Personal Experiences in the Labor Market and Household Credit Behavior

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OUTLINE

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▷ Data and Summary Statistics
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Motivation and Research Question

Do personal negative experiences in the labor market shape individuals' willingness to take credit in the long-run?

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Do personal negative experiences in the labor market shape individuals' willingness to take credit in the long-run?

Two Strands:

- ▷ **Standard financial literature**: risk preferences and attitudes are not influenced only by personal experiences, but would take into account all public information available.

- ▷ **Psychology literature**: personal experiences are important when making decisions about risk prospects. Hertwig et al. (2004)

This Paper vs. Literature

What We do:

$\triangleright$ Analyse Household financial decision making several years after a negative experience in the labor market

$\triangleright$ Specifically: Brazilian workers' credit patterns 1-4 years after being fired during a recession and after finding another job.

$\triangleright$ Channel: a job loss can lower risk appetite or intertemporal rate of substitution and to be less likely to take credit.

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▷ Analyse Household financial decision making several years after a negative experience in the labor market

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Related Literature:

▷ **Inflation Memories**. Malmendier and Nagel (2015), Ehrmann and Tzamourani (2012) and Fajardo and Dantas (2018)

▷ **Risk taking and Past Stock/Bond Returns**. Malmendier and Nagel (2011).

▷ **Risk taking and Labor market Conditions.** Knüpfer et al. (2017).

Methodology and Overview of Results

Using a Diff-in-Diff approach:

  ▷ Treated individuals: those fired in the 2008-2009 recession, but employed before (2007) and after (2010 to 2013)

  ▷ Control group: those NOT fired in the 2008-2009 recession, and employed before and after

  ▷ Credit behavior Pre/Post the recession

Methodology and Overview of Results

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- ▷ Credit behavior Pre/Post the recession

Empirical Results:

- ▷ fired in the recession negatively decreases both:
  - ▷ the probability of taking credit (between 8% and 12% of the baseline probability)
  - ▷ the volume of credit. (between 10% and 20% of the baseline credit volume)
- ▷ Effects fading over time

Summary Statistics

Table: Summary Statistics

	(1) 2010 mean	(2) 2011 mean	(3) 2012 mean	(4) 2013 mean
Fired during Recession 2008-2009	.09299	.09622	.09797	.09905
$\mathbb{P}$[Credit] 2007	.1064	.1056	.1048	.1041
$\mathbb{P}$[Credit] final year	.1441	.1695	.1588	.1663
$\Delta\mathbb{P}$[Credit]	.0377	.06387	.05401	.0622
Credit Volume / Wage in 2007	1.312	1.295	1.284	1.279
Credit Volume / Wage in final year	1.863	1.846	1.833	1.894
Δ (Credit Volume / Wage)	.5447	.5425	.5515	.6184
Arrears in 2007	.00805	.00803	.00802	.00799
Arrears in final year	.01848	.02228	.03157	.03025
Job Tenure in 2007	46.31	45.68	45.11	44.56
Job Tenure final year	58.77	59.56	62.28	64.54
Monthly Wage 2007 (BRL)	1,306	1,296	1,286	1,275
Monthly Wage final year (BRL)	1,855	2,078	2,317	2,570
Number of Observations	1.86e+07	1.82e+07	1.77e+07	1.72e+07

Treated and Control Groups are Different

Table: Conditional Summary Statistics

	(1)	(2)
	Not Fired	Fired
	mean	mean
$\mathbb{P}$[Credit] 2007	.1089	.08183
$\mathbb{P}$[Credit] 2010	.1488	.09822
$\Delta\mathbb{P}$[Credit]	.03989	.01639
Credit Volume/ Wage in 2007	1.331	1.120
Credit Volume/ Wage in 2010	1.909	1.422
Δ(Credit Volume / Wage)	.5695	.3033
Arrears 2007	.008011	.008388
Arrears 2010	.01842	.01909
Job Tenure in 2007	48.59	24.08
Job Tenure in 2010	63.47	12.94
Monthly Wage 2007 (BRL)	1,345	927
Monthly Wage 2010 (BRL)	1,914	1,280

Baseline Results - Probability of Taking Credit

Table: Recession and Probability of Taking Credit (2010-2007)

	(1) $\Delta\mathbb{P}[\text{Credit}]$	(2) $\Delta\mathbb{P}[\text{Credit}]$	(3) $\Delta\mathbb{P}[\text{Credit}]$
Fired	-0.0237***	-0.0126***	-0.0129***
	(-21.45)	(-16.37)	(-18.91)
Gender FE	Yes	Yes	Yes
Race FE	Yes	Yes	Yes
Municipality FE	Pre	Pre/Post	Pre/Post
Job Occupation FE	Pre	Pre/Post	Pre/Post
Education FE	Pre	Pre/Post	Pre/Post
Employer FE	No	No	Yes
Controls	Pre	Pre/Post	Pre/Post
# Observations	1.84e+07	1.79e+07	1.69e+07
Adj R2	0.00468	0.01018	-0.01006

