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# Personality Traits and the Likelihood of Self-Employment: A Journey into the Crafts' Way of Doing Business

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**Abstract:** Given the renewed scholarly interest in the crafts, this paper explores the nuances of crafts entrepreneurship through a personality-based approach. Our findings validate prior research on the general influence of broad and narrow personality traits on self-employment. However, our analysis also suggests that certain effects differ between crafts and non-crafts, most notably the role of the Big Five trait of conscientiousness – suggesting that there is something ‘unique’ about the crafts’ way of doing business that goes beyond firm size. In this way, we provide evidence that personality may affect self-employment differently depending on the sector or field of entrepreneurship.

**Keywords:** self-employment; personality traits; entrepreneurship; crafts sector

**JEL Classification:** L26; M13; D91

## 1 Introduction

In Germany, 95 trades belong to what is legally defined as the crafts sector, which comprises around five million professionals, or about 12.5 percent of the German labor force (see Haverkamp, Wesling, and Seibert 2019; Müller, Markworth, and Söndermann 2011), constitutes a core segment of the German Mittelstand (Pahnke and Welter 2019), and has been the subject of a number of academic and policy

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debates in recent years (e.g. Aretz, Gregory, and Arntz 2013; Fredriksen, Runst, and Bizer 2019; Runst and Thomä 2020; Runst and Wyrwich 2023; Runst et al. 2019; Schmitz 2019).

Economic activity in the crafts has recently received increased attention in entrepreneurship and management research, with studies examining the typical competitive strategies chosen by owners of craft companies (Cattani, Dunbar, and Shapira 2017; Sasaki, Nummela, and Ravasi 2021; Solomon and Mathias 2020), entrepreneurial behavior in the crafts (Pret and Cogan 2019); the role of crafts people's shared identities in work satisfaction and business success (Binder and Blankenberg 2022; Mathias et al. 2018), the craft-specific approach to work organization and knowledge acquisition (e.g. Bell, Dacin, and Toraldo 2021; Bell and Vachhani 2020; Kroezen et al. 2021; Kuhn and Galloway 2015; Thomä and Zimmermann 2013), and related forms of firm-level innovation (Runst and Thomä 2022; Thomä and Zimmermann 2020).

The renewed scholarly interest in the craft-based mode of competition, work, learning and innovation suggests that there is something 'unique' about the craft's way of doing business that goes beyond the small firm sizes typical of the craft sector. To give a few examples: Kroezen et al. (2021) conceptualize 'craft' as "a timeless approach to work that prioritizes human engagement over machine control". Closely related to this, the empirical results of Binder and Blankenberg (2022) imply that the strong desire among craftspeople to work with their own hands, applying their skills and know-how in the creation of products or services, is a source of individual pride and occupational identity. The study by Solomon and Mathias (2020) suggests that business owners in the crafts, due to their strong desire for personal independence, tend to avoid being influenced by external stakeholders – and therefore often have a critical view of business growth.

The aim of this paper is to take a closer look at what makes the crafts unique in empirical terms (not least in comparison with other small firms) and thereby shed light on the conceptual core of the various studies mentioned above. Following Hoyte (2019), we argue that the fundamental specificity of the crafts is closely linked to the personal characteristics of the business owner – or entrepreneur –, as he or she has a formative influence on all operational matters in the mostly very small craft enterprises. In fact, the 'crafts entrepreneur' type has been conceptualized in the literature as having distinct motivations and goals (e.g. Cooper and Dunkelberg 1986; Miner, Smith, and Bracker 1992; Smith 1967; Smith and Miner 1983; Woo, Cooper, and Dunkelberg 1991).

This paper therefore takes a personality approach to explore the potential uniqueness of crafts entrepreneurship. We empirically investigate the relationship between personality traits and the likelihood of self-employment (as a

commonly used indicator of entrepreneurship) in the crafts sector using a representative panel data set of German individuals. By comparing this with individuals who become self-employed in non-crafts occupations, the personality trait specificities of crafts entrepreneurship are examined – which contributes to the recent research on the craft-based mode of doing business (e.g. Cattani, Dunbar, and Shapira 2017; Kroezen et al. 2021; Kuhn and Galloway 2015; Pret and Cogan 2019; Sasaki, Nummela, and Ravasi 2021; Solomon and Mathias 2020).

