

# Responsible Personal Finance: The Role of Conscientiousness in Bank and Pension Savings in Chile\*

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## ABSTRACT

We investigate the role of trait conscientiousness, from the Big Five personality traits, in explaining individual saving behavior. Conscientiousness is a disposition to be responsible and pursue non-immediate goals; thus, we expect this trait to positively predict saving behavior. Using a nationally representative survey from Chile, we find the expected effect of conscientiousness on pension and bank savings.

JEL classification: C2, D03, D14, E21, J32

## I. INTRODUCTION

The past decade has seen growing interest among economists and financial academics in the role of personality traits in economic outcomes (Almlund et al. 2011). Prior research has shown that personality traits predict a variety of variables ranging from occupational attainment and earnings (Heckman et al. 2006) to experimental game decisions (Kagel and McGee 2014). Despite this, little to no attention has been paid to whether personality traits affect saving behavior (for an exception, see Brown and Taylor 2014). This is surprising, given that theories about why people save money typically involve psychological motives such as effort or autonomy (Browning and Lusardi 1996), which are linked to personality traits.

In the present note, we examine whether a particular personality trait, the factor conscientiousness from the widely used Big Five taxonomy (Becker et al. 2012), is related to saving behavior in a Chilean sample.<sup>1</sup> The core of conscientiousness is a disposition to be responsible, organized, and persistent (McCrae

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1 We should note that Brown and Taylor (2014) examine a similar issue using a UK sample and find no significant results. In our paper, we use not only bank savings, as Brown and Taylor (2014) do, but also voluntary pension savings. This is particularly interesting because our sample is from Chile. Chile is usually taken as a classic example of an individual capitalization pension system; thus, studying how a personality trait may affect saving behavior is relevant given this context.

and Costa 2003). Conscientious individuals tend to constrain impulses, in order to pursue non-immediate goals (DeYoung et al. 2010). DeYoung et al. use structural magnetic resonance imaging to study how the Big Five traits are related to the volume of different brain regions, and find that conscientiousness is related to volume in the lateral prefrontal cortex, a region involved in planning and the voluntary control of behavior. Likely because of this, conscientiousness significantly predicts job performance and college grades (Borghans et al. 2008), a robust result that has been found in countries with different cultural backgrounds (e.g. Barros et al. 2014).

Consistent with the essence of this personality trait, many economists have underscored the importance of self-control, delay of gratification, and willpower in saving behavior (e.g. Laibson 1997). As Brandstätter (2005, p. 67) points out, 'most forms of saving imply some kind of delay of gratification, a behavioral control mechanism that is essential for any human development.' As such, we expect conscientiousness to positively predict saving behavior.

## **II. DATA**

We employ Chile's Social Protection Survey (Encuesta de Protección Social, EPS). Comparable to the Health Retirement Survey (HRS) in the US<sup>2</sup>, the EPS is a nationally representative, stratified survey that includes information about individuals' labor history, wages, wealth, health, education, financial literacy, selected personality traits, among others variables. The dataset has currently three waves (2002, 2006, and 2009) and was developed by the University of Chile in collaboration with the Population Studies Center at the University of Pennsylvania. Behrman et al. (2012), for example, used this dataset in their study of the effects of financial literacy and years of education on wealth accumulation. We conduct our empirical analysis using the last wave available (2009) because only in this wave was the personality traits module included. Our sample contains around 4470 individuals after excluding retirees and individuals aged below 25 and above 65. The sample is reduced by around 400 individuals in the analyses including pension savings because additional restrictions apply to these individuals in order to be eligible to make voluntary savings.<sup>3</sup>

Our empirical analysis is focused on conscientiousness and individual saving behavior. Personality traits, including conscientiousness, are measured with Gosling et al.'s (2003) questionnaire, which includes items ranging from 1 (e.g. low conscientiousness) to 7 (e.g. high conscientiousness). We consider two types of individual saving behavior as our main dependent variables: voluntary pension savings and bank savings. In Table 1, we provide a first look at the data by reporting the personality traits' averages for those individuals reporting any

2 In contrast to the HRS, the EPS includes information about all adults, not just respondents aged above 50.

3 In order to be eligible to voluntarily save for future pension, people must have a formal job and pay social security (pension and health).

