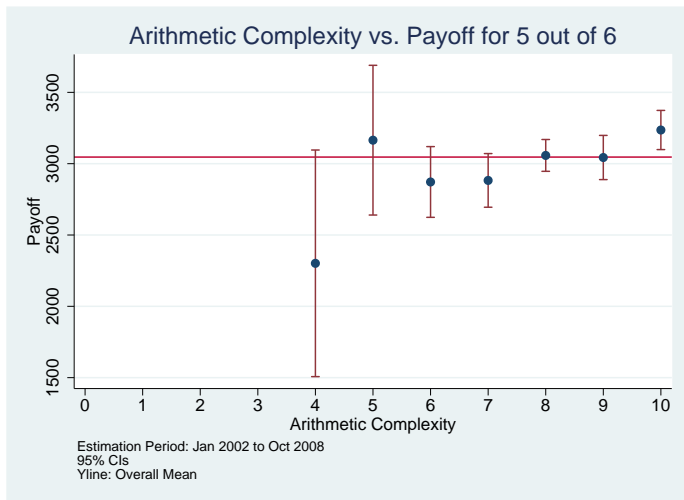
FIGURE 12: Arithmetic Complexity vs. Payoff for "5 out of 6"

ANALYSIS IV: EDGE NUMBERS
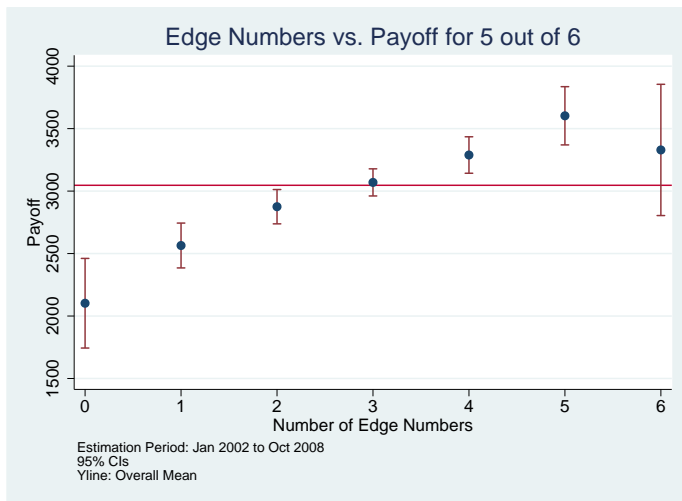
FIGURE 13: Edge Numbers vs. Payoff for "5 out of 6"

ANALYSIS V: BIRTHDAY NUMBERS
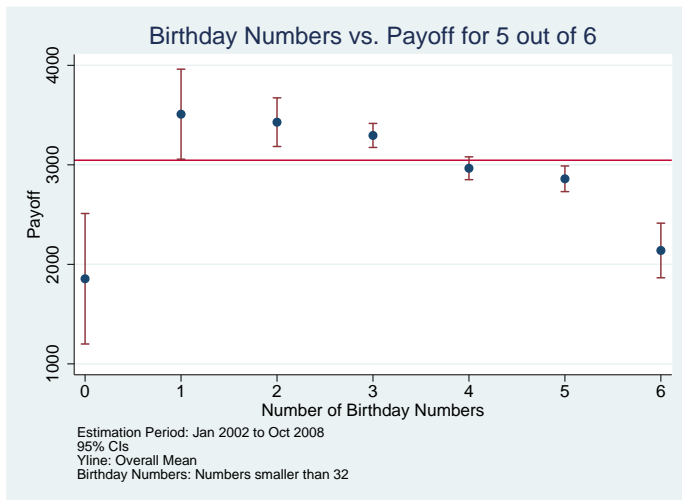
FIGURE 14: Birthday Numbers vs. Payoff for "5 out of 6"

Thank you for your attention!

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