Broad (the Big Five; see Digman 1990; John, Donahue, and Kentle 1991; McCrae and Costa 2008) and narrow traits of personality (locus of control, risk tolerance; see Chell, Harworth, and Brearley 1991; Rotter 1966) are considered – which represents a common measurement approach to personality in the entrepreneurship literature (see e.g. Brandstätter 2011; Caliendo, Fossen, and Kritikos 2014; Leutner et al. 2014; Obschonka and Stuetzer 2017; Runst and Thomä 2023). In this way, the present paper also aims to contribute to this general literature by showing for the first time (to the best of the author’s knowledge) that it is necessary to distinguish between different sectors or fields of entrepreneurship when analyzing the influence of personality traits on self-employment decisions. With this empirical approach, the present paper goes beyond the conceptual paper of Hoyte (2019), who examines the personality patterns of artisan entrepreneurship (as a subset of crafts entrepreneurship, mainly found in cultural and creative industries) from a purely theoretical perspective.

The remainder of the paper is structured as follows. Section 2 discusses the theoretical background of the following empirical analysis. Section 3 presents the data set and describes the methodical procedure, before the results are detailed in Section 4. Finally, Section 5 summarizes the main contributions and draws conclusions for policy and research.

## 2 Conceptual Background

### 2.1 The Crafts Entrepreneur

According to a widely used theoretical typology (e.g. Miner, Smith, and Bracker 1992; Solomon and Mathias 2020; Woo, Cooper, and Dunkelberg 1991), which goes back to Smith (1967) and Smith and Miner (1983), there is a basic entrepreneurial type that can be expected to be closely associated to business activity in the crafts. For the ‘crafts entrepreneur’, the opportunity for self-directed work and personal autonomy constitutes a primary motivation for venturing into self-employment (Binder and Blankenberg 2022; Bridge and O’Neill 2018; Hornaday 1990; Runst and Thomä 2021). According to this concept, these individuals are less motivated by financial gains or the opportunity to build a large business organization. Instead,

crafts entrepreneurs can be more succinctly characterized by personal goals such as a desire for independence, autonomy, and self-realization through active participation in the productive and creative processes (Amin and Roberts 2008; Kuhn and Galloway 2015; Smith and Miner 1983; Solomon and Mathias 2020; Woo, Cooper, and Dunkelberg 1991). They value the act of practicing a trade or occupation, and thus the mastery of knowledge and skills, i.e. the achievement of craftsmanship (Binder and Blankenberg 2022; Hoyte 2019; Nootboom 1994; Sennett 2008; Thomä and Zimmermann 2020). On the other hand, they tend to see administrative and management tasks tend to be perceived as a necessary evil of entrepreneurial activity (Das and Teng 1998; Smith and Miner 1983; Woo, Cooper, and Dunkelberg 1991). Accordingly, people who opt for self-employment in the crafts often strive for personal competency and creative problem-solving in the creation of individualized, non-mass-produced products and services. They often do not have a well-developed marketing strategy, and if they do, it emphasizes the company's reputation for delivering high quality.

Since crafts entrepreneurs often find personal self-fulfillment in the acquisition of tacit know-how in a specific technical field, innovations conducted by crafts enterprises are usually of a customized nature and often take the form of step-by-step optimization, further development or adaptation of existing products, services and processes (i.e. incremental innovations; Amin and Roberts 2008; Das and Teng 1998; Miner, Smith, and Bracker 1992; Runst and Thomä 2022; Thomä and Zimmermann 2020).

Moreover, crafts entrepreneurs tend to stick to tried and tested routines (Das and Teng 1998; Hoyte 2019; Miner, Smith, and Bracker 1992). In doing so, they perfect traditional ways of working and doing in a conscientious manner. When they make changes, they do so less proactively and are less likely to create novel markets and introduce fundamentally new products, processes and services. Instead, self-employed people of crafts type behave relatively more reactively: they tend to adapt more slowly to changing conditions and only do so to the necessary extent to safeguard their existing business model, thus limiting entrepreneurial risk (Bridge and O'Neill 2018; Miner, Smith, and Bracker 1992). Crafts entrepreneurs therefore often run long-lasting businesses that tend to remain small, preferring stability over growth (Solomon and Mathias 2020).

