Noncognitive Abilities and Financial Distress, by Gianpaolo Parise and Kim Peijnenburg

Discussant: Annette Vissing-Jorgensen, University of California Berkeley

**Question:** Do low noncognitive abilities cause financial distress?

**Data:** Dutch data from the Longitudinal Internet Study for the Social Sciences (LISS). 2008-2015. Around 7000 individuals.

**Answer:** Yes, with quite large economic effects. With controls:

- A one std. dev. increase in *emotional stability* is associated with a 0.5 pct point decrease in prob. of financial distress (12.1% relative to baseline rate of 4.4%)
- A one std. dev. increase in *conscientiousness* is associated with a 0.8 pct point decrease in prob. of financial distress (19.0% relative to baseline rate of 4.4%).

**Mechanism:** Noncognitive abilities affect productivity of time spent on financial choices.
Background: This is a great question

- We have a pretty good understanding that different types of debt matter more for different people:

(SCF 2004)
• But for each type of debt: **Lots of heterogeneity in debt/income across households.**

Gathergood’s 2016 report on financial credit in the UK shows that Debt/Income is the strongest predictor of financial distress.
• Crucially, not much of this heterogeneity in Debt/Income is well understood.

  - Little is explained by demographics: The graph has about as much dispersion with controls for age, gender, and within-group income.

• Similarly, it’s not that well understood even why some people with a given Debt/Income default and others don’t:

  - Models predicting default tend to have a modest statistical fit (e.g. Gross and Souleles (2002))
  - And often predictors are credit scores (e.g., FICO) that emphasize past borrowing and repayment behavior.
  - For understanding underlying economic drivers of debt and default, predicting default based on past repayment behavior is not informative!

→ New predictors of financial distress are needed.

  Personality traits (measuring noncognitive abilities) seem ex-ante promising.
Comment 1. A recently published paper has very similar results: Xu, Beller, Roberts and Brown (2015), Journal of Economic Psychology

- Representative sample of 13,470 US young adults (age 24-34) in 2007/2008 (from National Longitudinal Study of Adolescent to Adult Health)
- Coefficients are marginal effects for one standard deviation changes. Financial distress is the sum of the six variables in col 1 to 6 (mean=0.9).

<table>
<thead>
<tr>
<th>Variables</th>
<th>(1) No utility pmt</th>
<th>(2) No phone serv</th>
<th>(3) No mortg pmt</th>
<th>(4) Insolvency</th>
<th>(5) Food depletion</th>
<th>(6) Welfare/publ asst</th>
<th>(7) Financial distress</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conscientiousness</td>
<td>-.033*** (.004)</td>
<td>-.013*** (.002)</td>
<td>-.015*** (.003)</td>
<td>-.025*** (.005)</td>
<td>-.020*** (.003)</td>
<td>-.012** (.006)</td>
<td>-.128*** (.015)</td>
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<tr>
<td>Neuroticism</td>
<td>.019*** (.004)</td>
<td>.014*** (.002)</td>
<td>.014*** (.003)</td>
<td>.010** (.005)</td>
<td>.025*** (.003)</td>
<td>.011* (.006)</td>
<td>.110*** (.017)</td>
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<tr>
<td>Extraversion</td>
<td>-.000 (.005)</td>
<td>.004 (.002)</td>
<td>.003 (.003)</td>
<td>-.008** (.004)</td>
<td>-.002 (.004)</td>
<td>-.011** (.005)</td>
<td>-.011 (.014)</td>
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<tr>
<td>Agreeableness</td>
<td>.010** (.004)</td>
<td>.002 (.003)</td>
<td>.004 (.003)</td>
<td>.003 (.006)</td>
<td>.011*** (.004)</td>
<td>-.001 (.006)</td>
<td>.029** (.012)</td>
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<tr>
<td>Openness</td>
<td>.012*** (.004)</td>
<td>-.001 (.003)</td>
<td>.005 (.003)</td>
<td>.016*** (.005)</td>
<td>.003 (.005)</td>
<td>.000 (.006)</td>
<td>.031* (.017)</td>
</tr>
<tr>
<td>Demographic controls</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>Background-w1</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>HHI Income-w4</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>Constant</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Observations</td>
<td>13,470</td>
<td>13,470</td>
<td>13,470</td>
<td>13,470</td>
<td>13,470</td>
<td>13,470</td>
<td>13,470</td>
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</tbody>
</table>
Comment 2. True causal effect likely much larger than estimated effect with controls.