Baseline Results - Volume of Credit

Table: Recession and Credit Volume (2010-2007)

	(1)	(2)	(3)
	ΔCredit	ΔCredit	ΔCredit
Fired	-0.2654***	-0.2467***	-0.2732***
	(-24.13)	(-15.32)	(-15.79)
Gender FE	Yes	Yes	Yes
Race FE	Yes	Yes	Yes
Municipality FE	Pre	Pre/Post	Pre/Post
Job Occupation FE	Pre	Pre/Post	Pre/Post
Education FE	Pre	Pre/Post	Pre/Post
Employer FE	No	No	Yes
Controls	Pre	Pre/Post	Pre/Post
# Observations	1.83e+07	1.79e+07	1.69e+07
Adj R2	0.00063	0.00178	-0.03219

Long-term Results - Probability of Taking Credit

Table: Recession and Probability of Taking Credit - Long-term Effects

	(1) $\Delta\mathbb{P}$[Credit] (2010-2007)	(2) $\Delta\mathbb{P}$[Credit] (2011-2007)	(3) $\Delta\mathbb{P}$[Credit] (2012-2007)	(4) $\Delta\mathbb{P}$[Credit] (2013-2007)
Fired	-0.0126***	-0.0117***	-0.0086***	-0.0064***
	(-16.37)	(-15.20)	(-13.44)	(-9.21)
Gender FE	Yes	Yes	Yes	Yes
Race FE	Yes	Yes	Yes	Yes
Municipality FE	Pre/Post	Pre/Post	Pre/Post	Pre/Post
Job Occupation FE	Pre/Post	Pre/Post	Pre/Post	Pre/Post
Education FE	Pre/Post	Pre/Post	Pre/Post	Pre/Post
Employer FE	No	No	No	No
Controls	Pre/Post	Pre/Post	Pre/Post	Pre/Post
# Observations	1.79e+07	1.75e+07	1.70e+07	1.65e+07
Adj R2	0.01018	0.01765	0.02049	0.02271

Long-term Results - Volume of Credit

Table: Recession and Volume of Credit: Long-term Effects

	(1) ΔCredit (2010-2007)	(2) ΔCredit (2011-2007)	(3) ΔCredit (2012-2007)	(4) ΔCredit (2013-2007)
Fired	-0.2467***	-0.2030***	-0.1580***	-0.1135***
	(-15.32)	(-11.58)	(-8.80)	(-5.58)
Gender FE	Yes	Yes	Yes	Yes
Race FE	Yes	Yes	Yes	Yes
Municipality FE	Pre/Post	Pre/Post	Pre/Post	Pre/Post
Job Occupation FE	Pre/Post	Pre/Post	Pre/Post	Pre/Post
Education FE	Pre/Post	Pre/Post	Pre/Post	Pre/Post
Employer FE	No	No	No	No
Controls	Pre/Post	Pre/Post	Pre/Post	Pre/Post
# Observations	1.79e+07	1.75e+07	1.70e+07	1.65e+07
Adj R2	0.00178	0.00270	0.00359	0.00456

PSM Approach 2 - Conditional Summary Stats

Table: Conditional Summary Statistics - PSM - Second Approach

	(1) Not Fired 2010	(2) Fired 2010	(3) Not Fired 2013	(4) Fired 2013
$\mathbb{P}$[Credit] 2007	.07762	.07964	.07772	.07938
$\mathbb{P}$[Credit] end-year	.1037	.09587	.1346	.1293
$\Delta\mathbb{P}$[Credit]	.0261	.01622	.05686	.04989
Credit Volume/ Wage in 2007	1.026	1.063	1.052	1.069
Credit Volume/ Wage in end-year	1.497	1.378	1.665	1.56
Δ(Credit Volume / Wage)	.4713	.3147	.613	.4904
Arrears 2007	.00820	.00812	.00813	.00809
Arrears end-year	.01869	.01872	.03034	.03018
Job Tenure in 2007	23.13	23.37	23.78	23.78
Job Tenure in end-year	11.37	11.35	22.93	23.00
Age in 2007	31.13	31.2	30.95	30.97
Monthly Wage 2007 (BRL)	926.9	927.8	932.7	926.3
Monthly Wage end-year (BRL)	1,298	1,292	1,970	1,939

