Occupational Attainment and Earnings in Southeast Asia: The Role of Personality Traits*

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Abstract

Rural labor markets in emerging countries offer limited occupation choices and earning opportunities to individuals, and, decisions are often made out of necessity rather than opportunities. Given these difficult circumstances, it is all the more important to understand the role of personality traits for occupational attainment and earnings. Using new micro level data from individuals living in rural areas of Thailand and Vietnam, this paper aims to (i) examine the role of personality traits in occupational attainment and earnings in a rural emerging market setting and (ii) compare the outcomes to existing results from industrialized countries. We find that conscientious individuals are more likely to engage in self-employment or professional jobs. In relation to earnings, less Neuroticism and low trust are rewarded across all occupations. Other non-cognitive skills such as locus of control, risk, and patience play an inferior role. Overall, our results show that while occupational attainment is determined by similar factors in both developing and developed countries, there are differential effects of personality profiles on earnings in the two settings.

Keywords: Personality traits; Big Five Factor Model; Occupational Attainment; Occupational Earnings; Southeast Asia; TVSEP
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1 Introduction

Empirical and experimental evidence (Jencks and Williams, 1979; Nyhus and Pons, 2005; Wells et al., 2016) corroborate that in addition to cognitive skills, non-cognitive skills – also called personality traits – play an important role in determining individual decision making behavior (Wichert and Pohlmeier, 2010), job performance (Barrick and Mount, 1991) and economic outcomes (Piatek and Pinger, 2010). According to Heckman and Cunha (2007), non-cognitive skills are vital for the realization of the acquired potential (i.e. cognitive skills). The endowment of these traits differs among individuals and also leads to different productivity across different occupations. Hence, individuals sort themselves in tasks that offer them a higher comparative advantage (Borghans et al., 2008; Heckman et al., 2010; Heckman and Kautz, 2012). Therefore, the importance of personality traits in determining occupational attainment (Cobb-Clark and Tan, 2011; John and Thomsen, 2014) and occupational earnings (Osborne Groves, 2003; Mueller and Plug, 2006; Heineck and Anger, 2010) has been acknowledged widely in the literature. Existing studies focus mainly on industrialized countries using data from the U.S., Japan or Europe. However, it is unclear in how far these results hold in an emerging or developing country setting.

Labor markets in emerging and developing countries vary substantially from labor markets in industrialized countries. In particular, these labor markets are characterized as labor intensive and capital scarce (Campbell and Ahmed, 2012). There is little specialization and mostly small scale operations (Banerjee and Duflo, 2007). Specifically, rural economies are informal, likely to be less productive, credit insufficient, and prone to greater earnings instability (Campbell, 2011). Gollin et al. (2014) highlight that in most developing countries labor is misallocated into the agriculture sector, leading to a large agricultural productivity gap. Low levels of skills among farmers are thought to be one of the main reasons for this gap (Laajaj and Macours, 2017). Job creation has been identified as the key to alleviating extreme poverty, improving living standards and reaching the Sustainable Development Goals by 2030 (Van Trotsenburg, 2018). However, this requires a better understanding of individual labor market decisions and productivity determinants in these countries. Only recently, some studies started to address the determinants and impacts of non-cognitive skills in developing economies (Attanasio et al., 2015; Gertler et al., 2014; Laajaj and Macours, 2017).

Against this background, this paper aims to (i) examine the role of personality traits in occupational attainment and earnings in a rural emerging market setting and (ii) compare the outcomes to existing results from industrialized countries. Our study is closest related to that of John and Thomsen (2014), who study the relationship between personality traits and occupational attainment and earnings for a sample in Germany. In our study, we first examine the importance of personality traits for occupational attainment in rural areas of Southeast Asia. Even though non-farming households tend to be better off than farming-only households (Sohns and Revilla Diez, 2016; Sharma et al., 2016), a majority of households in developing countries rely on income from agriculture and environmental resource extraction (Parvathi and Nguyen, 2018). Since the skill set and the labor market opportunities in these settings are rather homogeneous, personality traits might explain why some individuals pursue a career other than farming. We therefore employ a multinominal logit model, using subsistence farming as the baseline occupation and test it against different occupation categories such as professionals or self-employed. Second, we analyze how personality traits affect earnings within different occupation groups. Identical personality traits can be valued differently across occupations. Therefore, we regress Mincer-type wage equations for each occupation type, thereby following John and Thomsen (2014).

For our analysis, we use a data set for Thailand and Vietnam, collected under the Thailand Vietnam

Socio Economic Panel (TVSEP) in 2017.[1] A section on measurement of personality traits was included for the first time in 2017, providing information on around 4000 individuals. Therefore, in this paper, we also implement and validate measures of personality traits, namely the Big Five factor model (McCrae and John, 1992; Costa and McCrae, 1997). In order to capture an individual's personality we use nine different measures: the Big Five factor model, locus of control as well as measures on patience, risk and trust. The Big five model and the locus of control capture personality traits while risk, patience and trust are considered as preferences (Falk et al., 2018). Preferences display very weak correlation with personality traits and are seen complementary to personality traits in examination of various labor market outcomes (Becker et al., 2012).

We find that personality traits are important predictors for both occupational attainment and earnings of individuals in our rural sample. In particular, Conscientiousness is the most decisive factor for occupational attainment and other personality measures play an inferior role. This is line with literature utilizing developed country data sets (Barrick and Mount, 1991; John and Thomsen, 2014). The findings for earnings, however, present a contrast. We find no significance for Conscientiousness and locus of control. Rather, Neuroticism and trust are the most important predictors. However, successful rural self-employed individuals show the same traits as those displayed by their developed country counterparts.

Our paper contributes to the literature in two ways. Firstly, we examine the relationship between personality and occupational attainment as well as occupational earnings in an emerging country setting. This provides basis for comparison with studies that are based in industrialized countries. Secondly, we provide insights for farmers. This occupation is generally not included in existing studies because farmers are not the target population for these samples or the size of farming sample is negligible. Our study confirms that there are indeed some differences between industrialized countries and rural labor markets, both for occupational attainment and and even more so for occupational earnings. Our results indicate that it is crucial for development support policies to identify individuals who are willing to choose an occupation outside of the farming business. We further find that policies aimed at improving rural labor market situations should be tailored to the population and thus keep in mind that some heterogeneity across countries remains with regards to the influence of personality. Our paper provides necessary information for policies aimed at rural labor markets.

The remainder of the paper is organized as follows: Section 2 provides the theoretical framework for our paper. Section 3 introduces the study design and illustrates data collection, measurement of the traits and the econometric models used in our paper. Section 4 presents the results, which is followed by a conclusion in Section 5.

2 Theoretical Framework

2.1 Occupation and human capital

Labor market outcomes, such as occupational attainment and earnings, relate to the human capital of the individual. To conceptualize this, we follow the human capital and earnings models that study the behavior of humans in relation to their human capital formation and occupational attainment (Ben-Porath, 1967, 1970; Mincer, 1970; Heckman, 1976; Cunha et al., 2006). In the simplest setting, we assume that individuals choose their occupation in order to maximize their life-time earnings. Further, individuals are assumed to choose the individually optimal investment into human capital that allows them to reach their desired occupation and to maximize their earnings (Blau et al., 1956). Thus, labor

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[1] For more information please refer to the project webpage: https://www.tvsep.de/overview-tvsep.html.