- Financial distress results from too high commitments to pay relative to your ability to pay (leaving strategic default aside)

- What causes too high commitments relative to ability to repay?
  1) Lack of planning
  2) Shocks: High expenditure/low income
  3) Ex-ante lack of resources: Conscious decision to be at high risk
     (Rampini and Viswanathan (2016), “household risk management” is (theoretically) increasing in wealth and income).
Paper emphasizes 1), lack of planning: Noncognitive abilities affect productivity of time spent on financial choices.

- **Controls are included to ensure causality** (since e.g. a lack of income/wealth may drive both emotional stability/conscientiousness and financial distress).

- And including controls make sense if we want to **document an effect above and beyond known predictors**

- **Effects without controls are several times larger:**

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(4)</th>
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</thead>
<tbody>
<tr>
<td>Noncognitive ability: emotional stability</td>
<td>-0.0162***</td>
<td>-0.0053***</td>
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<tr>
<td></td>
<td>(0.0017)</td>
<td>(0.0011)</td>
</tr>
<tr>
<td>Noncognitive ability: conscientiousness</td>
<td>-0.0153***</td>
<td>-0.0083***</td>
</tr>
<tr>
<td></td>
<td>(0.0017)</td>
<td>(0.0011)</td>
</tr>
</tbody>
</table>

- But the controls capture channel 2) and 3) (and to some extent even 1) so we eliminate any effects of noncognitive ability that work via these channels.
Specifically, the controls include a host of variables that are known to or likely to be partially *caused by* noncognitive ability and that are highly significant:

- Variables related to planning: Financial literacy, numeracy, financial wealth<br>  → We get an underestimate of channel 1)

- Variables related to income/expenditure shocks and resources: Income, unemployment dummy, health status, financial wealth<br>  → We don’t capture effects that work via 2) or 3)

Almlund, Duckworth, Heckman and Kautz (2011) state: "A growing body of evidence suggests that personality measures—especially those related to Conscientiousness, and, to a lesser extent, Neuroticism—predict a wide range of outcomes."
Examples of relevant variables predicted (and probably caused) by personality:
Education (and thus income) and health (and thus health-related income/expenditure risk)
Figure 9. Association of the Big Five and Intelligence with Years of Schooling in GSOEP

Females

- Emotional Stability
- Agreeableness
- Extraversion
- Conscientiousness
- Openness
- Fluid Intelligence
- Crystalized Intelligence

Standardized Regression Coefficient

Unadjusted for Intelligence
Adjusted for Intelligence
Figure 18. Correlations of Mortality with Personality, IQ, and Socioeconomic Status (SES)

Notes: The figure represents results from a meta-analysis of 34 studies. Average effects (in the correlation metric) of low socioeconomic status (SES), low IQ, low Conscientiousness (C), low Extraversion/Positive Emotion (E/PE), Neuroticism (N), and low Agreeableness (A) on mortality. Error bars represent standard error. The lengths of the studies represented vary from 1 year to 71 years.
Source: Roberts, Kuncel, Shiner et al. [2007]
Comment 3. Mechanism: How do we think about low noncognitive abilities causing financial distress?