**Table 1** Mean personality trait scores for savers and non-savers across types of saving behavior

Type of saving behavior	Savers	Non-savers	Difference
<i>Pension savings</i>			
Conscientiousness	5.89	5.52	0.37***
Extraversion	4.68	4.38	0.30*
Agreeableness	4.69	4.88	-0.19
Neuroticism	4.98	4.75	0.23*
Openness to experience	4.93	4.88	0.05
Financial literacy	4.23	3.84	0.39**
<i>Bank savings</i>			
Conscientiousness	5.78	5.47	0.31***
Extraversion	4.43	4.30	0.13
Agreeableness	4.84	4.91	-0.07
Neuroticism	4.74	4.73	0.01
Openness to experience	5.07	4.71	0.36**
Financial literacy	4.12	3.60	0.52**

Note: Number of observations for pension savings: 4071. Number of observations for pension saving behavior: 4471. Under 'savers' we report the average personality scores of those who had any non-zero amount of savings. The percentage of savers was 3.3% (pension savings) and 9.3% (bank savings).

\*Significant at 10%; \*\*significant at 5%; \*\*\*significant at 1%.

non-zero amount of savings and those who do not. Also, differences in individual financial literacy are reported in the last row of each panel. Financial literacy has been identified in the prior literature as an important determinant of savings (see Bernheim et al. 2001; Lusardi 2008). We find that savers have a significantly higher level of conscientiousness than non-savers for both pension savings (5.89 versus 5.52) and bank savings (5.78 versus 5.47). Savers also have higher financial literacy than non-savers (pension savings: 4.23 versus 3.84; bank savings: 4.12 versus 3.60).

### III. RESULTS

In order to identify the potential effect of conscientiousness on saving behavior, we estimate the following linear model:

$$Y_i = \beta_0 + \beta_1 \text{Conscientiousness}_i + X_i' \beta + \varepsilon_i$$

where  $Y_i$  is the amount of either pension savings or bank savings hold by the individual  $i$ . Our main independent variable is conscientiousness, while the  $X_s$  represents a set of additional control variables, including the remaining Big Five personality traits (extraversion, agreeableness, neuroticism, and openness to experience), sex, age, years of education, self-reported health, marital status, having children, wage, wealth, employment status, and a six-item measure of financial literacy (see Behrman et al. 2012), among others. We estimate the

model using a Tobit estimator because the dependent variable is censored by the left at zero. Our identification strategy relies on the assumption that personality traits are exogenous to saving behavior, in the sense that saving shocks do not have a significant impact on personality traits variables. Previous research has suggested that personality traits remain stable over individuals' adult life (see Cobb-Clark and Schurer 2012; Brown and Taylor 2014); thus, they are reasonably free of reverse causality when used for explaining economic outcomes.<sup>4</sup>

Table 2 shows the estimated marginal effects for a set of Tobit models. At the top of each column, we report the type of saving used as the dependent variable. In the first two estimated models, we only include conscientiousness, whereas in the remaining two, we include all the Big Five personality traits. We do this because personality traits tend to be correlated with each other (McCrae and Costa 2003). We report robust standard errors across specifications.

The first model, in column 1, shows the relationship between conscientiousness and voluntary pension savings. The estimated marginal effect of this personality trait is positive (0.0903) and statistically significant as expected. When re-estimating this model, including as additional controls the remaining four traits of the Big Five (column 2), the main findings remain unchanged. Regarding the effect of these additional personality variables on savings, we only find that the agreeableness trait seems to affect negatively voluntary pension savings. Column 3 shows the estimated model using bank savings as the outcome. As with voluntary pension saving, the estimated coefficient for conscientiousness is positive (0.1398) and highly significant, indicating that more conscientious individuals are more likely to save money in a bank. The model including additional controls (column 4) also shows a positive effect of conscientiousness on savings. Interestingly, and consistent with prior literature, this analysis suggests that financial literacy is a significant determinant of bank savings.<sup>5</sup>