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market outcomes, such as occupational attainment and earnings, can be depicted as:

$$max(LM outcome) = f(H) + \epsilon \tag{1}$$

Where ϵ signifies the idiosyncratic difference in labor market outcomes and H the human capital of the individual. Human capital is considered a latent variable as there does not exist one variable that allows us to measure it directly. It is rather a combination of different factors which define it, including skills (S) and other individual characteristics (I), socio-economic characteristics related to the family background (F), and other factors, which affect the labor market outcome (X), including labor market experience, labor market conditions and health (Mincer, 1970, 1974). Therefore, human capital can be formally described as:

$$H = \alpha S + \beta I + \delta F + \gamma X + \mu \tag{2}$$

The individual skill set S refers to cognitive and non-cognitive skills, which are key determinants for labor market outcomes of the individual. Cognitive skills, often referred to as education or level of technical skills, are closely associated with the individuals occupational attainment as well as earning differentials (Cawley et al., 2001; Finnie and Meng, 2002; Hanushek and Woessmann, 2008; McIntosh and Vignoles, 2001). In addition to cognitive skills, non-cognitive skills, such as personality traits or interpersonal skills, relate to labor market outcomes. In particular, empirical evidence suggests that personality traits affect job search behavior, occupational attainment, job satisfaction, work behavior, and income (Ones et al., 2003; Judge et al., 2002b,a).

In addition to cognitive and non-cognitive skills other characteristics related to the individual (I) such as gender, age and ability shape the occupation decision and the earnings potential. In the context of developing countries gender plays an important role with respect to labor market outcomes as females face different constraints compared to men. Evidence from Schmidt and Strauss (1975) suggests that females are less likely to work in high skilled white collar jobs. Besides those individual characteristics, the socio-economic and family background matters for the formation of human capital and thus labor market related decisions (F). Social capital is also an important factor. Evidence from (Bentolila et al., 2010) shows that the the network of the individual or family increase the chance of finding job opportunities. Finally, the general labor market situation and other regional disparities are decisive for the individual decision making and realization from human capital investments (X).

We therefore capture these aspects in our model and include measures for each facet of human capital into the analysis.

2.2 Definition of non-cognitive skills

As was previously described, personality traits and preferences build a part of the individuals human capital. We consider nine measures to capture these aspects.

Personality Traits   The Big Five model proposed by McCrae and John (1992); Costa and McCrae (1997) is the most cross-culturally validated model of personality traits (Stuetzer et al., 2018). The factors are relatively stable over an individual's lifetime (Heineck and Anger, 2010) and are considered heritable (Hofstede and McCrae, 2004). The Big Five model includes traits of Openness, Conscientiousness, Ex-

traversion, Agreeableness, and Neuroticism.[2] Openness captures how individuals value new experiences and changes (Rolland, 2002). An open person is creative and enthusiastic about complex jobs. Previous research finds that individuals who are more open, opt for self-employment (Obschonka and Stuetzer, 2017; Stuetzer et al., 2018) or prefer professional jobs requiring analytical and creative thinking (Wells et al., 2016; John and Thomsen, 2014). Conscientiousness depicts how an individual handles tasks. Persons displaying high levels of Conscientiousness are responsible, efficient and hardworking, in their own work and the work done for others (Wichert and Pohlmeier, 2010). Extraversion captures the individual's social relationship. A person with a high level of Extraversion seeks to establish contact with others, displays confidence and is positive (Schäfer, 2016; Wichert and Pohlmeier, 2010). Extroverted individuals are expected to choose and perform better in jobs involving social interaction (Barrick and Mount, 1991). Agreeableness refers to the quality of interpersonal relationships of the individual. An agreeable person is caring and selfless. Neuroticism captures how an individual behaves under stressful situations. Scoring high on this factor indicates that the individual is emotionally unstable and does not cope well with stress (Rammstedt, 2007; Schmitt et al., 2008). Overall, Conscientiousness is considered as the most important predictor of occupational performance (Barrick and Mount, 1991). In case of Openness, there is no consensus on the influence of higher Openness on earnings, with studies demonstrating both positive (Mueller and Plug, 2006) and negative association (Seibert and Kraimer, 2001). An extraverted person earns more and is more successful at work, while an agreeable individual would display lower job satisfaction (Seibert and Kraimer, 2001). Agreeableness is also linked positively to the individual's normative commitment (Erdheim et al., 2006). Scoring high on Neuroticism negatively influences earnings and job satisfaction (Nyhus and Pons, 2005). Specifically for entrepreneurship, a successful entrepreneur scores high on Extraversion, Conscientiousness, and Openness and low on Agreeableness and Neuroticism (Stuetzer et al., 2018; Obschonka and Stuetzer, 2017).

Another non-cognitive skill is the locus of control, which captures the individuals belief of how much their decisions affect their outcomes (Rotter, 1966). A person with an internal locus of control believes that reinforcement in life is contingent on their actions (Piatek and Pinger, 2016). In contrast, a person with an external locus of control views their life as being beyond their control and, rather, influenced by external factors such as destiny (Caliendo et al., 2015). We expect that individuals with an internal locus of control to be more likely to step out of their comfort zone. Hence, this trait might be stronger in entrepreneurs or managers and less visible in professionals (John and Thomsen, 2014). Additionally, it is proposed that individuals with a stronger internal locus tend to invest in themselves, for example in education and training (Piatek and Pinger, 2010) and in their businesses and employees (Sharma and Tarp, 2018). These individuals also engage in high paying jobs and show greater mobility towards higher paying jobs (Schnitzlein and Stephani, 2016).

Preferences   Trust is an important preference and captures the quality of an individual to rely on others, to trust them and their dealing of strangers (Caliendo et al., 2012). Caliendo et al. (2014) find that a trustworthy person is more likely to start a business. The most researched preference in labor force participation is the risk attitude of the individual (Caliendo et al., 2010). If the individual is risk averse, they will prefer more stable job profiles such as permanent employment or the default of subsistence farming. On the contrary, a risk-loving individual is more likely to engage in self-employment or adopt new technologies (Dustmann et al., 2017; Falk et al., 2018). Another variable is patience, which refers to the individuals willingness to wait. Patient people are more likely to save and display higher educational attainment (Falk et al., 2018) which might lead to better occupational outcomes. Literature

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[2] See Table A.1 in the appendix for a graphic overview

posits that being patient might positively influence entrepreneurial decisions (Caliendo et al., 2012). However, Caliendo et al. (2014), find that patience is collinear with emotional stability or Neuroticism included in the Big Five, and, therefore, would display no effect on the occupational decision. We are unclear about the expectations in this regard.

3 Study Design

3.1 Data and occupation types

Household Data   We use micro data originating from the Thailand Vietnam Socio Economic Panel (TVSEP). The economic, cultural and institutional background across the two countries is quite diverse. While Thailand is a constitutional monarchy which operates under relatively free, market driven policies, Vietnam belongs to the four remaining countries worldwide which are governed by a one-party socialist system openly advocating communism (Gloede et al., 2015).[3] Economic development across Thailand and Vietnam differs substantially. According to their Gross Domestic Product (GDP) per capita, Vietnam belongs to the lower-middle-income economies, while Thailand is classified as an upper-middle income country (World Bank, 2018). Despite recent growth and increases in overall household wealth, pockets of poverty persist in rural areas of both countries (Hardeweg et al., 2013b).

Since 2007, the TVSEP regularly administers surveys among rural households in Thailand and Vietnam. Until now, six additional waves have been conducted, in 2008, 2010, 2011, 2013, 2016 and 2017. The Thai data were collected in the provinces Buriram, Nakhon Panom and Ubon Ratchathani and the Vietnamese data in the provinces Thua Thien Hue, Ha Tinh and Dak Lak. Figure A.1 in the Appendix exhibits an overview of the survey region. The survey covers 4,000 rural households in 440 villages. For the purpose of this study, we use data on 2,734 individual respondents who answered the subsection on personality traits. The sample is not exactly identical to the household sample due to three reasons: First, common survey attrition; Second, we have to exclude households that did not answer the survey items; Third, we apply an age restriction and only include working-age individuals aged between 15 to 64 years for our analysis. We hereby follow the OECD definition of working-age individuals (OECD, 2019).