- The current paper discusses how the time/utility cost of financial planning and budgeting is likely to be lower for the more conscientious or more emotionally stable:

  “For example, it is easier for a conscientious person to keep track of her expenditures or dutifully read and compare the financial prospectus of different investment programs. Conversely, a less emotionally stable person will consider it a burden to spend time on making financial decisions or monitoring expenses.”

- I think the mechanism linking noncognitive ability and financial distress is a more extreme version of lack of planning: Impulse buying, or even compulsive buying.
Impulse buying:

- Impulse buying occurs when consumers experience *sudden, generally powerful and persistent urge to buy something immediately* (Rook 1987).

  Impulse buying is a sudden and immediate purchase with *no pre-shopping intentions* either to buy the specific product category or fulfill a specific buying task (Beatty and Ferrell 1998, cited in Turkyilmaz et al 2015).

Some view impulse buying as the initial stage of a continuum leading some individuals progressively to become habituated, addicted, and then, ultimately, *compulsive buyers* (Thompson and Prendergast 2015).

- Compulsive buying is a *repetitive and excessive purchasing pattern* which develops into a primary response to negative feelings, providing immediate short-term gratifications, but which ultimately results in harmful consequences for the individual and others (O’Guinn and Faber, 1989).

<table>
<thead>
<tr>
<th>Item</th>
<th>Factor loading</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I often buy things spontaneously.</td>
<td>.81</td>
<td>3.08</td>
<td>1.18</td>
</tr>
<tr>
<td>2. &quot;Just do it&quot; describes the way I buy things.</td>
<td>.75</td>
<td>2.65</td>
<td>1.17</td>
</tr>
<tr>
<td>3. I often buy things without thinking.</td>
<td>.73</td>
<td>2.33</td>
<td>1.19</td>
</tr>
<tr>
<td>4. &quot;I see it, I buy it&quot; describes me.</td>
<td>.71</td>
<td>2.36</td>
<td>1.15</td>
</tr>
<tr>
<td>5. &quot;Buy now, think about it later&quot; describes me.</td>
<td>.65</td>
<td>2.25</td>
<td>1.20</td>
</tr>
<tr>
<td>6. Sometimes I feel like buying things on the spur-of-the-moment.</td>
<td>.64</td>
<td>3.40</td>
<td>1.04</td>
</tr>
<tr>
<td>7. I buy things according to how I feel at the moment.</td>
<td>.63</td>
<td>3.17</td>
<td>1.19</td>
</tr>
<tr>
<td>8. I carefully plan most of my purchases.</td>
<td>.62</td>
<td>2.81</td>
<td>1.16</td>
</tr>
<tr>
<td>9. Sometimes I am a bit reckless about what I buy.</td>
<td>.60</td>
<td>2.99</td>
<td>1.08</td>
</tr>
</tbody>
</table>
A commonly used survey measure of compulsive buying: Faber and O’Guinn (1992)

<table>
<thead>
<tr>
<th>Number</th>
<th>Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>If I have any money left at the end of the pay period, I just have to spend it.</td>
</tr>
<tr>
<td>2a</td>
<td>Felt others would be horrified if they knew of my spending habits.</td>
</tr>
<tr>
<td>2b</td>
<td>Bought things even though I couldn't afford them.</td>
</tr>
<tr>
<td>2c</td>
<td>Wrote a check when I knew I didn't have enough money in the bank to cover it.</td>
</tr>
<tr>
<td>2d</td>
<td>Bought something in order to make myself feel better.</td>
</tr>
<tr>
<td>2e</td>
<td>Felt anxious or nervous on days I didn’t go shopping.</td>
</tr>
<tr>
<td>2f</td>
<td>Made only minimum payments on my credit cards.</td>
</tr>
</tbody>
</table>

Table 1
Compulsive Buying Scale (Faber and O'Guinn, 1992).
Thomson and Prendergast (2015) document relation between the **big five personality traits** and impulse buying: Conscientiousness and emotional stability matter most

- 839 students at an English-language university in Hong Kong
- Regress survey-based measure of impulse buying on personality traits, controlling for gender and age. Neuroticism is the negative of emotional stability.

