Inequality and Financial Literacy

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The growing importance of financial literacy

A new economic landscape

Major changes that increase individuals’ responsibility for their financial well-being

- Changes in the pension landscape
  - More individual accounts

- Changes in the labor markets
  - Workers change jobs often
  - Skill-based wage differentials

- Changes in the financial markets
  - More complexity
  - More opportunities to borrow & in large amounts
The “great risk shift”

Risk shift from the government and employers to individuals

How well-equipped are people to make these decisions?
Our questions

1. What is the level of financial literacy among the population?
2. Are there vulnerable groups?
3. Does financial literacy matter?
   - Is it linked to behavior?
   - More specifically, is it linked to wealth inequality?
Financial Literacy Programme Funded by EIB

**Bringing together an international team**

The Financial Literacy Programme brings together research teams in 9 countries:

- The United States
- The Netherlands
- Germany
- Italy
- Sweden
- Switzerland
- Spain
- Portugal
- Turkey

Website of the project: [http://www.globalfinancialliteracyproject.org/](http://www.globalfinancialliteracyproject.org/)
How well equipped are people to make financial decisions?

- **Aim**: Assess knowledge of basic concepts, the *abc’s* of personal finance
- **Use three financial literacy questions**
Measuring financial literacy (I)

To test numeracy and understanding of interest rates, we asked:

“Suppose you had $100 in a savings account and the interest rate was 2% per year. After 5 years, how much do you think you would have in the account if you left the money to grow?”

i) More than $102
ii) Exactly $102
iii) Less than $102
iv) Don’t know
v) Refuse to answer
To test understanding of inflation, we asked:

“Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After 1 year, with the money in this account, would you be able to buy…”

i) More than today
ii) Exactly the same as today
iii) Less than today
iv) Don`t Know
v) Refuse to answer
Measuring financial literacy (III)

Finally, to test understanding of risk diversification, we asked:

“Do you think the following statement is true or false? *Buying a single company stock usually provides a safer return than a stock mutual fund.*”

i) True
ii) False
iii) Don`t Know
iv) Refuse to answer
Financial Literacy around the World (FLat World)

Evidence from 13 countries:

- USA
- The Netherlands
- Germany
- Italy
- Russia
- Sweden
- New Zealand
- Japan
- Australia
- France
- Switzerland
- Romania
- Canada
Financial illiteracy is widespread in the population
- Less than half of the population in many countries can answer three basic financial literacy questions

Risk diversification is most difficult concept
- Similar pattern of response across countries
- Prevalence of “do not know” answers

Gender difference in financial literacy
- Women more likely than men to answer “I do not know” to financial literacy questions
Who are the vulnerable groups?

- **Who knows the least?**
  - Those with low income/education, immigrants, those living in rural areas, the elderly, the young and women

- **Women have lower financial literacy**
  - Need to look closer at the evidence

- **The young have lower financial literacy**
  - Most data sets have information on respondents 18 and older. New data is available for 15-year olds.
Financial knowledge among women

- Very robust findings of large gender differences in financial knowledge
- Women are much more likely to say “I do not know”

Financial knowledge by gender (% answering 3 Qs correctly)

At least one "don't know" answer, by gender
Gender differences in financial literacy: The Netherlands

The Netherlands

<table>
<thead>
<tr>
<th>Category</th>
<th>Women</th>
<th>Men</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interest</td>
<td>83.1</td>
<td>86.6</td>
</tr>
<tr>
<td>Inflation</td>
<td>72.0</td>
<td>81.9</td>
</tr>
<tr>
<td>Risk</td>
<td>42.1</td>
<td>62.0</td>
</tr>
<tr>
<td>All correct</td>
<td>35.0</td>
<td>55.1</td>
</tr>
<tr>
<td>At least 1 DK</td>
<td>45.9</td>
<td>29.0</td>
</tr>
</tbody>
</table>

Source: 2010 DNB Household Survey
Gender differences in financial literacy

Our paper: How financially literate are women? An overview and new insights

- This pattern of response is true in most countries
- Provide an in-depth analysis of gender differences in financial literacy
- Look at East-West Germany
- Young and old women
- Look at other measures of financial literacy
- Self-assessed measures of financial literacy
- Financial advice: A substitute for financial literacy?
Work in progress

- SAMPLE: DNB Household Panel (DHS), online survey representative of Dutch-speaking households
- We include panel members who are household heads and their partners, age 18 and older
- DESIGN: Financial literacy questions asked twice
  - First survey (May 2012): Financial literacy questions including a “Do not know” option
  - Second survey (June /July 2012): Same questions without a “Do not know” option
- After each question in June/July ask for confidence in the answer
Our sample