The household sample in each province was randomly drawn based on a stratification process considering the heterogeneous agro-ecological conditions within the regions.[4] All monetary variables were converted to 2005 Purchasing Power Parity USD (PPP USD) equivalents.

In both countries, an almost identical household survey is applied. It consists of nine sections covering individual information on household members (e.g. age, education, health, and employment) as well as household-level information on expenditures, shocks, risks, income earning activities such as farming, livestock raising and fishing, household financial situation, housing conditions, transfers received, and assets owned. In addition to the household survey, a village-level survey is administered to the village chief collecting information on the village location, population, infrastructure, employment, agriculture, and economic conditions.

In the 2017 panel wave of the TVSEP, an additional module was included which asks for the established psychological personality inventories that measure the Big Five. These questions allow to study personality traits and their consequences on a large, representative sample of rural households in Thailand and Vietnam and to relate them to a rich set of socio-economic variables. Since these survey items

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[3] The other three countries are China, Cuba and Lao PDR.
[4] See Hardeweg et al. (2013b) for a detailed overview of the sampling strategy.

were newly introduced, we valdiate the measures in Section 4.1

Additional Data   In order to validate our Big Five survey measures we perform three different exercises. For one of those validation exercises, we use additional data from a TVSEP Add-on project that was conducted in Ubon Rathathani, Thailand, in November 2017 amongst the same households. [5] The Add-on questionnaire includes the exact same questions on personality traits as the TVSEP household survey from summer 2017. This gives us the unique opportunity to compare the answers from one individual at two different points in time for one of the TVSEP survey provinces. Hence, we can test the stability of the survey measure. We identified 505 cases where the respondent in the summer and in November are the same person. For these 505 cases, we compare the answers given in the summer with those given in November. Data from the Add-On are used only for the purpose of validating the data. Throughout our analysis we use data from all the TVSEP provinces in Thailand and Vietnam.

Definition of Occupation Groups   For our analysis, we categorize our sample of working age individuals by occupation type and define eight occupation categories: Subsistence farmers, commercial farmers, professionals, government workers, sales and service workers, craft workers, labourers and self-employed.[6] Our occupation groups relate to the occupation categories described in the International Classification of Occupation (ISCO-08) from the International Labor Organization. We adapted the ISCO-08 to our rural sample population. Therefore, we separate the group of agricultural workers into two groups: subsistence farmers and commercial farmers. We do so in order to get a more comprehensive understanding of peoples job opportunities in the farming sector. We use an output based index, namely, the Household Commercialization Index (HCI) to distinguish between subsistence and commercial farmers (von Braun and Kennedy, 1994; Jaleta et al., 2009)[7]. We further form a group for self-employed individuals. According to the ILO standards, self-employed individuals should be sorted into one of the nine ISCO categories. We think it is appropriate to form a separate group for self-employed individuals for three reasons: (i) Job tasks for self-employed people in our sample are different from other non-self-employed jobs. Grouping those people into one of the ISCO categories would be an over-simplification; (ii) According to behavioural studies self-employed individuals differ in their character traits from individuals in other jobs (Caliendo et al., 2012; Stuetzer et al., 2018); (iii) Individuals working in self-employment face a higher income uncertainty compared to people working in regular jobs.

Since the survey targets low-income households in rural areas, not all occupation categories described by the ISCO standard can be found in our sample. We therefore cannot form groups for managers, technicians and associated professionals, clerical support workers, plant and machine operators and assemblers, and armed forces.

Furthermore, we have to note that our occupation categories for occupations outside farming are quite small. Only 20% of respondents (756 individuals) work in occupations other than farming. The survey

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[5] The Add-on project is about *Behavioral insights into over-indebtedness within a vulnerable population*. For more details on the Add-on project, see Klühs et al. (2019).

[6] We build the occupation categories based on self reported answers from the respondent about their main occupation.

[7] We calculate the index based on the formula:

$$HCI = \frac{\Sigma_{k=1}^{K} \overline{P_k} S_{ik}}{\Sigma_{k=i}^{K} \overline{P_k} Q_{ik}} \qquad (3)$$

where S_{ik} is the quantity of crop k sold by household i. $\overline{P_k}$ is the weighted price and Q_k is the total quantity of crop k produced by household i. This index aggregates the value of all crops cultivated and sold by the household. Thereafter, we use the definitions from Ruthenberg (1971); Pingali and Rosegrant (1995) to define a threshold of 50 per cent. Households that sell less than 50 per cent of their total production are termed as subsistence farming households while those selling above this threshold are labelled as commercial farming households

setting is rural areas in Thailand and Vietnam. Naturally, people mainly work in farming. In our sample, 61% of the respondents report agriculture as their main occupation, of those 61%, 29% are engaged in subsistence farming, meaning that their agricultural output is mainly used for home consumption and not for commercial gain. 33% are engaged in commercial farming. The majority of people that do not work as a farmer are self-employed (9%) or work as a labourer (4%). Respondents working in self-employment run various kinds of businesses, for example retail or small food shops. 1.4% of individuals are professionals. 2.1% of respondents work as a government official. Respondents working as a professional or as government official have on average the highest education level. The group of professionals mainly constitutes of teachers. Another 2.1% work as a sales and service worker and 1% of the respondents work as a craft worker. The remaining 19% of people do not engage in wage generating activities. Those people are either housewives, take care of impaired family members or identify as unemployed or unable to work.

3.2 Measurement of personality traits

We capture the different aspects of personality by using nine distinct measures: the Big Five inventory, locus of control, risk and trust. Apart from the Big Five Inventory, all items have been asked and tested in previous TVSEP survey waves.

The Big Five Inventory   We follow the Big Five model (Costa and McCrae, 1992, 1997) which has become the standard personality measurement in psychology, described in Section 2.2. The model defines personality along the five following dimensions: Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism. The survey questions used to capture these dimensions are based on the Big Five personality inventory questions used in the German Socio Economic Panel (SOEP).[8] Similar questions are used in the British micro panel survey and World Bank surveys across different countries (Guerra et al., 2016). In the respective questionnaire section in the TVSEP survey, respondents are asked how much they agree with different statements about themselves. They rank their answers on a 7 point Likert scale ranging from 1 to 7, where 1 means "Does not apply to me at all" and 7 means "Applies to me perfectly". In total, respondents are presented with 15 survey questions. Figure A.2 in the Appendix exhibits an overview of the survey questions.[9]

Locus of control   We capture the extent to which respondents believe that they have control over their life outcomes by using a survey item that asks about the reasons for why people have low incomes. Answers include among others: *pure luck*, *knowing the right people*, or *hard work good education*. The item scale ranges from 1 to 9, where 1 means that the person has a complete external locus of control and 9 means that the person has a complete internal locus of control.

