



IQ and gambling behaviour: An analysis of horse race betting participation and expenditure using individual-level data

(co-research with Niko Suhonen, Jani Saastamoinen, David Forrest and Tuomo Kainulainen)

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This study

- Recent literature suggests that intelligence is positively associated with economic outcomes involving risky decisions (Grinblatt et al. 2012) and a higher probability of becoming an inventor (Aghion et al. 2018). However, the relationship between intelligence and gambling is not understood yet.
- This study investigates how intelligence is associated with gambling participation and expenditure using a unique data set from Finland.
- To explore this, we merge three individual-level data sets:
 1. one year period online betting data from a Finnish monopoly horse race betting operator
 2. background information on the Finnish adult population from Statistics Finland
 3. intelligence test (IQ) results conducted by the Finnish Defence Forces (FDF)

Horse race betting in Finland

- Betting on horse racing in Finland is organized by Veikkaus Ltd (formerly Fintoto Ltd), which has a legal monopoly on-track and off-track betting (Internet and betting shops, bars, etc.)
- According prevalence surveys, horse race betting online or offline participates 5-7% of the respondents during last 12 months (5.4% in 2015 and 6.8% in 2011).
- Online gambling service initiated in 2002, during the data set period around 60% of the aggregate volume of betting is online (135.5M€ of 230.7M€ in 2015).

Individual-level horse race betting data

- This study employs with one year period (from 9/2015 to 8/2016) online betting data from Finnish monopoly operator
 - Data contains all betting types and transactions.
 - We observe in total 45 090 bettors, of which around 75% were males
 - This data set is aggregated on daily level.

Socio-demographics

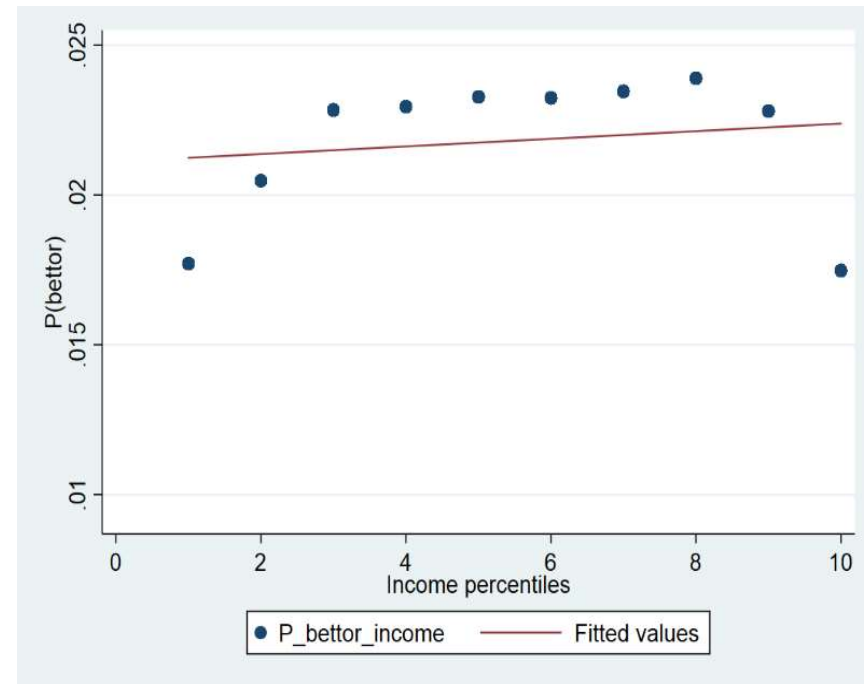
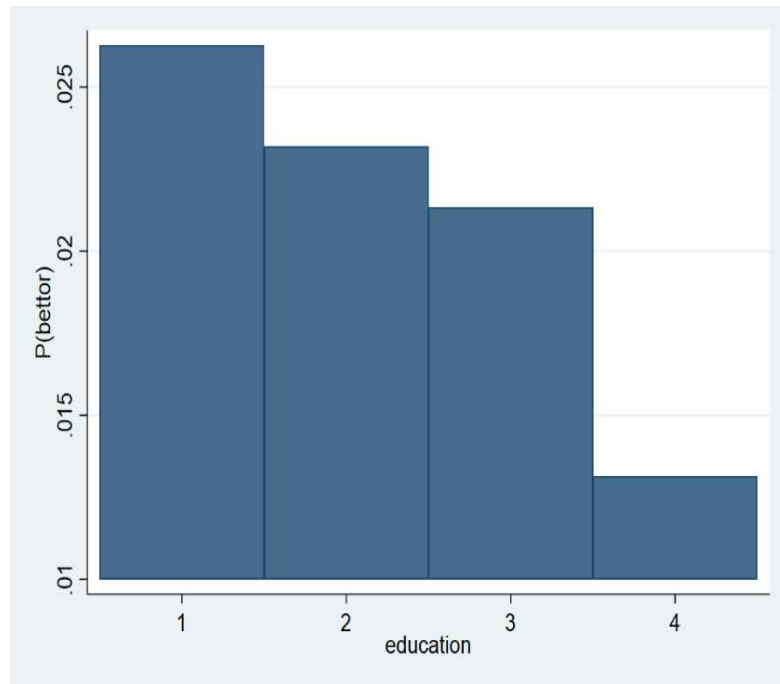
- This study use Finnish Lognitudinal Employee-Employer Data (FLEED) from 2015. It contains all Finns in the age range 18-70 (i.e. about 3.9 million individuals).
 - FLEED contains detailed administrative data about personal income, education, socioeconomic status, family status of individual etc.
- We are able to compare characteristics of horse racebettors aged 18-70 and characteristics of all Finns 18-70 as captured in the FLEED.

