



## Do personality traits influence investors' portfolios?

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### ABSTRACT

Based on large-scale survey data from the 2006–2012 waves of the US Health and Retirement Study (HRS), we show that individual portfolio decisions are influenced by a variety of stable traits and facets traditionally investigated in the field of personality psychology. Three personality traits have a significant negative correlation with financial risk taking, as measured by the holding and the amount of stock assets: Agreeableness, Cynical Hostility and Anxiety. For Cynical Hostility a belief-based mechanism seems to be at work, whereas the impact of all the other traits seems to pass through the preferences – rather than the beliefs – channel. Our findings shed new light on the determinants of individuals' risk taking in the financial domain.

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### 1. Introduction

In finance, the classic “risk as analysis” (Slovic et al., 2004) perspective posits that investors are driven by cognitive assessments of risk, thoughtfully facing the market's risk-reward trade-offs before making their financial decisions. However, in spite of the indisputable importance of examining investors' assessments of risk,<sup>1</sup> we claim that our understanding of financial decision making might benefit from the rapid growth of a complementary stream of literature – mainly in the fields of behavioral economics, psychology and neuroscience – that has been investigating the *non-cognitive* side of risk-taking behavior. In particular, a burgeoning literature has shed light on the role of personality traits in shaping risky decision-making processes (Almlund et al., 2011; Rustichini et al., 2012). In psychology, personality traits have been defined as the relatively enduring patterns of thoughts, feelings, and behaviors that differentiate individuals from one another and that reflect the tendency to respond in certain ways under certain cir-

cumstances (Roberts, 2009). It is fair to acknowledge that sharp contrasts between cognition and personality are not always easy to make (Borghans et al., 2008).<sup>2</sup> However, studying the importance of non-cognitive determinants of investors' risk taking has potentially relevant implications for our understanding of the extent to which public policy, education and market incentives may be expected to influence individuals' financial decisions.

Personality is a relevant but so far largely neglected side of investors' relationship with their money. In this paper, we hypothesize that individual-specific factors such as personality traits may affect investors' propensity to take financial risks, being an important source of variation in their portfolio decisions. In particular, also in light of rich anecdotal evidence from the recent financial crisis, we test the hypothesis that personality traits are correlated with the propensity to take risks in the financial domain.

While personality traits have an important tradition in psychology, only recently economists started examining their impact on economic variables. In particular, since in personality psychology so far the so called “Big Five” model turned out to be successful in many domains, our empirical strategy pays attention to this approach, to see whether the key personality traits and facets studied within this framework do exert a significant impact also on investors' financial decisions. However, as the current debate indicates that controversies exist about the explanatory power of

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<sup>1</sup> Christelis, Jappelli and Padula (2010), focusing on individuals living in 11 European countries, show that their propensity to invest in stocks significantly and positively depends on their cognitive abilities (on the link between cognitive ability and financial decision making, see also Agarwal and Mazumder, 2013). Browning and Finke (2015) find that among retirees cognitive ability is negatively related to allocations away from stocks, that are associated with long-term underperformance.

<sup>2</sup> For example, it is hard to decide whether so called ‘quasi-cognitive’ traits, such as, e.g., creativity and emotional intelligence, are mainly cognitive or non-cognitive.

the Big Five model (e.g., due to its atheoretical nature), on the whole we decided to rely on a broader array of investors' personality traits, including from the outset in our analysis also several personality characteristics unrelated to the Big Five model (see Section 3 for details on this).

Our work is related to Brown and Taylor (2014) and Conlin et al. (2015). Brown and Taylor (2014) use data from one wave of the British Household Panel Survey and find that some Big Five personality traits (in particular, Conscientiousness, Extraversion, and Agreeableness) correlate with the amount of unsecured debt and savings. They also check for the correlation between the Big Five traits and the holding of specific assets, finding significantly negative correlations only with stock holding and Extraversion (in the sample of couples) and Agreeableness (in the sample of singles). Conlin et al. (2015) use Finnish data to examine the link between personality traits (and facets) and stock market participation and show that one of the four temperament traits in the Temperament and Character Inventory, that is, harm avoidance, negatively correlates with stock holding. In addition, the authors find that stock holding also correlates with several temperament sub-traits, linked to harm avoidance as well as other traits.

In this paper, we rely instead on US data and look at the connection between the propensity to take financial risk, as measured by the holding and the amount of risky assets, and a broad range of personality traits, including Big Five as well as other traits. Next, for each trait we consider not only a score but also a set of specific facets (i.e., sub-traits) that compose it: This helps to make a more accurate assessment of the empirical connection that constitutes the major focus of our analysis. To this aim, we use survey data from the US *Health and Retirement Study* on a representative sample of US households whose head is within the 50–80 age range covering the 2006–2012 period on a biennial basis. This dataset contains a rich and nuanced array of personality questions: To our knowledge, we are the first to conduct a large-scale study focusing on the connection between a large variety of individual investors' personality traits and facets and their willingness to take financial risk. The study benefits from a large number of observations and a wide set of control variables.

