STATA AND THE ONE-ARMED BANDIT

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INTRODUCTION

FEATURES OF THE GERMAN 6/49 LOTTERY GAME

- Punters choose 6 out of 49 Integers on Game Board, pay 75 Eurocents (≈ 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
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- Number of Combinations:

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\binom{49}{6} \times 10 = 139,838,160
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- 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
**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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**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
  - ⇒ No Third-Party Software necessary
  - ⇒ Status below undocumented ?

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- *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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Figure 3: The Windows Task Scheduler
**Figure 4:** Call the Wizard in the Task Scheduler
FIGURE 5: Step 1 in the Wizard

Create Basic Task Wizard

Name: Lotto Data Retrieval

Description: Retrieve Data from within Stata on Monday and Thursday at noon
**Figure 6:** Step 2 in the Wizard
AUTOMATIC RETRIEVAL VII

**Figure 7:** Step 3 in the Wizard
**Figure 8:** Step 4 in the Wizard
**Figure 9:** Step 5 in the Wizard
**AUTOMATIC RETRIEVAL X**

**Figure 10:** Step 6 in the Wizard

![Create Basic Task Wizard](image_url)
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
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  - Measured via “Arithmetic Complexity”: “Number of positive differences between any two numbers in a combination, minus (6-1)” (Henze and Riedwyl, 1998, p. 52)
**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
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**Analysis II: Covariates**

**Figure 11:** Edge Numbers, Birthday Numbers and Arithmetic Complexity
Figure 12: Arithmetic Complexity vs. Payoff for “5 out of 6”

Estimation Period: Jan 2002 to Oct 2008
95% CIs
Yline: Overall Mean

Analysis III: Arithmetic Complexity
Analysis IV: Edge Numbers

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

Estimation Period: Jan 2002 to Oct 2008
95% CIs
Yline: Overall Mean
Figure 14: Birthday Numbers vs. Payoff for “5 out of 6”
Thank you for your attention!
REFERENCES