Intelligence test (IQ) data

- Finnish males are required to perform military service. They conduct in their second week of service, the military administer IQ and personality tests. This study employ with the IQ test data that covers all military service participants between years 1982-2010.
- The data contains the raw test scores for mathematical, linguistic and visuospatial IQ test. In addition, it contains P1 -score that is aggregate cognitive ability score of above three abilities. For the analysis we normalise these test scores (mean of 100 and SD 15).
- Merging the betting data, FLEED and IQ data, we were able to create a data set of about 720,000 males aged 24-61, of whom 15,800 were bettors (hereafter IQ sample). The data set allows us to study the relationship between betting and IQ.

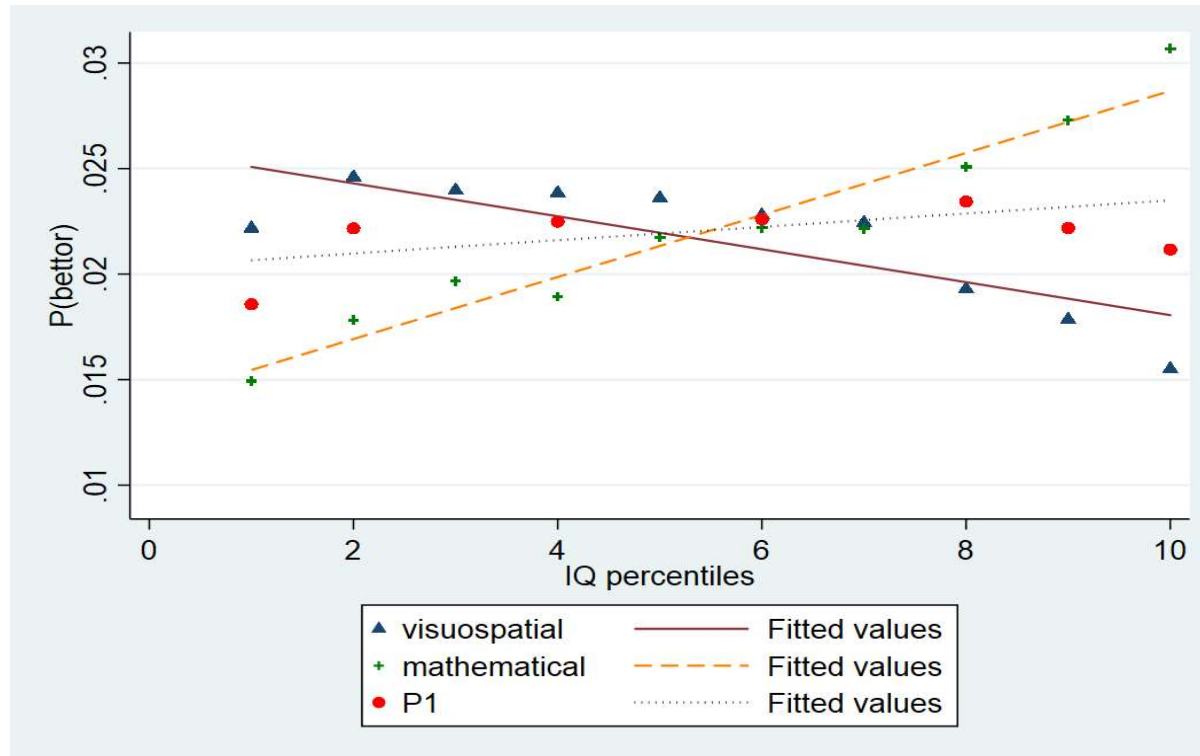
Gambling participation and IQ (1/2)