<table>
<thead>
<tr>
<th></th>
<th>$\beta$</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Controls</strong></td>
<td></td>
</tr>
<tr>
<td>Sex</td>
<td>$-0.24^{***}$</td>
</tr>
<tr>
<td>Age</td>
<td>$0.07^*$</td>
</tr>
<tr>
<td>State affect</td>
<td>$0.09^+$</td>
</tr>
<tr>
<td><strong>Personality</strong></td>
<td></td>
</tr>
<tr>
<td>Extraversion</td>
<td>$0.09^*$</td>
</tr>
<tr>
<td>Openness</td>
<td>$0.04$</td>
</tr>
<tr>
<td>Neuroticism</td>
<td>$0.13^{***}$</td>
</tr>
<tr>
<td>Conscientiousness</td>
<td>$-0.27^{***}$</td>
</tr>
<tr>
<td>Agreeableness</td>
<td>$0.00$</td>
</tr>
<tr>
<td>$R^2$</td>
<td></td>
</tr>
</tbody>
</table>
Otero-Lopez and Pol (2013) document relation between the **big five personality traits** and **compulsive buying**: Conscientiousness and emotional stability matter most

- Representative sample of 1365 Spanish adults from 2011/2012
- Report means of personality traits, by compulsive shopping groups, after controlling for gender and age.

<table>
<thead>
<tr>
<th>NEO-PI-R scales</th>
<th>Low ($n = 792$)</th>
<th>Moderate ($n = 456$)</th>
<th>High ($n = 117$)</th>
<th>$F(2, 1362)$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neuroticism</td>
<td>54.94 (.32)$^a$</td>
<td>58.67 (.45)$^b$</td>
<td>65.11 (1.1)$^c$</td>
<td>52.61***</td>
</tr>
<tr>
<td>Extraversion</td>
<td>45.58 (.41)</td>
<td>45.03 (.58)</td>
<td>43.97 (1.4)</td>
<td>0.77</td>
</tr>
<tr>
<td>Openness</td>
<td>48.58 (.41)</td>
<td>47.13 (.59)</td>
<td>47.42 (1.42)</td>
<td>2.12</td>
</tr>
<tr>
<td>Agreeableness</td>
<td>42.26 (.35)$^a$</td>
<td>39.74 (.5)$^b$</td>
<td>38.96 (1.21)$^b$</td>
<td>10.1***</td>
</tr>
<tr>
<td>Conscientiousness</td>
<td>43.94 (.34)$^a$</td>
<td>41.33 (.48)$^b$</td>
<td>36.29 (1.16)$^c$</td>
<td>25.5***</td>
</tr>
</tbody>
</table>
Gathergood (2012) documents how **impulse buying causes financial distress**

- UK data from DebtTrack survey. 1,234 households with positive consumer credit
- Regress measures of delinquency/self-reported over-indebtedness on impulse buying (survey measure), controlling for demographics, income and liquid assets

<table>
<thead>
<tr>
<th></th>
<th>(1) One month behind</th>
<th>(2) Three month behind</th>
<th>(3) Self-reported</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financially literate</td>
<td>−0.21*</td>
<td>−0.18</td>
<td>−0.10</td>
</tr>
<tr>
<td></td>
<td>(0.09)</td>
<td>(0.11)</td>
<td>(0.12)</td>
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<tr>
<td></td>
<td>[−0.05]</td>
<td>[−0.02]</td>
<td>[−0.01]</td>
</tr>
<tr>
<td>Confused by finance</td>
<td>0.13</td>
<td>0.01</td>
<td>0.10</td>
</tr>
<tr>
<td></td>
<td>(0.09)</td>
<td>(0.11)</td>
<td>(0.12)</td>
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<tr>
<td></td>
<td>[0.03]</td>
<td>[0.01]</td>
<td>[0.01]</td>
</tr>
<tr>
<td>Heavy discounter</td>
<td>0.04</td>
<td>−0.05</td>
<td>−0.19</td>
</tr>
<tr>
<td></td>
<td>(0.13)</td>
<td>(0.16)</td>
<td>(0.18)</td>
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<tr>
<td></td>
<td>[0.01]</td>
<td>[−0.01]</td>
<td>[−0.01]</td>
</tr>
<tr>
<td>Impulsive spender</td>
<td><strong>0.37</strong></td>
<td><strong>0.44</strong></td>
<td><strong>0.65</strong></td>
</tr>
<tr>
<td></td>
<td>(0.14)</td>
<td>(0.16)</td>
<td>(0.17)</td>
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<tr>
<td></td>
<td>[0.10]</td>
<td>[0.07]</td>
<td>[0.04]</td>
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</tbody>
</table>