Risk   We capture someones willingness to take risks by using the standard risk measurement item used in many economic studies. The question asks: *Are you generally a person who is fully prepared to take risks or do you try to avoid taking risk?* Respondents can rank themselves on a scale from 0 to 10. 0 means *Unwilling to take risks* and 10 means *Fully prepared to take risk*. This survey measure has been

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[8] See survey page for details: https://www.diw.de/en/soep

[9] An identical set of questions was administered to individuals who participated in the Add-on project. However, the answer modalities differed slightly. Although, the items are measured on the same scale (7 point Likert scale), each number on the scale was labelled explicitly (each answer option is associated with a specific phrase, e.g. 1 means Disagree fully, 3 means Disagree a little, 6 means Agree strongly). Despite these differences, we rely on the comparison of the TVSEP data with the Add-on data to reveal, if the measures are reliable or not.

experimentally validated for the TVSEP data by Hardeweg et al. (2013a)

Trust   Trust is measured by a dummy variable, based on the following question: *Generally speaking, would you say that most people can be trusted or that you need to be very careful when dealing with people?* The variable is 0 if the respondents answer is *Need to be very careful when dealing with people* and 1 if the answer is *Most people can be trusted.* Similar scales have been applied in the SOEP and validated by Becker et al. (2012); Dohmen et al. (2009).

Patience   We measure a persons patience through the following question: *Are you generally a person who is fully prepared to give up something now in order to gain more in the future?* Again, respondents rank themselves on a scale from 0 to 10, where 0 means *Unwilling to wait* and 10 means *Fully prepared to wait.* Similar questions have been used in other major surveys such as the Global Preference Survey and validated by (Falk et al., 2018, 2016).

3.3   Specification of econometric models

In the analysis, we use different methodologies to address our research question. We start by assessing the internal validity of the Big Five survey measures. We then apply a multinomial logit regression to estimate the influence of personality traits on an individual's occupational attainment. We further analyse the relationship between personality traits and occupational earnings within the different occupation groups.

We address the internal validity of the Big Five model for our sample population in three ways: (i) We compute the Cronbach's itemized alpha coefficient to test for internal consistency of the scales; (ii) We conduct a PCA based on the survey questions; (iii) We test the stability of the personality traits over time. The Cronbach's itemized alpha coefficient (Cronbach, 1951) is widely used in the psychological literature and tests the internal consistency of the scales across the survey questions and across the five personality traits (Schäfer, 2016; Yomaboot and Cooper, 2016).

We use a principal component analysis (PCA) to validate the structure of the personality factors for the sample population (Schmitt et al., 2007). The PCA is based on the 15 personality questions administered to respondents in the household questionnaire (see Table A.2) and allows it us to reduce the dimension of the traits variables by creating factors which are homogeneous within themselves and heterogeneous between each other (Backhaus et al., 2011). In order to compare our measures with other studies, we also construct simple averages for the respective Big Five traits to produce comparable measures of the personality traits for our sample population (see Tables A.1 and A.2 for relation between personality traits and survey questions). We use the Kaiser criterion (K1) (Ford et al., 1986) which retains all factors with eigenvalues greater or equal to one, to determine the number of factors to be retained, resulting in five factors which explain a total of 56% of the variance. Following Hair et al. (2009), only the factors with loadings greater than 0.30, i.e. meeting the minimum practical significance level, are interpreted.

To validate the stability of the personality traits in our sample, we use data from an Add-on project conducted in Ubon Ratchathani. Given that the same individuals were asked the same type of questions, this allows us to compare the responses from the same person at two different points in time. A two-sided ttest is executed to compare the results.

In the main part of the analysis we look at occupational attainment and occupation earnings. We first use a multinomial logit model to understand, in how far the individual's personality traits predict occupational attainment.

The regression takes the following form:

$$Pr(O_{ijr} = 0) = \beta_0 + \beta_1 E_{ijrc} + +\beta_2 P_{ijrc} + \gamma_1 I_{ijr} + \gamma_2 HH_{jr} + \gamma_3 LM_r + \gamma_4 D_r + \epsilon_{ijr} \quad (4)$$

Where O_{ijr} denotes probability of individual i in household j and region r to engage in an occupation in relation to the base category of being a subsistence farmer. E_{ijrc} represents the cognitive skills of individuals measured as years of schooling. The vector P_{ijrc} captures the set non-cognitive skills of each individual, including the Big Five measures as well as the variables on locus of control, patience, risk and trust. I_{ijr} and H_{jr} are vectors of individual and household control variables. These include gender, age, and being active in a political party. Furthermore we also control for household size, ethnicity and mobile phone ownership refer to socio-economic characteristics related to the family background. Finally, we include controls for the labor market situation (LM_r) at the district level and for the province (D_r) in which the household resided to capture regional differences.

Finally, we estimate the role of personality traits on individual earnings for each occupation type. The concept of the human capital approach, described in Section 2.2 is the basis for our regression model and the variables included.

The regression takes the following form:

$$ln(Wage_{ir}|Occupation = j) = \alpha_0 + \alpha_1 E_{ijrc} + +\alpha_2 P_{ijrc} + \eta_1 I_{ijr} + \eta_2 HH_{jr} + \eta_3 LM_r + \mu_{ijr} \quad (5)$$

Where $Wage_{ijr}$ denotes the hourly wage of individual i in household j and region r conditional on *Occupation* being equal to *j*. *Occupation* includes all occupation types excluding subsistence and commercial farming. The construct of our data set hinders calculation of individual agricultural earnings. Therefore, we limit the analysis to non-farming occupation types. We employ same explanatory variables as Equation4.

4 Results

4.1 Validity of the survey measure

Measures on the Big Five Inventory were newly introduced to the TVSEP in 2017. In order to accurately interpret the findings from our main analysis, we have to be certain that survey measures are consistent. This section therefore addresses the internal validity of these survey measures.[10]

Cronbach's Alpha   In order to test for internal consistency of the survey measures we compute the Cronbach's itemized alpha coefficient for the overall TVSEP sample as well as for the Ubon Sub-sample. The Cronbach's itemized alpha coefficient ranges between 0.42 and 0.60 across the Big Five factors. The overall reliability lays a 0.64 for the whole sample indicating a good fit (Schäfer, 2016) . For the Ubon Sub-sample the score lays at 0.67. Detailed results are reported in Table A.3 in the Appendix. Our results are similar to those of Rammstedt and John (2007).

Principal Component Analysis   The PCA reveals five factors (see Table A.3 and Figure A.2 in the Appendix). In order to avoid confusion with the five factors from the Big Five model we name our factors: (i) Creativeness, (ii) Diligence, (iii) Skepticism, (iv) Approachability, and (v) Amiableness. Individuals

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[10] Note that we use an unrestricted sample throughout Section 4.1 and only apply the working age restriction in Sub-section 4.2 and 4.3, where we analyze the relationship between personality traits and occupational attainment.

who are creative consider themselves as artistic, have new ideas and an active imagination. They work thoroughly and efficiently, are sociable, and kind to others. People who are diligent are very determined to work (i.e. not lazy at all) and are always considerate and kind to others (i.e. never rude). The factor skepticism combines the items worrying and nervousness. Approachability combines new ideas, talkative, outgoing (i.e. not reserved) and stressed easily (i.e. not relaxed). Finally, Amiableness is a combination of talkative and sociable but also forgiving and kind.

Table 1 shows the correlation between the Big Five factors and the factors derived from the conducted PCA. The results suggest that our factors are relatively close to the Big Five factors. Our factor Creativeness is significantly correlated to the factor Openness from the Big Five model. Similarly, our factor Skepticism can be clearly mapped to the factor Neuroticism, and, our factor Approachability to the Big Five factor Extraversion. For the remaining two factors, Diligence and Amiableness we see correlations with more than one factor or with none of the factors from the Big Five model. Overall, we conclude that it is suitable to use the Big Five factors for our survey population as the results suggest a strong correlation between our factors and the Big Five factors. The same validation technique has been followed by (Rammstedt and John, 2007) to establish the equivalence of the BFI-S to the BFI-44.