- About 1.2% of all Finns between age 18 to 70 participates, however, it is more common in among males 24-61 years old (IQ-subsample), where about 2.2% participates.
- Following some graphs of the subsample that have IQ scores (i.e. IQ sample)
- Education categories are (1=base, 2=secondary school, 3=, college, 4=master/PhD)



Gambling participation and IQ (2/2)

- Since the values of visuospatial IQ and linguistic IQ would be very similar, I only present P1, visuospatial and mathematical IQ in here.

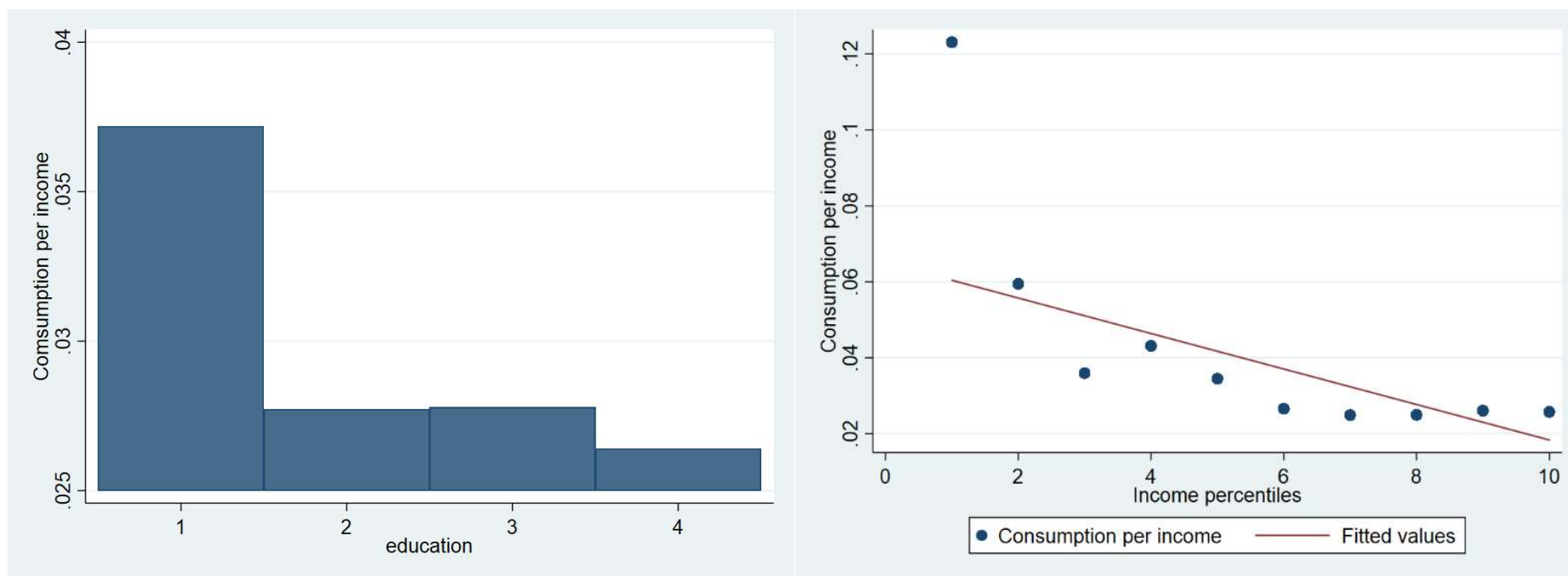


- Overall, seems that mathematical IQ is positive predictor, but visuospatial/linguistic IQ is negative predictor to participation