- Impulsive spenders are 70% more likely to be 1 month delinquent (baseline prob. is 14%).
What’s the underlying mechanism linking personality (noncognitive ability) to impulse buying/compulsive buying? **Personality drives lack of self-regulation**

From Thompson and Prendergast (2015):

```
Several researchers suggest impulse buying results from **self-regulation dysfunction** [....] self-regulation can fail and result in impulse buying when
(a) longer-term goals (like saving money) cease to be adhered to because they are temporarily **superseded** by short-term objectives seemingly achievable by unplanned purchasing; when
(b) conscious self-monitoring of buying and its consequences is **suspended**; or when
(c) **impulse restraint capacity is reduced** through ego depletion.”
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Further evidence that (and how) personality drives financial distress via lack of impulse control comes from linking default risk to product type: Vissing-Jorgensen (2015)

- Mexican data for about 500,000 borrowers and > 1 million product-specific loans at a large retail chain

- The paper documents huge differences in default risk across loans taken out to buy different products: Loans given to buy exciting products (more likely to attract impulse buyers) have higher default rates
<table>
<thead>
<tr>
<th>Product category</th>
<th>Pct. of sales</th>
<th>Excluding products with no default information (clothes, cell phone minutes)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pct. of sales</td>
<td>Pct. of loans</td>
</tr>
<tr>
<td>Kitchen equipment, various hh. items</td>
<td>2.4%</td>
<td>3.5%</td>
</tr>
<tr>
<td>Electronics</td>
<td>40.6%</td>
<td>60.0%</td>
</tr>
<tr>
<td>Mattresses, dining sets, other furniture</td>
<td>4.9%</td>
<td>7.2%</td>
</tr>
<tr>
<td>Living room and bedroom furniture</td>
<td>3.4%</td>
<td>5.1%</td>
</tr>
<tr>
<td>Kids gear and toys, auto parts, bikes</td>
<td>5.5%</td>
<td>8.2%</td>
</tr>
<tr>
<td>Appliances</td>
<td>9.2%</td>
<td>13.5%</td>
</tr>
<tr>
<td>Watches</td>
<td>0.6%</td>
<td>0.9%</td>
</tr>
<tr>
<td>Jewelry</td>
<td>0.7%</td>
<td>1.1%</td>
</tr>
<tr>
<td>Glasses etc.</td>
<td>0.3%</td>
<td>0.5%</td>
</tr>
<tr>
<td>Cell phone minutes</td>
<td>1.8%</td>
<td></td>
</tr>
<tr>
<td>Clothes</td>
<td>30.5%</td>
<td></td>
</tr>
<tr>
<td>All above categories</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>
• This effect is mainly a **person effect**, not a product effect: Once you control for person fixed effects, product dummies have little explanatory power for default.

  **Personality traits such as conscientiousness and emotional stability are plausible drivers of the person fixed effects.** Perhaps the conscientious buy washing machines and the non-conscientious buy entertainment electronics...

• So, you can **type-caste people based on their purchases.**
### Table 4. Predicting loss rates using information known at time of purchase, including product categories

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
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<tr>
<td><strong>Controls:</strong></td>
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<tr>
<td>Time as customer fixed effects</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Transactions characteristics</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>Measures of borrower credit risk</td>
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<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>Demographics</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>Store fixed effects</td>
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<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
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<tr>
<td>Individual fixed effects</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
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</tr>
<tr>