PSM Approach 2 - Probability of Taking Credit

Table: Recession and Probability of Taking Credit - Second PSM Approach

	(1) $\Delta\mathbb{P}[\text{Credit}]$ (2010-2007)	(2) $\Delta\mathbb{P}[\text{Credit}]$ (2011-2007)	(3) $\Delta\mathbb{P}[\text{Credit}]$ (2012-2007)	(4) $\Delta\mathbb{P}[\text{Credit}]$ (2013-2007)
Fired	-0.0092***	-0.0102***	-0.0077***	-0.0068***
	(-14.10)	(-12.24)	(-13.52)	(-11.06)
Gender FE	Yes	Yes	Yes	Yes
Race FE	Yes	Yes	Yes	Yes
Municipality FE	Pre/Post	Pre/Post	Pre/Post	Pre/Post
Job Occupation FE	Pre/Post	Pre/Post	Pre/Post	Pre/Post
Education FE	Pre/Post	Pre/Post	Pre/Post	Pre/Post
Employer FE	No	No	No	No
Controls	Pre/Post	Pre/Post	Pre/Post	Pre/Post
# Observations	3.28e+06	3.32e+06	3.29e+06	3.23e+06
Adj R2	0.01876	0.02657	0.03142	0.03373

PSM Approach 2 - Volume of Credit

Table: Recession and Credit Volume - Second PSM Approach

	(1) ΔCredit (2010-2007)	(2) ΔCredit (2011-2007)	(3) ΔCredit (2012-2007)	(4) ΔCredit (2013-2007)
Fired	-0.1460***	-0.1753***	-0.1545***	-0.1159***
	(-9.53)	(-10.00)	(-11.35)	(-5.04)
Gender FE	Yes	Yes	Yes	Yes
Race FE	Yes	Yes	Yes	Yes
Municipality FE	Pre/Post	Pre/Post	Pre/Post	Pre/Post
Job Occupation FE	Pre/Post	Pre/Post	Pre/Post	Pre/Post
Education FE	Pre/Post	Pre/Post	Pre/Post	Pre/Post
Employer FE	No	No	No	No
Controls	Pre/Post	Pre/Post	Pre/Post	Pre/Post
# Observations	3.28e+06	3.32e+06	3.29e+06	3.23e+06
Adj R2	0.01236	0.01200	0.00974	0.00171

Final Remarks

$\triangleright$ Empirical evidence: some years after the negative experience of being fired during a recession, Workers decrease their willingness of taking credit both in the extensive and intensive margins.

Final Remarks

▷ Empirical evidence: some years after the negative experience of being fired during a recession, Workers decrease their willingness of taking credit both in the extensive and intensive margins.

▷ Future improvements and follow-up questions:
  ▷ Is this effect really long lasting?
  ▷ Add data after the 2014-2016 recession in Brazil
  ▷ Check the effect for those workers who lost the job AND had some arrears in loans during the recession
  ▷ Second hand experiences: relatives and neighbors

Thank You!

Ehrmann, M. and Tzamourani, P. (2012). Memories of high inflation. *European Journal of Political Economy*, 28(2):174–191.

Fajardo, J. and Dantas, M. (2018). Understanding the impact of severe hyperinflation experience on current household investment behavior. *Journal of Behavioral and Experimental Finance*, 17:60 – 67.

Hertwig, R., Barron, G., Weber, E. U., and Erev, I. (2004). Decisions from experience and the effect of rare events in risky choice. *Psychological science*, 15(8):534–9.

Knüpfer, S., Rantapuska, E., and Sarvimäki, M. (2017). Formative experiences and portfolio choice: Evidence from the finnish great depression. *The Journal of Finance*, 72(1):133–166.

Malmendier, U. and Nagel, S. (2011). Depression Babies: Do Macroeconomic Experiences Affect Risk Taking? *Quarterly Journal of Economics*, 126(1):373–416.

Malmendier, U. and Nagel, S. (2015). Learning from Inflation Experiences. *The Quarterly Journal of Economics*, 131(1):53–87.

PSM Approach 1 - Conditional Summary Stats

Table: Conditional Summary Statistics - First PSM Approach

	(1) Not Fired 2010	(2) Fired 2010	(3) Not Fired 2013	(4) Fired 2013
$\mathbb{P}$[Credit] 2007	.07895	.08202	.07797	.08105
$\mathbb{P}$[Credit] end	.1145	.09861	.1385	.1311
$\Delta\mathbb{P}$[Credit]	.03555	.01658	.06055	.05003
Credit Volume/ Wage 2007	1.121	1.129	1.115	1.113
Credit Volume/ Wage in end-year	1.805	1.449	1.797	1.607
Δ(Credit Volume / Wage)	.6833	.3207	.6816	.4935
Arrears 2007	.008348	.008333	.008364	.008217
Arrears end-year	.0192	.01898	.03021	.03029
Job Tenure in 2007	24.33	24.12	24.54	24.35
Job Tenure in end-year	38.07	12.77	44.46	24.25
Age in 2007	31.22	31.3	30.99	31.05
Monthly Wage 2007 (BRL)	929.4	937.9	928.2	934.1
Monthly Wage end-year (BRL)	1,312	1,309	1,960	1,956
Number of Observations	1,511,603	1,671,502	1,476,935	1,635,017