Table 1: Correlation between Big Five and Factors from PCA

	Openness	Conscientiousness	Extraversion	Agreeableness	Neuroticism
Creativeness	**0.76**	**0.63**	0.38	0.50	-0.23
Diligence	-0.37	**0.51**	0.12	**0.64**	-0.12
Skepticism	-0.02	0.13	-0.06	0.09	**0.92**
Approachability	0.22	0.08	**0.75**	-0.24	0.11
Amiableness	-0.21	-0.42	0.46	0.32	0.07

Correlation higher than absolute 0.50 are shown in bold.
Source: Authors' calculations.

Comparison of Sub-Sample Table 2 depicts the average score for each of the Big Five factors for those individuals included in the TVSEP and the Add-on project. The results reveal that on average the factors differ only slightly between the answers given in the TVSEP data and the Add-on project. The factors Extraversion, Agreeableness and Neuroticism are not statistically different from each other. Although, the factors Openness and Conscientiousness are statistically different from each other, the mean values are still very close together and do not contradict each other. Some of this variation might also be the result of the different answer framing in the Add-on questionnaire. Due to this alteration the answers are not 100 percent comparable. Moreover, questions were posed by enumerators and not self-reported. This might have added some additional variation to the answers. The findings show that the answers are consistent over time, which lets us to believe that overall the 15 survey questions were posed in the correct way and that respondents understood them.

Table 2: Comparison of sample means

	Mean TVSEP	Mean Add-on	Mean Difference
Openness	4.601	4.922	-0.321***
Conscientiousness	5.549	5.743	-0.195***
Extraversion	4.484	4.505	-0.021
Agreeableness	5.593	5.589	0.004
Neuroticism	3.399	3.264	0.135

Note: *, **, and *** denote significance at the 10, 5, and 1 percent levels for two-sided ttests.
Source: Authors' calculations.

Overall, the results from the Cronbach's alpha and the PCA indicate that the personality factors in our sample population are similar to the Big Five factors. Furthermore, the comparison between the TVSEP data and the Add-on projects show that individuals answer consistent across the two surveys. Thus, we conclude that the personality trait questions can be utilized to form the Big Five factors for our study population. For comparability we use the average score of the original Big Five factors for the remainder of the study.

4.2 Importance of personality traits for occupational attainment

Results from the multionominal logit regression are presented in Table 3 and Table A.5 in the Appendix. Table 3 displays marginal effects for our main variables of interest. Results from the Multinominal Logit Regression showing relations for all covariates with our output variable are illustrated in Table A.5. Using subsistence farming as the baseline occupation, the columns depict marginal effects of one occupation category, each in relation to being a subsistence farmer. Controls for individual, household and region-specific effects are included. The pseudo R squared of 0.13 indicates that the model fit is acceptable.

The results show some heterogeneity across groups. Respondents, scoring low on Conscientiousness are more likely to take up commercial farming over subsistence farming. More neurotic and conscientious individuals are more likely to be a professionals. The results match with the idea of a well organised professional worker. While we do not see any predictors for government workers, we find that respondents who score lower on Conscientiousness are more likely to work in sales and services. Moreover, higher levels of Conscientiousness are associated with a higher likelihood of choosing to work as craft worker. Craft workers are also less patient. The results fit with the picture of an organized and dedicated craftsmen. For the group of labourers we see that opting for this occupation category is not only influenced by higher levels of Conscientiousness, but also by lower levels of Extraversion. Self-employed respondents score higher on Conscientiousness, matching the job profile of a well organized and responsible business person.

Overall, our results suggest that personality traits, specifically, Conscientiousness, are associated with the occupational attainment of individuals. In particular, for individuals who score higher on Conscientiousness, the probability of choosing to work as a craft worker, labourer or self-employed, increase in relation of opting to become a subsistence-farmer. We further see that the Big Five play a more prominent role in terms of occupational attainment than other aspects of personality.

Our individual-level control variables indicate further important differences that relate to occupational attainment. The results confirm women are less likely to work as a commercial farmer, as craft worker or as a labourer, suggesting that those jobs are predominately chosen by men in the rural areas of Thailand and Vietnam. In terms of age, the results clearly show that the probability of choosing to work as a commercial farmer, a sales or service worker, a craft worker labourer or in self-employment decrease in relation to Subsistence-Farming with every year of age. This indicates that younger people opt for occupations other than subsistence farming. Finally, individuals with a higher level of education rather opt for professional or government jobs as well as working in sales and services or self-employed. Lower levels of education are associated with working as a labourer. Thus, higher skilled individuals opt for more complex tasks that are likely related with higher income.

Overall, the results from our regression analysis suggest that Personality Traits are important factors for the occupational attainment of individuals in rural Southeast Asia. Specifically, individuals who are more conscientious and better educated opt for self-employment and professional jobs. Furthermore,

Table 3: Marginal Effects of the relation between personality traits and occupational attainment

	Commercial Farmers	Professionals	Government Workers	Sales and Service Workers	Craft Wokers	Labourers	Self-Employed
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Openness	-0.0108	-0.000159	0.00324	-0.00162	0.000568	-0.00760*	0.00422
	(0.00797)	(0.00170)	(0.00278)	(0.00281)	(0.00202)	(0.00397)	(0.00544)
Conscientiousness	-0.0309***	0.00535*	0.000892	-0.00728*	0.00777**	0.0138**	0.0176**
	(0.0117)	(0.00279)	(0.00429)	(0.00382)	(0.00361)	(0.00610)	(0.00813)
Extraversion	0.00697	-0.000198	0.00258	0.00240	-0.00299	-0.00897*	-0.00316
	(0.00921)	(0.00195)	(0.00308)	(0.00325)	(0.00236)	(0.00459)	(0.00618)
Agreeableness	0.00857	-0.000925	0.00500	0.00347	0.00134	-0.00559	-0.000303
	(0.0113)	(0.00252)	(0.00407)	(0.00395)	(0.00286)	(0.00552)	(0.00752)
Neuroticism	-0.00558	0.00551***	-0.00446	-0.00263	0.00207	-0.00185	0.00374
	(0.00863)	(0.00207)	(0.00284)	(0.00294)	(0.00212)	(0.00427)	(0.00572)
Locus of Control	-0.00433	-0.000725	0.000914	0.00124	-0.000116	-0.00123	0.00281
	(0.00349)	(0.000792)	(0.00114)	(0.00117)	(0.000889)	(0.00178)	(0.00227)
Risk	0.00211	-0.00129	0.000297	-0.000629	-0.000571	6.30e-05	0.00122
	(0.00370)	(0.000823)	(0.00129)	(0.00124)	(0.000882)	(0.00183)	(0.00246)
Patience	0.00401	-.0000774	-0.000479	-0.00135	-0.00155*	0.00175	0.000703
	(0.00354)	(0.000799)	(0.00116)	(0.00116)	(0.000849)	(0.00177)	(0.00231)
Trust	-0.00113	-0.00124	-0.00618	-0.000900	0.00413	0.00196	-0.0115
	(0.0140)	(0.00283)	(0.00471)	(0.00502)	(0.00351)	(0.00710)	(0.00958)
Observations	2,457	2,457	2,457	2,457	2,457	2,457	2,457

Note: *, **, and *** denote significance at the 10, 5, and 1 percent levels.
Source: Authors' calculations

gender norms are quite persistent and men are more likely to work in labour intensive jobs such as commercial farming or as a labourer.