Our major results can be summarized as follows. Personality characteristics matter, as we document that three personality traits have important negative effects on financial risk taking. Cynical Hostility shows a negative correlation with both stock holding and the stock share; Agreeableness is negatively linked with the stock holding while Anxiety is negatively associated with the stock share. Moreover, our analysis indicates that the influence of Cynical Hostility seems to occur through the beliefs channel – though it is fair to say that also the preferences channel might play a role in this relationship. For all the other personality traits, the impact on financial risk taking seems to pass through the preferences – rather than the beliefs – channel. Finally, a more fine-grained analysis allows us to offer evidence of correlation between portfolio choice and several facets associated with all the personality traits we consider in the analysis.

The remainder of the paper proceeds as follows. Section 2 provides a selective review of the voluminous literature on personality traits, placing a special emphasis on the relationships between personality traits and economic outcomes. Section 3 describes our data while Section 4 illustrates our main findings. Section 5 concludes. A final online appendix lists the raw variables used to identify personality traits, and reports the results of further empirical analyses.

## 2. Personality traits and economic outcomes

Available empirical evidence supports the view that individuals' willingness to take risks, far from being stable across decision

contexts (as it was supposed to be in several standard models in economics and finance), is highly dependent on the specific domain in which it is elicited (Dohmen et al., 2011; Loomes and Pogrebna, 2014), also when market data are used (Barseghyan et al., 2011).<sup>3</sup> This suggests that researchers should adopt a domain-specific approach to the measurement of risk-taking behavior (Deck et al., 2014). In our analysis, we examine risk taking in the financial domain, by directly focusing on investors' portfolio choice.

Looking at the impact of personality traits on financial risk taking appears to be a promising research area also due to mounting evidence from economics studies that speaks to the independent predictive power of personality traits for economic outcomes. Almlund et al. (2011) focus on personality traits as predictors of academic and economic success, health and criminal activity and document that, for many outcomes, personality measures are just as predictive as cognitive measures, even after controlling for family background and cognition.

The so called "Big Five" model is one of the most commonly used taxonomies in the management and psychology literature (Costa and McCrae, 1992; Deck et al., 2008). This model subsumes a huge variety of personality attributes (Lonnqvist et al., 2015) and, at the broadest level of abstraction, it posits that five traits (i.e., Openness to Experience, Conscientiousness, Extraversion, Agreeableness and Neuroticism) are fundamental and universal and that the score of an individual in these dimensions characterizes her stable pattern of thoughts and feelings (Rustichini et al., 2012). The Big Five model provides us with a comprehensive categorization of personality traits that also includes progressively more narrowly defined traits (or facets) at lower and lower levels (Almlund et al., 2011).

Prior empirical work examined the relationship between the Big Five model and a variety of economic variables and life outcomes. Nyhus and Webley (2001) find that more emotionally stable and introverted individuals save more and borrow less, whereas more agreeable individuals do the opposite. Bucciol et al. (2015) observe that personality traits bias one's perceived position in the social ladder. Several articles focus on the relationship between Big Five traits and earnings (see, e.g., Mueller and Plug, 2006). Rustichini et al. (2012) show that personality variables affect a variety of economic and life outcomes, such as credit score, job persistence, heavy truck accidents, Body Mass Index and smoking habit, with personality traits having a stronger predictive power than economic preferences. Becker et al. (2012) compare the explanatory power of economic preferences and measures of personality in accounting for health, educational and labor market outcomes and conclude that standard measures of preferences and personality are to a large extent complementary constructs. Psychological factors related to individuals' personality seem to play an important role also with regard to people's attitude towards portfolio monitoring: Gherzi et al. (2014) find that investors behave like hyper-vigilant meerkats as they increase their portfolio monitoring following both positive and negative market returns. They also show that neuroticism moderates the pattern of portfolio monitoring. Letkiewicz and Fox's (2014) empirical analysis indicates that Conscientiousness predicts asset accumulation among young Americans.

Relevant personality traits also include cynical hostility, anxiety and anger. However, it is important to note that, compared to the Big Five model, the relationships between these three

<sup>3</sup> According to Weber, Blais and Betz (2002), individuals view risk differently over six domains, distinguishing between financial, gambling, social, ethical, recreational and health safety risks: A person can be quite risk averse when it comes to financial decisions, but risk loving with regard to health decisions (Borghans et al., 2008).

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