PSM Approach 1 - Probability of Taking Credit

Table: Recession and Probability of Taking Credit - First PSM Approach

	(1) $\Delta\mathbb{P}[\text{Credit}]$ (2010-2007)	(2) $\Delta\mathbb{P}[\text{Credit}]$ (2011-2007)	(3) $\Delta\mathbb{P}[\text{Credit}]$ (2012-2007)	(4) $\Delta\mathbb{P}[\text{Credit}]$ (2013-2007)
Fired	-0.0079***	-0.0060***	-0.0035***	-0.0018***
	(-11.35)	(-7.66)	(-6.41)	(-2.69)
Gender FE	Yes	Yes	Yes	Yes
Race FE	Yes	Yes	Yes	Yes
Municipality FE	Pre/Post	Pre/Post	Pre/Post	Pre/Post
Job Occupation FE	Pre/Post	Pre/Post	Pre/Post	Pre/Post
Education FE	Pre/Post	Pre/Post	Pre/Post	Pre/Post
Employer FE	No	No	No	No
Controls	Pre/Post	Pre/Post	Pre/Post	Pre/Post
# Observations	3.34e+06	3.37e+06	3.33e+06	3.27e+06
Adj R2	0.01498	0.02350	0.02849	0.03107

PSM Approach 1 - Volume of Credit

Table: Recession and Credit Volume - First PSM Approach

	(1)	(2)	(3)	(4)
	ΔCredit	ΔCredit	ΔCredit	ΔCredit
	(2010-2007)	(2011-2007)	(2012-2007)	(2013-2007)
Fired	-0.1252***	-0.1306***	-0.0827***	-0.0623***
	(-3.20)	(-7.46)	(-4.69)	(-4.24)
Gender FE	Yes	Yes	Yes	Yes
Race FE	Yes	Yes	Yes	Yes
Municipality FE	Pre/Post	Pre/Post	Pre/Post	Pre/Post
Job Occupation FE	Pre/Post	Pre/Post	Pre/Post	Pre/Post
Education FE	Pre/Post	Pre/Post	Pre/Post	Pre/Post
Employer FE	No	No	No	No
Controls	Pre/Post	Pre/Post	Pre/Post	Pre/Post
# Observations	3.34e+06	3.37e+06	3.33e+06	3.27e+06
Adj R2	0.00578	0.00942	0.00865	-0.00161

Placebo PSM - Probability of Taking Credit

Table: Placebo PSM Test - Recession and Probability of Taking Credit

	(1) $\Delta\mathbb{P}[\text{Credit}]$ (2007-2004)	(2) $\Delta\mathbb{P}[\text{Credit}]$ (2007-2005)	(3) $\Delta\mathbb{P}[\text{Credit}]$ (2007-2006)
Fired	0.0010**	0.0021***	0.0011**
	(2.32)	(5.10)	(2.47)
Gender FE	Yes	Yes	Yes
Race FE	Yes	Yes	Yes
Municipality FE	Pre/Post	Pre/Post	Pre/Post
Job Occupation FE	Pre/Post	Pre/Post	Pre/Post
Education FE	Pre/Post	Pre/Post	Pre/Post
Employer FE	No	No	No
Controls	Pre/Post	Pre/Post	Pre/Post
# Observations	2.72e+06	3.13e+06	3.13e+06
Adj R2	0.03573	0.01403	0.00848

Placebo PSM - Volume of Credit

Table: Recession and Credit Volume

	(1) ΔCredit (2007-2004)	(2) ΔCredit (2007-2005)	(3) ΔCredit (2007-2006)
Fired	0.0113	0.0473***	0.0097
	(0.55)	(4.58)	(0.84)
Gender FE	Yes	Yes	Yes
Race FE	Yes	Yes	Yes
Municipality FE	Pre/Post	Pre/Post	Pre/Post
Job Occupation FE	Pre/Post	Pre/Post	Pre/Post
Education FE	Pre/Post	Pre/Post	Pre/Post
Employer FE	No	No	No
Controls	Pre/Post	Pre/Post	Pre/Post
Observations	2.72e+06	3.13e+06	3.13e+06
Adj R2	0.02421	0.00897	0.01239