4.3   Importance of personality traits for occupational earnings

Table 4 shows the results for the occupation specific regressions. While substantial variation can be observed across the various occupation types, Neuroticism negatively influences the earnings under all occupation types. This is in line with existing literature that posits that labor market rewards emotional stability or lower Neuroticism among workers (Barrick and Mount, 1991; Nyhus and Pons, 2005; Mueller and Plug, 2006). However, we do not find any significance for Conscientiousness. This is in stark contrast to Barrick and Mount (1991) and Stuetzer et al. (2018). This could indicate that though Conscientiousness is a valid predictor of occupation choice in the rural labor market, it does not affect earnings within the occupation groups. Unlike the results from Heineck and Anger (2010); John and Thomsen (2014), Locus of control, patience and risk have no significance in the analysis.

Looking at specific occupation types, we see that professionals earn more if they are less extroverted, less neurotic and more trusting. A one standard deviation increase in Extraversion leads to a decrease in earnings by 52 per cent.[11] For Government workers being neurotic can harm their earning levels. Similarly, neurotic sales and service workers also earn less. Being trusting also has a negative effect on earnings. Interestingly, we do not find any significance for Openness which is expected to be a determinant of earnings for service workers (Wells et al., 2016). Neuroticism harms earnings in case of both crafts workers and laborers. However, laborers can earn more if they are more open but less trusting. Self-employed individuals report higher earnings when they are more open, less agreeable, less neurotic, and less trusting. These are in resonance with Caliendo et al. (2012); Obschonka and Stuetzer (2017);

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[11] We are aware that our coefficients are exceptionally high. We assume this comes from the small group sizes that are created when we divide our sample to obtain occupation types. We are currently looking into this aspect.

Table 4: Personality traits and individual earnings

	Professionals	Government Workers	Sales and Service Workers	Craft Wokers	Labourers	Self-Employed
Openness	0.3347	-0.024	0.298	0.310	0.689***	0.712***
	(0.249)	(0.243)	(0.281)	(0.519)	(0.133)	(0.124)
Conscientiousness	0.284	0.792	0.324	0.987	0.646	0.747
	(0.382)	(0.297)	(0.355)	(0.851)	(0.214)	(0.195)
Extraversion	-0.523*	-0.132	-0.203	0.509	-0.324*	-0.052
	(0.309)	(0.250)	(0.292)	(0.825)	(0.151)	(0.133)
Agreeableness	0.6166	0.322	-0.258	-1.192	-0.066	-0.339**
	(0.442)	(0.340)	(0.350)	(1.097)	(0.210)	(0.170)
Neuroticism	-1.1765***	-0.528**	-1.019***	-1.391*	-0.817***	-0.875***
	(0.320)	(0.219)	(0.273)	(0.553)	(0.160)	(0.124)
Locus of Control	-0.448	-0.038	0.378	-0.282	0.023	0.108
	(0.108)	(0.0794)	(0.0982)	(0.210)	(0.0659)	(0.0503)
Risk	0.308	0.23	-0.0645	-0.467	0.181	0.065
	(0.131)	(0.102)	(0.115)	(0.225)	(0.0681)	(0.0543)
Patience	-0.129	0.298	0.096	-0.238	-0.242	-0.151
	(0.112)	(0.103)	(0.0951)	(0.195)	(0.0604)	(0.0536)
Trust	-1.020***	-0.349	-0.637**	0.159	-0.372**	-0.431***
	(0.393)	(0.320)	(0.444)	(0.618)	(0.274)	(0.217)
Observations	53	69	72	38	156	278
R2	0.752	0.781	0.566	0.535	0.666	0.612

Note: *, **, and *** denote significance at the 10, 5, and 1 percent levels. Standard errors in parentheses. Coefficients indicate percentage change in wages when personality trait score changes by one standard deviation. Other controls include age, years of schooling, religious, ethnicity, gender, household size and labor market controls.
Source: Authors' calculations

Stuetzer et al. (2018) which implies that the success of entrepreneurs is not contingent on the market setting. Hence, to be a successful entrepreneur, individuals have to possess the same set of traits in the developing and the developed world.

In case of individual level controls, we also observe interesting results. Please refer to Table A.6 in the Appendix. Our results for years of schooling show no significance across all occupation types. This is not observed in literature from developed countries where education is expected to provide the high returns Heckman and Kautz (2012). We attribute this to the rural setting of our sample. In our case, while education does play a vital role when it comes to sorting into the different occupations, it is homogeneous across occupation types once the individual sorting is completed. If an individual is religious, she earns more under all occupation types.

Our results highlight the importance of including personality traits in the estimation of individual earnings. We also notice that estimating occupation specific earnings provides more insightful information compared to estimation of earnings in general. Please refer to Table A.7 and Table A.8 in the Appendix for a comparison. In emerging country labor markets, less Neuroticism and low trust are very important. Unlike the evidence from developed countries, we observe a lesser role for Extraversion and Agreeableness. Education is also not significant in our setting.

5   Conclusion

This paper aims to understand if the role of personality traits for occupational choice and earnings is similar across developed and developing countries. To achieve this, we employ data from a comprehensive household survey from Thailand and Vietnam collected under the Thailand Vietnam Socio Economic

Panel. We perform a multinomial logit estimation to learn about the relationship between personality traits and occupational attainment. We find that the Big Five, and Conscientiousness in particular, are the most important predictor of occupational attainment of an individual in Southeast Asia. Other non-cognitive skills, such as locus of control, trust, risk and patience play an inferior role in predicting occupational attainment. Conscientious and more educated individuals opt for self-employment or professional jobs.

To obtain a better understanding of how personality determines earnings, we estimate occupation specific regressions. We find that less Neuroticism along with low trust are the most valued traits in the rural setting. In contrast to evidence from developed countries, Conscentiousness, Extraversion and Locus of control have a lesser role. Interestingly, we find that education does not have any significance. We attribute this to the relatively homogeneous composition of cognitive skills across occupation types in rural labor markets. With relation to specific occupations, only successful rural self-employed individuals show the same traits as those displayed by their developed country counterparts.

Our study contributes to the literature by providing empirical evidence not only in the context of developing countries but also in reference to rural job markets. The results emphasize the important role of personality traits in individual decision making. From a policy perspective, a better understanding of personality traits would aid in efficient policy making. The need to rethink development policy to account for human factors has been widely identified (World Bank, 2015). Success of most development policies is contingent on an individual's participation, which again depends on the individual's personality. This is especially important for labor market policies. While policy makers can improve employment services and incentivize self-employment through offering micro grants, it is up to the population to size these opportunities.

In the next step, we aim to utilize the panel structure of TVSEP and look at the family background of the respondents and their past shock experience.