<td><strong>Product category (omitted=sewing machines)</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kitchen equipment, various household items</td>
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<td></td>
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</tr>
<tr>
<td>Kitchen electronics</td>
<td>0.030</td>
<td>0.029</td>
<td>0.054</td>
<td>0.052</td>
<td>0.049</td>
<td>0.048</td>
<td>0.008</td>
<td>0.009</td>
<td></td>
</tr>
<tr>
<td>Cook and tableware</td>
<td>0.025</td>
<td>0.026</td>
<td>0.052</td>
<td>0.050</td>
<td>0.048</td>
<td>0.049</td>
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<td>Personal care</td>
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<td>0.047</td>
<td>0.074</td>
<td>0.065</td>
<td>0.056</td>
<td>0.053</td>
<td>0.009</td>
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<tr>
<td>Luggage</td>
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<td>0.041</td>
<td>0.067</td>
<td>0.060</td>
<td>0.057</td>
<td>0.058</td>
<td>0.009</td>
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<td>Category</td>
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<td>0.121</td>
<td>0.110</td>
<td>0.100</td>
<td>0.096</td>
<td>0.028</td>
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<td>-------</td>
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<tr>
<td>Audio, for cars</td>
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<tr>
<td>Audio, not for cars</td>
<td>0.074</td>
<td>0.074</td>
<td>0.080</td>
<td>0.071</td>
<td>0.064</td>
<td>0.061</td>
<td>0.006</td>
<td>0.007</td>
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<td>TVs</td>
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<td>0.090</td>
<td>0.083</td>
<td>0.074</td>
<td>0.072</td>
<td>0.000</td>
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<td>DVD, video</td>
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<td>0.075</td>
<td>0.087</td>
<td>0.078</td>
<td>0.067</td>
<td>0.063</td>
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<td>Entertainment electronics</td>
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<td>0.096</td>
<td>0.092</td>
<td>0.080</td>
<td>0.071</td>
<td>0.068</td>
<td>0.007</td>
<td>0.008</td>
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<td>Phones (not cell)</td>
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<td>0.020</td>
<td>0.043</td>
<td>0.037</td>
<td>0.038</td>
<td>0.031</td>
<td>0.005</td>
<td>0.003</td>
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<td>Cell phones</td>
<td>0.167</td>
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<td>0.138</td>
<td>0.128</td>
<td>0.129</td>
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<td>0.046</td>
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<tr>
<td>Microwave ovens</td>
<td>0.053</td>
<td>0.054</td>
<td>0.067</td>
<td>0.062</td>
<td>0.056</td>
<td>0.051</td>
<td>0.009</td>
<td>0.010</td>
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<tr>
<td>Mattresses, dining sets, other furniture</td>
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<td></td>
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<td>Mattresses</td>
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<td>0.045</td>
<td>0.043</td>
<td>0.042</td>
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<td>Dining sets, chairs</td>
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<td>0.027</td>
<td>0.023</td>
<td>0.020</td>
<td>0.019</td>
<td>-0.001</td>
<td>0.000</td>
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<tr>
<td>Office furniture</td>
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<td>-0.004</td>
<td>0.011</td>
<td>0.009</td>
<td>0.012</td>
<td>0.009</td>
<td>0.013</td>
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<tr>
<td>Wardrobes, cupboards</td>
<td>0.009</td>
<td>0.011</td>
<td>0.016</td>
<td>0.015</td>
<td>0.010</td>
<td>0.009</td>
<td>0.010</td>
<td>0.010</td>
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<tr>