## 2.2 The Formal and Informal Institutional Background of the German Crafts Sector

The German Trade and Crafts Code (TCC, *Handwerksordnung*) defines and regulates more than 90 crafts trades. In many of these trades, the law requires advanced vocational training to be eligible to start a business, i.e. the head of a crafts company

must hold a so-called *Meister*-degree.<sup>1</sup> In 2004, some trades have been partially (e.g. bakers and butchers) or fully (e.g. brewers, instrument maker) deregulated. However, some of these reforms have been reversed in 2020. According to official statistics (Federal Statistical Office), there were 5.4 million active craftspeople in Germany in 2021. Of these, around 80 per cent are in crafts trades with entry restrictions that require the owner or employed manager to have a master craftsmen's qualification. It is therefore reasonable to assume that for most craftspeople the path to self-employment is a sequential one, starting with basic vocational training (and therefore wage employment in the crafts sector) before potentially moving on to become a self-employed business owner in the crafts sector. Nevertheless, we must not lose sight of alternative paths. For example, as a result of the 2004 TCC deregulation, a certain share of individuals may move from wage employment in the non-crafts sector to self-employment in the crafts sector. Another more likely potential pathway is from crafts wage employment to self-employment outside the crafts sector.

In addition to the formal institutions of the German crafts sector, the informal institutional background of the crafts must also be taken into account. For example, the results of Runst and Thomä (2021) provide empirical evidence for the assumption that the likelihood of being a 'crafts entrepreneur' type is considerably higher among self-employed individuals in the German crafts sector than in non-crafts occupations, as delineated by the TCC. Based on data from the IAB/ZEW Start-up Panel – a representative survey of start-up businesses in Germany – they show that the desire for self-determined work and the implementation of a new business idea are the most frequent driving forces for starting up a business, both in the crafts and in the non-crafts. However, the motive of 'self-determined work' is significantly more important among founders in the crafts than in non-crafts occupations. This points to the singular motives and goals of the self-employed in the crafts, in line with the 'crafts entrepreneur' described above, which are driven less by the desire for profit and growth than by the desire for personal autonomy, self-realization and expertise in one's own trade or occupation. In contrast, the implementation of a new business idea is relatively less often the central motive for founding a company in the German crafts sector – which in turn may indicate a lower personal focus on profit and growth.

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<sup>1</sup> In order to acquire a *Meister*-degree, a person must complete basic vocational training (which lasts about three years) and become a *Geselle*. After that, the *Geselle* can take further training and pass associated exams in order to become a master craftsman.

### 2.3 Broad and Narrow Personality Traits

The Big Five is a widely used model of personality traits (Digman 1990; John, Donahue, and Kentle 1991; McCrae and Costa 2008). It states that the main facets of human personality can be condensed into five basic dimensions that remain more or less stable across the lifespan: extraversion, conscientiousness, emotional stability, openness to experience and agreeableness. *Extraversion* indicates a preference for social interactions. It is also increasingly associated with a higher reward sensitivity (see Cohen et al. 2005; Lucas et al. 2000). Agreeable individuals try to avoid interpersonal conflict, forgive others more easily, and are more thoughtful in their interactions with others. They prefer cooperation over competition. In addition, *agreeableness* is associated with expressing oneself carefully to avoid upsetting others and showing a higher degree of empathy. On the other hand, people with higher scores of *conscientiousness* act in a controlled and structured way. They plan ahead and tend towards perfectionism. At the same time, they show a higher degree of accuracy, diligence, precision and determination. The trait of *emotional stability* indicates how well a person is able to deal with setbacks and stress factors. High emotional stability is associated with less severe mood swings, less anxiety, sadness, insecurity or other negative feelings. *Openness* indicates how willing a person is to make new experiences. Open-minded persons enjoy change and are more likely to be creative, imaginative and experimental, while they also have a strong imagination.

The impact of the Big Five on the probability of self-employment and related entrepreneurial decisions has been extensively studied. Extraversion and openness in particular and – less clear – emotional stability and conscientiousness can have a positive influence on entrepreneurial decisions (e.g. Brandstätter 2011; Caliendo, Fossen, and Kritikos 2014; Runst and Thomä 2023; Zhao, Seibert, and Lumpkin 2010). Agreeableness shows no effects, apart from one paper finding a positive impact on exits from self-employment (see Caliendo, Fossen, and Kritikos 2014). Zhao, Seibert, and Lumpkin (2010) argue that agreeableness should be negatively related with both entrepreneurial performance and start-up intention, although their empirical results cannot support either hypothesis.