May wave: N= 1,748

June/July wave: N= 1,973

Sample for the analysis: complete questionnaire in both waves, N=1,528

- **Attrition**: No significant effects of gender or financial literacy on dropping out after May wave

- **Learning**: Answers to financial literacy do not differ significantly from participants in both waves.
Answers waves 1 & 2, interest question, by gender

<table>
<thead>
<tr>
<th></th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>W1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5.0</td>
<td>7.8</td>
</tr>
<tr>
<td></td>
<td>91.9</td>
<td>91.2</td>
</tr>
<tr>
<td>W2</td>
<td>5.4</td>
<td>84.5</td>
</tr>
<tr>
<td></td>
<td>94.6</td>
<td>91.2</td>
</tr>
</tbody>
</table>

Significant improvement in the probability to give a correct answer for men and women.
Answers waves 1 & 2, inflation question, by gender

Significant improvement in the probability to give a correct answer for men and women.
Answers waves 1 & 2, risk question, by gender

Risk

Significant improvement in the probability to give a correct answer for men and women

<table>
<thead>
<tr>
<th></th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>W1</td>
<td>62.1</td>
<td>73.1</td>
</tr>
<tr>
<td>W2</td>
<td>82.3</td>
<td>73.1</td>
</tr>
</tbody>
</table>

- Correct
- Incorrect
- DK (refuse)
Answers in wave 2 conditional on answers in wave 1
Confidence in wave 2 conditional on being correct, incorrect, or DK in wave 1. Risk diversification.
### Gender and financial literacy between waves

Dependent variable = # of correct answers to finlit quest

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>July (1)</th>
<th>May (2)</th>
<th>July (3)</th>
<th>May (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>-0.253***</td>
<td>-0.404***</td>
<td>-0.196***</td>
<td>-0.309***</td>
</tr>
<tr>
<td></td>
<td>(0.0312)</td>
<td>(0.0393)</td>
<td>(0.0326)</td>
<td>(0.0399)</td>
</tr>
<tr>
<td>Constant</td>
<td>2.703***</td>
<td>2.504***</td>
<td>2.249***</td>
<td>1.709***</td>
</tr>
<tr>
<td></td>
<td>(0.0198)</td>
<td>(0.0261)</td>
<td>(0.136)</td>
<td>(0.176)</td>
</tr>
<tr>
<td>Other controls</td>
<td>no</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Observations</td>
<td>1,528</td>
<td>1,528</td>
<td>1,528</td>
<td>1,528</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.038</td>
<td>0.056</td>
<td>0.106</td>
<td>0.162</td>
</tr>
<tr>
<td>Robust standard errors in parentheses</td>
<td>*** p&lt;0.01, ** p&lt;0.05, * p&lt;0.1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# Financial literacy & stock market participation

## Financial literacy, gender and stock market participation

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial literacy</td>
<td></td>
<td>0.0541***</td>
<td>0.0914***</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.00973)</td>
<td>(0.0105)</td>
</tr>
<tr>
<td>Female</td>
<td>-0.137***</td>
<td>-0.0729***</td>
<td>-0.0469**</td>
</tr>
<tr>
<td></td>
<td>(0.0207)</td>
<td>(0.0213)</td>
<td>(0.0212)</td>
</tr>
<tr>
<td>Constant</td>
<td>0.339***</td>
<td>0.101</td>
<td>0.145*</td>
</tr>
<tr>
<td></td>
<td>(0.0162)</td>
<td>(0.0732)</td>
<td>(0.0754)</td>
</tr>
<tr>
<td>Financial literacy measure</td>
<td>na</td>
<td>July</td>
<td>May</td>
</tr>
<tr>
<td>Other controls</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Observations</td>
<td>1,528</td>
<td>1,528</td>
<td>1,528</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.023</td>
<td>0.125</td>
<td>0.146</td>
</tr>
</tbody>
</table>

Robust standard errors in parentheses clustered at the household level

*** p<0.01, ** p<0.05, * p<0.1
Summary of findings so far

- Gender gap in financial literacy decreases but does not disappear when deleting the “Do not know” option.

- Men and women responding “Do not know” have high likelihood of giving a correct answer, but more women said DK in the first place.

- Women are much less confident, even if they answer correctly.

- Confidence can explain a substantial part of the gender gap in financial literacy, but not all.

- Financial literacy and confidence are associated with financial decision making. They account for (part of) the gender gap in stock market participation.
Compared to other age groups, financial knowledge among the young is very low.

(% answering 3 questions correctly)
New data for 15-year-olds around the world

We have important new data

- 2012 Programme for International Student Assessment (PISA)
- Measuring financial literacy among high school students
A group of experts was convened by the OECD to design the 2012 module on financial literacy.

They represented many countries and many stakeholders (treasury departments, central banks, regulators, practitioners, academics).