#### **IV. CONCLUSIONS**

Altogether the analyses indicate that the personality trait conscientiousness has a positive effect on individuals' savings. In the present study, this includes both voluntary pension savings and bank savings. Understanding how personality

4 Endogeneity due to measurement error may be present, however.

5 As noted, our results differ from Brown and Taylor (2014), who do not find a relationship between conscientiousness and savings. A potential explanation is that there are different emphases in the content of the conscientiousness measures used in the UK and Chile surveys. The emphasis of the items included in the UK survey is on *efficiency*; the emphasis of the items included in the EPS (Chile) is on *deliberation* (the tendency to think carefully before acting). This is more consistent to the self-control and willpower needed to make saving decisions, which could explain the difference in results across studies. Future studies should pay attention to the difference in content across personality measures, as they can have consequences in the studies' results.

## Conscientiousness and Savings

**Table 2** Marginal effects of Tobit estimations for pension savings and bank savings

Variables	Panel A: Pension Savings		Panel B: Banking Savings	
	[1]	[2]	[3]	[4]
Conscientiousness	0.0903*	0.0988**	0.1398***	0.1481***
	(0.0477)	(0.0485)	(0.0515)	(0.0551)
Extraversion		0.0365		-0.0187
		(0.0378)		(0.0469)
Agreeableness		-0.115**		-0.0304
		(0.0565)		(0.0573)
Neuroticism		0.0555		-0.0310
		(0.0458)		(0.0544)
Openness to experience		-0.0335		0.0391
		(0.0437)		(0.0448)
Financial literacy	0.0429	0.0407	0.0786*	0.0790*
	(0.0404)	(0.0387)	(0.0469)	(0.0465)
Gender (male = 1)	-0.0140	0.0019	0.0690	0.0648
	(0.1333)	(0.1277)	(0.1444)	(0.1444)
Age	0.0222***	0.0219***	-0.0061	-0.0050
	(0.0082)	(0.008)	(0.0079)	(0.0077)
Years of education	0.0482**	0.0457**	0.0756***	0.0732***
	(0.0222)	(0.0221)	(0.0232)	(0.0239)
Health (poor = 1 to excellent = 6)	0.0406	0.0418	-0.0791	-0.0741
	(0.0712)	(0.0685)	(0.0824)	(0.0829)
Head of household (yes = 1)	-0.0490	-0.0452	0.1083	0.1245
	(0.1295)	(0.1239)	(0.1446)	(0.1423)
Married (yes = 1)	-0.0577	-0.0405	0.3273**	0.3328**
	(0.1196)	(0.115)	(0.1586)	(0.1567)
Children (yes = 1)	-0.0607	-0.0604	-0.2795***	-0.2826***
	(0.053)	(0.0499)	(0.0686)	(0.068)
Wage (T\$/2009)	0.0446**	0.0400**	0.1173	0.1150
	(0.0173)	(0.0156)	(0.0874)	(0.0867)
Wealth (M\$/2009)	0.0034***	0.0031***	0.0033	0.0032
	(0.0012)	(0.0011)	(0.0023)	(0.0023)
Home ownership (yes = 1)	0.0697	0.0648	0.2254	0.2282*
	(0.1319)	(0.1249)	(0.1379)	(0.1367)
Employment status (yes = 1)	0.3961***	0.3712**	-0.1239	-0.1202
	(0.1518)	(0.1468)	(0.2006)	(0.1979)
Self-employed (yes = 1)	-0.4283***	-0.4085***	-0.0320	-0.0446
	(0.1325)	(0.1263)	(0.1781)	(0.1739)
Number of observations	4071	4071	4471	4471
Pseudo R <sup>2</sup>	0.0400	0.0361	0.0260	0.0250

*Note:* For the Big Five personality traits and financial literacy, 1 = low and 7 = high. T\$ = Thousands of Chilean pesos; M\$ = millions of Chilean pesos. Robust standard errors in parenthesis.

\*Significant at 10%; \*\*significant at 5%; \*\*\*significant at 1%.

traits influence financial outcomes such as bank savings may be an important step in encouraging researchers to further explore how noncognitive skills explain heterogeneity in finance-related behavior.

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