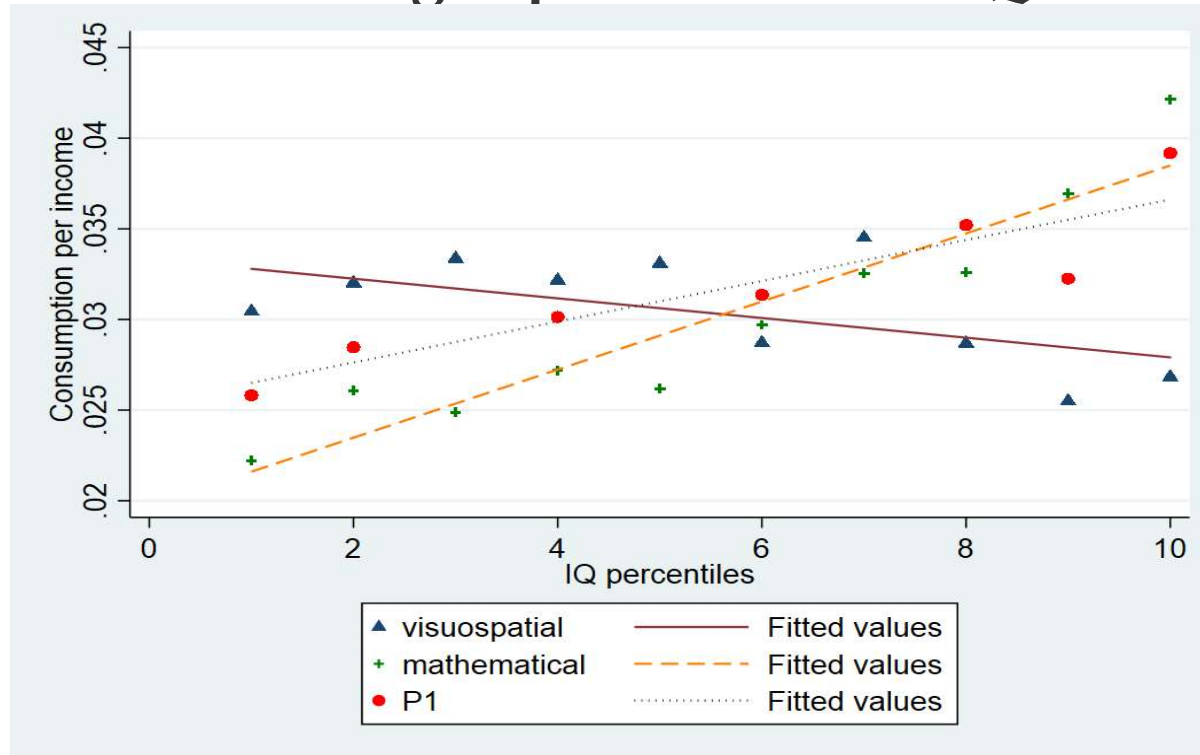
Gambling expenditure and IQ (1/3)

- There is many measures for a betting expenditure, we applied expenditure as a fraction of income (i.e. annual net return of betting / annual net income)
- On average, bettors that participates spend around 3% of their incomes on online horse race betting. This is about 818€ per year (68 € per month) (IQ-sample)
- Here also some graphs of the subsample that have IQ scores

Gambling expenditure and IQ (2/3)



Gambling expenditure and IQ (3/3)



- Overall, seems that aggregate cognitive ability (i.e. P1) is positive predictor to gambling expenditure. The driver seems to be mathematical IQ, whereas visuospatial/linguistic IQ is negative predictor to also expenditure

Summary

- This graphical analysis indicates:
 - The relation between aggregate intelligence (i.e. P1) and gambling is slightly positive
 - More importantly, the clear driver in these relations is mathematical IQ, which is likely positively associated to both participating on betting and betting expenditure. In turn, visuospatial and linguistic IQ are likely negatively associated to both participating on betting and betting expenditure.

Thank you!



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