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A   Appendix

Table A.1: Example of adjectives defining the Big Five factors

Factor	Facets/Adjectives
Extraversion	Active, Assertive, Energetic, Enthusiastic, Outgoing, Talkative
Agreeableness	Appreciative, Forgiving, Generous, Kind, Sympathetic, Trusting
Conscientiousness	Efficient, Organized, Planful, Reliable, Responsible, Thorough
Neuroticism	Anxious, Self-Pitying, Tense, Touchy, Unstable, Worrying
Openness	Artistic, Curious, Imaginative, Insightful, Original, Wide interests

Figure A.1: Overview of Survey Region

Table A.2: Overview of survey questions

Do you see yourself as someone who.

is sometimes a bit rude to others?
works thoroughly?
is talkative?
worries a lot?
is original, comes up with new ideas?
has a forgiving nature?
tends to be lazy?
is outgoing, sociable?
gets nervous easily?
values artistic, aesthetic experiences?
is considerate and kind to almost everyone?
does tasks efficiently?
is reserved?
is relaxed, handles stress well?
has an active imagination?
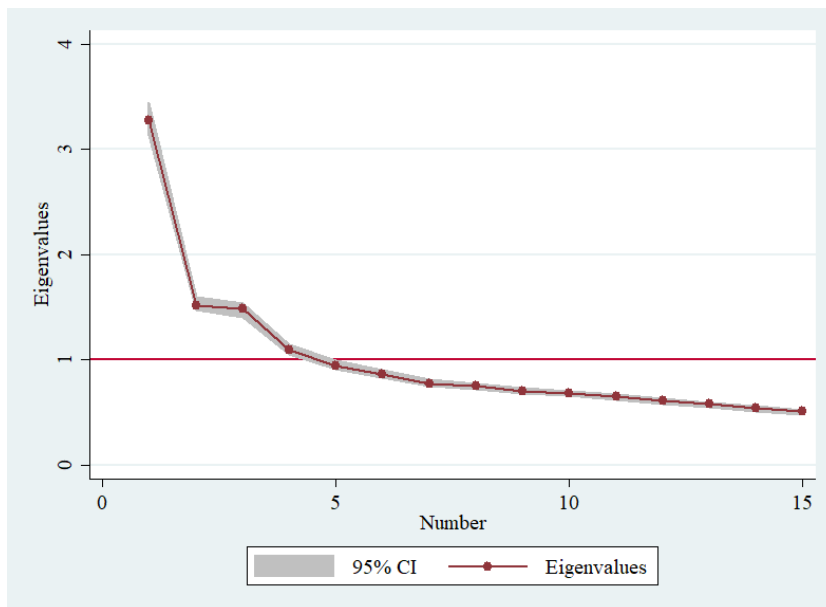
Figure A.2: Scree plot of eigenvalues after PCA

Table A.3: Cronbach's Alpha

Personality Trait	Cronbach's alpha	No. of items
Openness	0.60	3
Conscientiousness	0.55	3
Extraversion	0.42	3
Agreeableness	0.58	3
Neuroticism	0.56	3
All Traits	0.67	15

Table A.4: Factor Loadings according to PCA

BFI-Items	Factor 1 Creativeness	Factor 2 Diligence	Factor 3 Skepticism	Factor 4 Approachability	Factor 5 Amiableness
Artistic	**0,30**	-0,27	-0,10	0,01	0,08
New Ideas	**0,31**	-0,12	0,12	**0,31**	**-0,35**
Active Imagnation	**0,32**	-0,26	0,10	0,05	-0,14
Work thoroughly	**0,30**	0,22	0,10	0,04	**-0,39**
Efficient	**0,35**	0,11	-0,08	-0,06	**-0,30**
Lazy (reversed)	0,10	**0,53**	-0,08	0,05	**-0,31**
Talkative	0,24	-0,12	-0,03	**0,45**	0,22
Sociable	**0,32**	-0,02	0,00	**0,30**	**0,30**
Reserved (reversed)	-0,15	0,24	-0,12	**0,65**	0,15
Forgiving	0,28	0,25	0,04	-0,19	**0,48**
Kind	**0,35**	0,23	0,00	-0,18	**0,33**
Rude (reversed)	0,00	**0,53**	-0,14	-0,04	0,06
Worries	0,00	0,15	**0,67**	0,01	-0,01
Nervous	0,00	0,01	**0,66**	-0,02	0,12
Relaxed	**-0,31**	0,12	0,17	**0,32**	0,00

Table A.5: Relation between personality traits and occupational attainment - Full MLogit Output

	Commercial Farmers	Professionals	Government Workers	Sales and Service Workers	Craft Wokers	Labourers	Self-Employed
Openness	-0.0666	-0.0187	0.0943	-0.0920	-0.00417	-0.164**	0.00210
	(0.0406)	(0.180)	(0.118)	(0.109)	(0.143)	(0.0738)	(0.0603)
Conscientiousness	-0.0618	0.593*	0.111	-0.203	0.572**	0.255**	0.190**
	(0.0594)	(0.304)	(0.185)	(0.148)	(0.244)	(0.113)	(0.0903)
Extraversion	0.00825	0.000346	0.0970	0.0706	-0.222	-0.161*	-0.0406
	(0.0469)	(0.207)	(0.131)	(0.126)	(0.165)	(0.0853)	(0.0687)
Agreeableness	0.0577	0.00109	0.239	0.167	0.127	-0.0539	0.0339
	(0.0574)	(0.266)	(0.172)	(0.152)	(0.201)	(0.103)	(0.0834)
Neuroticism	-0.0253	0.523**	-0.138	-0.0971	0.130	-0.0405	0.0259
	(0.0439)	(0.225)	(0.121)	(0.114)	(0.149)	(0.0798)	(0.0637)
Locus of Control	-0.0165	-0.0672	0.0282	0.0418	-0.0101	-0.0242	0.0218
	(0.0177)	(0.0836)	(0.0486)	(0.0450)	(0.0626)	(0.0332)	(0.0252)
Risk	0.00915	-0.131	0.00120	-0.0222	-0.0365	0.00429	0.0131
	(0.0187)	(0.0883)	(0.0553)	(0.0481)	(0.0619)	(0.0341)	(0.0272)
Patience	0.0200	-0.00803	-0.0139	-0.0427	-0.0969*	0.0364	0.0135
	(0.0180)	(0.0847)	(0.0498)	(0.0448)	(0.0583)	(0.0330)	(0.0257)
Trust	-0.0471	-0.249	-0.318	-0.0893	0.229	-0.0100	-0.149
	(0.0711)	(0.302)	(0.201)	(0.194)	(0.244)	(0.132)	(0.106)
Age (Years)	-0.0139**	0.0123	0.0108	-0.0633***	-0.130***	-0.0674***	-0.0363***
	(0.00631)	(0.0261)	(0.0163)	(0.0155)	(0.0210)	(0.0115)	(0.00932)
Years of Schooling	0.000957	1.172***	0.441***	0.158***	-0.0177	-0.0749**	0.0433*
	(0.0173)	(0.124)	(0.0427)	(0.0407)	(0.0583)	(0.0318)	(0.0251)
Religous	0.341***	0.137	0.877**	1.408***	0.531	0.659***	-0.124
	(0.116)	(0.555)	(0.349)	(0.402)	(0.413)	(0.223)	(0.170)
Ethnicity	-0.0880	1.074	-0.316	0.480	-0.0450	-0.516*	1.500***
	(0.155)	(0.770)	(0.439)	(0.635)	(0.642)	(0.284)	(0.392)
Gender	-0.475***	-0.626	-0.289	-0.170	-0.644*	-0.883***	0.0804
	(0.106)	(0.474)	(0.290)	(0.278)	(0.364)	(0.188)	(0.160)
Household Size	0.0386	-0.0572	-0.00494	-0.208**	-0.193*	-0.0843	-0.0308
	(0.0310)	(0.160)	(0.0871)	(0.0853)	(0.115)	(0.0584)	(0.0466)
Share of farmers	2.806***	0.223	0.447	-8.628***	-9.870***	-5.285***	-4.447***
	(0.710)	(2.889)	(1.957)	(1.811)	(2.302)	(1.262)	(0.978)
Constant	0.265	-21.65***	-8.961***	2.449	3.695	4.863***	-0.671
	(0.686)	(3.868)	(2.058)	(1.849)	(2.417)	(1.248)	(1.059)
Observations	2,457	2,457	2,457	2,457	2,457	2,457	2,457
R2	0.129	0.129	0.129	0.129	0.129	0.129	0.129
Chi2	959.3	959.3	959.3	959.3	959.3	959.3	959.3