Experts worked on the assessment for about two years.
Strong performance in financial literacy

Average performance of 15-year-olds in financial literacy

Mean score

Strong performance in financial literacy

Flemish Community (Belgium)

Australia

New Zealand

Czech Republic

Estonia

Poland

Latvia

United States

Spain

Slovenia

Croatia

Israel

Slovak Republic

Russian Federation

France

Italy

Colombia

Low performance in financial literacy

Mean score
Distribution of student performance

Financial literacy performance levels

- L5 10% (625 and above)
- L4 22% (550 to <625)
- L3 30% (475 to <550)
- L2 23% (400 to <475)
- L1 15% (Less than 400 points)

Baseline

Top performers
9.7% of students are top performers in financial literacy (OECD average)

Boys are more likely to be top performers than girls, particularly in New Zealand, Israel, Poland, France and the Flemish Community (Belgium)
Across the OECD on average, 15% of students do not reach the baseline level of financial literacy – meaning that they can solve only simple tasks.

Boys are more likely to be low performers than girls, particularly in France, Israel, Slovenia and the Slovak Republic.
Are there gender differences in financial literacy?

On average there are no gender differences (except in Italy) but fewer girls at top and bottom.
Some important findings

- A lot of the variation in financial literacy is explained by socio-economic background (parent’s income and education)
- We start unequal when it comes to financial literacy and inequality will only grow
- How to provide equality of opportunity early in life?
Relationship between socio-economic status and financial literacy, mathematics, and reading performance

Percentage of variation in performance explained by socio-economic status

- Estonia
- Italy
- Russian Federation
- Croatia
- Australia
- Fl.Com. (Belgium)
- Poland
- Shanghai-China
- Colombia
- Latvia
- Czech Republic
- OECD average-13
- Israel
- Spain
- France
- Slovenia
- United States
- Slovak Republic
- New Zealand

Financial literacy, Mathematics, Reading
Why should we care?

• Financial knowledge can be linked to behavior: saving, borrowing, investing, and retirement planning

• Financial knowledge is linked to wealth inequality

• Our paper shows that financial knowledge is one of the main determinants of wealth inequality
Wealth inequality

**Top 10% wealth share in the United States, 1917-2012**

The figure depicts the share of total household wealth owned by the top 10%, obtained by capitalizing income tax returns versus in the Survey of Consumer Finances. The unit of analysis is the family. Source: Appendix Tables B1 and C4.

Figure 6: The Top 10% Wealth Share in the United States, 1917-2012

Source: Saez and Zucman (2014, NBER)
New work (Clark, Lusardi and Mitchell, 2014)

Financial knowledge & 401(k) investment performance

- Use administrative data from large financial institution
  - High quality data

- Designed survey that had the 3 financial literacy questions
  - Higher financial literacy than in the US population

- Linked financial literacy to return on 401(k) investments
  - Unique data

- Those who are more financially literate earn 130 basis points more on their portfolio (adjusted for risk)
  - Similar evidence is emerging in other papers
A new model incorporating financial literacy

Assessing how financial knowledge impacts wealth inequality is a hard task

Need a (new) model of saving that incorporates financial knowledge

The model needs to incorporate realistic features of the economy, such as:

– Many sources of risk
– Borrowing constraints
– Inequality in wages
Questions we can address

Once we have such a model, it is possible to

- Calculate the share of wealth inequality that is due to financial knowledge

- Understand the behavior of financial knowledge over time

- Assess whether policies or programs improve well-being; for example, what are the effects of adding financial literacy programs in school?
Incentives to save raise the rate of return on saving through financial knowledge accumulation.
Fin. knowledge and wealth inequality

- uncertainty: 0.877
- cons. floor: 0.976
- rep. rate: 1.289
- demographics: 1.457
- mortality: 1.815
- knowledge: 2.450

wealth ratio: college+/<HS
Summary of findings

- Many reasons to save but the most important engine of wealth inequality may be financial knowledge.

- From 30 to 40% of wealth inequality can be attributed to financial knowledge.

- Very important to start equal at the beginning of working life: Add financial literacy in school?
Use framework to study effects of adding fin. literacy in schools

- Increase the endowment of financial knowledge for everyone

- We find large welfare benefits: High school dropouts would need 82% more initial wealth to make them as well off as with higher starting values of financial literacy
Final considerations

- Income and wealth inequality have risen.
- Financial knowledge is an important mechanism in the transmission of income to wealth inequality.
- Financial education provides welfare benefits, particularly in a world where responsibility for retirement savings is shifted to workers.
GFLEC’s global network: Ongoing projects around the world
Our approach is multidisciplinary
Maximizing our potential through entrepreneurship

Entrepreneurs

Financial Literacy
Thanks to our funder
Thank you!

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