<td>Living room and bedroom furniture</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Living room furniture</td>
<td>0.026</td>
<td>0.027</td>
<td>0.004</td>
<td>0.000</td>
<td>-0.002</td>
<td>-0.003</td>
<td>-0.006</td>
<td>-0.005</td>
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<tr>
<td>Bedroom furniture</td>
<td>0.032</td>
<td>0.033</td>
<td>-0.013</td>
<td>-0.014</td>
<td>-0.020</td>
<td>-0.019</td>
<td>-0.019</td>
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<tr>
<td>Sewing machines</td>
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<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td></td>
</tr>
<tr>
<td>Kids gear and toys, auto parts, bikes</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>Baby items (e.g. stroller)</td>
<td>0.090</td>
<td>0.087</td>
<td>0.106</td>
<td>0.096</td>
<td>0.086</td>
<td>0.084</td>
<td>0.023</td>
<td>0.026</td>
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<tr>
<td>Toys</td>
<td>0.095</td>
<td>0.095</td>
<td>0.114</td>
<td>0.099</td>
<td>0.090</td>
<td>0.088</td>
<td>0.019</td>
<td>0.021</td>
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</tr>
<tr>
<td>Tires, car batteries</td>
<td>0.083</td>
<td>0.086</td>
<td>0.101</td>
<td>0.094</td>
<td>0.097</td>
<td>0.093</td>
<td>0.033</td>
<td>0.035</td>
<td></td>
</tr>
<tr>
<td>Kids bikes</td>
<td>0.084</td>
<td>0.083</td>
<td>0.092</td>
<td>0.080</td>
<td>0.075</td>
<td>0.077</td>
<td>0.011</td>
<td>0.012</td>
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</tr>
</tbody>
</table>
Type-casting people based on their purchases is at the heart of much of the big data revolution

- The Mexican firm in my data gives differential loan terms for cell phones

- US credit card companies are not allowed to change the terms of your current credit card based on where you shop, but they can use it to decide on new offers to you and they share this information with marketing partners.

Example: “Brands, agencies, and even small businesses can use edo Interactive’s card-linked marketing platform to send targeted offers to consumers based on their competitive spending patterns. The company has partnered with more than 200 banks, giving clients access to information about 200 million consumers. As a result, marketers connect their advertising to in-store purchases and send consumers relevant offers that they’re likely to redeem. Taking it a step further, edo’s Geocommerce feature combines purchase data with location information.”

http://streetfightmag.com/2014/01/09/5-tools-to-target-customers-based-on-past-purchase-behavior/
Comment 4: The IV result seems implausibly strong

Instrument for emotional stability: “experiencing a traumatic event during childhood”.

<table>
<thead>
<tr>
<th></th>
<th>Financial difficulty</th>
<th>Noncognitive ability: emotional stability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Noncognitive ability: emotional stability</td>
<td>-0.5180***</td>
<td>-0.3494***</td>
</tr>
<tr>
<td>(0.1686)</td>
<td></td>
<td>(0.0401)</td>
</tr>
<tr>
<td>Traumatic event during childhood</td>
<td></td>
<td>-0.3494***</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.0401)</td>
</tr>
<tr>
<td>Time fixed effects</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Controls and constant</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Observations</td>
<td>28,021</td>
<td>28,021</td>
</tr>
<tr>
<td>Cragg-Donald Wald F-statistic</td>
<td>560.7</td>
<td></td>
</tr>
</tbody>
</table>

- IV coefficient is 100 times larger than OLS coefficient.
- Moving the instrument from 0 (no traumatic event) to 1 (traumatic event) moves emotional stability down by 0.3494 standard deviations (1st stage) and the prob. of financial distress by -0.5180*(-0.3494)=0.18, i.e. 18 pct point relative to the mean of 4.4%.
- That seems implausible. What is the mean of financial distress dummy for those with traumatic events?