Note: *, **, and *** denote significance at the 10, 5, and 1 percent levels. Standard errors in parentheses.
Source: Authors' calculations

Table A.6: Earnings Regression - Full Output

	Professionals	Government Workers	Sales and Service Workers	Craft Wok-ers	Labourers	Self-Employed
Openness	0.3347	-0.024	0.298	0.310	0.689***	0.712***
	(0.249)	(0.243)	(0.281)	(0.519)	(0.133)	(0.124)
Conscientiousness	0.284	0.792	0.324	0.987	0.646	0.747
	(0.382)	(0.297)	(0.355)	(0.851)	(0.214)	(0.195)
Extraversion	-0.523*	-0.132	-0.203	0.509	-0.324*	-0.052
	(0.309)	(0.250)	(0.292)	(0.825)	(0.151)	(0.133)
Agreeableness	0.6166	0.322	-0.258	-1.192	-0.066	-0.339**
	(0.442)	(0.340)	(0.350)	(1.097)	(0.210)	(0.170)
Neuroticism	-1.1765***	-0.528**	-1.019***	-1.391*	-0.817***	-0.875***
	(0.320)	(0.219)	(0.273)	(0.553)	(0.160)	(0.124)
Locus of Control	-0.448	-0.038	0.378	-0.282	0.023	0.108
	(0.108)	(0.0794)	(0.0982)	(0.210)	(0.0659)	(0.0503)
Risk	0.308	0.23	-0.0645	-0.467	0.181	0.065
	(0.131)	(0.102)	(0.115)	(0.225)	(0.0681)	(0.0543)
Patience	-0.129	0.298	0.096	-0.238	-0.242	-0.151
	(0.112)	(0.103)	(0.0951)	(0.195)	(0.0604)	(0.0536)
Trust	-1.020***	-0.349	-0.637**	0.159	-0.372**	-0.431***
	(0.393)	(0.320)	(0.444)	(0.618)	(0.274)	(0.217)
Age (Years)	-0.080	-0.052	-0.171	0.617	-0.022	-0.168
	(0.0386)	(0.0301)	(0.0329)	(0.0689)	(0.0246)	(0.0209)
Years of Schooling	0.147	0.1478	0.005	-0.3234	0.070	-0.060
	(0.129)	(0.0635)	(0.0907)	(0.215)	(0.0611)	(0.0498)
Religous	1.019***	2.276***	1.55***	0.659	1.491***	1.949***
	(0.697)	(0.686)	(1.126)	(1.333)	(0.456)	(0.319)
Ethnicity	0.098	0.232	0.222	0.009	0.474**	-0.068
	(1.036)	(0.703)	(1.579)	(2.223)	(0.567)	(0.940)
Gender	-0.23	-0.095	-0.095	0.102	0.256	-0.118
	(0.634)	(0.474)	(0.602)	(1.323)	(0.359)	(0.331)
Household Size	-0.169	-0.037	-0.395	-0.097	-0.434**	-0.076
	(0.241)	(0.142)	(0.197)	(0.513)	(0.105)	(0.0987)
Share of farmers	-0.722**	0.171	0.795**	0.3172	-0.171	-0.438***
	(3.504)	(2.910)	(3.754)	(6.086)	(2.495)	(1.768)
Observations	53	69	72	38	156	278
R2	0.752	0.781	0.566	0.535	0.666	0.612
R2 (Adjusted)	0.642	0.713	0.440	0.180	0.627	0.588
Root MSE	1.791	1.626	2.219	2.863	2.052	2.332
F - statistik	6.838	11.57	4.482	1.507	17.30	25.69

Note: *, **, and *** denote significance at the 10, 5, and 1 percent levels. Standard errors in parentheses. Coefficients indicate percentage change in wages when personality trait score changes by one standard deviation.
Source: Authors' calculations

Table A.7: Heckman Model 1

	Outcome Equation (Log Hourly Wage)	Selection Equation (Non Farmer)
Openness	0.433***	0.000631
	(0.0715)	(0.0325)
Conscientiousness	-0.120	0.0965*
	(0.109)	(0.0493)
Extraversion	-0.180**	-0.0215
	(0.0812)	(0.0380)
Agreeableness	-0.282***	-0.0414
	(0.101)	(0.0464)
Neuroticism	-0.780***	-0.0544
	(0.0746)	(0.0347)
Locus of Control	0.0279	0.0145
	(0.0304)	(0.0141)
Risk	0.0152	0.0116
	(0.0331)	(0.0156)
Patience	-0.0308	-0.0230
	(0.0310)	(0.0143)
Trust	-0.644***	-0.0756
	(0.123)	(0.0574)
Age (Years)	-0.00173	-0.0198***
	(0.0108)	(0.00493)
Years of Schooling	0.0583***	0.0592***
	(0.0216)	(0.0117)
Religous	3.884***	0.151*
	(0.204)	(0.0903)
Ethnicity	0.568*	-0.401***
	(0.318)	(0.129)
Gender	-0.102	-0.101
	(0.181)	(0.0840)
Household Size	-0.102*	-0.109***
	(0.0548)	(0.0250)
Share of farmers		-6.938***
		(0.261)
athrho		0.120*
		(0.0644)
lnsigma		0.779***
		(0.0274)
Constant	-0.287	2.682***
	(1.088)	(0.513)
Observations	2,451	2,451

Note: *, **, and *** denote significance at the 10, 5, and 1 percent levels. Standard errors in parentheses. Exclusion restriction share of farmers in household (probit : p>chi2 = 0.000; OLS: Prob>F = 0.1500).
Source: Authors' calculations

Table A.8: Heckman Model 2

	Outcome Equation (Log Hourly Wage)	Selection Equation (Non Farmer)
Openness	0.450***	0.000835
	(0.0706)	(0.0325)
Conscientiousness	-0.105	0.0967**
	(0.109)	(0.0493)
Extraversion	-0.198**	-0.0214
	(0.0802)	(0.0380)
Agreeableness	-0.292***	-0.0417
	(0.1000)	(0.0464)
Neuroticism	-0.768***	-0.0543
	(0.0736)	(0.0347)
Locus of Control	0.0284	0.0144
	(0.0300)	(0.0141)
Risk	0.0224	0.0115
	(0.0327)	(0.0156)
Patience	-0.0322	-0.0231
	(0.0307)	(0.0143)
Trust	-0.616***	-0.0762
	(0.122)	(0.0574)
Age (Years)	-0.00671	-0.0198***
	(0.0110)	(0.00493)
Years of Schooling	0.0123	0.0590***
	(0.0279)	(0.0117)
Religous	3.763***	0.151*
	(0.205)	(0.0903)
Ethnicity	0.895***	-0.401***
	(0.324)	(0.129)
Gender	-0.0341	-0.103
	(0.181)	(0.0840)
Household Size	-0.101*	-0.108***
	(0.0541)	(0.0250)
Share of farmers		-6.938***
		(0.261)
Occupation - Professionals	1.234**	
	(0.525)	
Occupation - Government Workers	1.319***	
	(0.465)	
Occupation - Sales and Service Workers	0.898**	
	(0.440)	
Occupation - Labourers	0.830**	
	(0.396)	
Occupation - Self-Employed	0.207	
	(0.383)	
athrho		0.125*
		(0.0651)
lnsigma		0.763***
		(0.0274)
Constant	-0.726	2.684***
	(1.141)	(0.513)
Observations	2,451	2,451

Note: *, **, and *** denote significance at the 10, 5, and 1 percent levels. Standard errors in parentheses. Exclusion restriction share of farmers in household.
Source: Authors' calculations