While the Big Five constitute broad personality traits, narrow personality traits are also discussed in the literature. The four most important narrow traits associated with entrepreneurship are achievement motivation, need for autonomy, risk tolerance and locus of control (Bridge and O'Neill 2018). Based on the available data (see Section 3), the influence of the latter two of these traits on self-employment can be examined. A person's self-efficacy belief or *locus of control* (LOC, Rotter 1966) reflects the conviction that a person has control over their own life. By contrast, a person scoring low on LOC believes that his or her life is shaped by external

factors over which he or she has no control. Furthermore, the degree of individual *risk tolerance* (Chell, Harworth, and Brearley 1991) is a narrow personality dimension that is plausibly related to entrepreneurial decisions, since the outcomes of self-employment are often uncertain. Moreover, humans have different risk preferences: some people prefer smaller, more secure income streams, while others would rather choose larger but more uncertain ones. The effects of LOC and risk tolerance have also been repeatedly investigated, supporting the hypothesis of a positive impact on the probability of self-employment (see e.g. Caliendo, Fossen, and Kritikos 2014).

## 2.4 Hypotheses

On the one hand, individuals who are open to new experiences are more likely to recognize entrepreneurial opportunities than others, which should also be true for the crafts entrepreneur (Caliendo, Fossen, and Kritikos 2014). For example, in her conceptual paper, Hoyte (2019) describes the openness of artisan entrepreneurs (representing a subsample of craftspeople who are found in the cultural and creative industries) and their willingness to pass on cultural traditions. On the other hand, the degree of openness may be less important for crafts entrepreneurs as they are less focused on growth, profit-making and radical innovation (see Section 2.1). If one's primary goal is to practice a trade and to generate incremental innovations in response to situational customer needs or circumstances, openness is less relevant than, for example, in highly innovative ventures that need to be constantly on the lookout for new trends and developments. In the case of crafts, openness should therefore be less strongly associated with self-employment than in the non-crafts (Hypothesis H1).

Entrepreneurship is always socially embedded (Sarasvathy 2001, 2008; Storr 2008), as entrepreneurs need to communicate and socialize with employees, customers, suppliers, financial institutions and other external partners. Generally speaking, extroverts are more attracted to self-employment than introverts (Caliendo, Fossen, and Kritikos 2014). This effect should be equally pronounced among crafts entrepreneurs. Overall, extraversion is therefore hypothesized to be a key driver of self-employment within and outside of the crafts sector (Hypothesis H2).

The relationship between the trait of conscientiousness and self-employment is somewhat ambivalent. On the one hand, highly conscientious people who value routines may not be attracted to the uncertainties of running a business. On the other hand, the efficiency orientation, determination and precision of conscientious people may promote business performance in the long run (Brandstätter 2011; Zhao, Seibert, and Lumpkin 2010). Overall, the empirical literature does not provide

evidence of a clear link between conscientiousness and self-employment. However, a positive effect of conscientiousness can be expected in case of the crafts. The desire for self-realization through the practice of a trade, craft or occupation – which is strongly anchored in the crafts entrepreneur type (see above) – and the associated high level of acquired professional-technical knowledge and skills suggests that a higher level of conscientiousness should positively affect self-employment in case of the crafts (Hypothesis H3). This hypothesis is in line with the conceptual proposition by Hoyte (2019) on the potential role of conscientiousness for artisan entrepreneurship in the cultural and creative industries. She states that crafts-based work requires a high degree of conscientiousness not only to learn a craft but also to practice it continuously throughout one's life and pass it on through generations, thus forming a common occupational identity.

Emotional stability – in particular the ability to make well-considered decisions under time pressure and deal with complex stress factors – is likely to be a general advantage for self-employed individuals (Zhao and Seibert 2006; Zhao, Seibert, and Lumpkin 2010). However, it can also be argued that less emotionally stable individuals may prefer owning a business (most likely a small one) to being in paid employment, as they are less likely to cope well as employees in a challenging work environment, e.g. characterized by stressful team interactions. Thus, individuals scoring low on emotional stability might engage in (necessity) entrepreneurship because it offers them a chance to leave wage employment. In summary, the effect of emotional stability on self-employment is ambivalent, and there are no specificities to be expected in the case of crafts entrepreneurship.

The possible role of agreeableness also seems ambiguous: on the one hand, entrepreneurs need a certain amount of willpower in difficult conversations and the ability to tolerate such conflicts, while on the other hand, a very low level of owner agreeableness may resemble stubbornness and has the potential to disrupt social interaction to such an extent that employees may deliberately withhold their opinions and ideas. If owners insist on their own opinion without considering and including the thoughts of others, it can severely disrupt the business culture and hinder the co-creation of valuable new things (Runst and Thomä 2022). The possible influence of agreeableness on self-employment is thus – as in the case of emotional stability – ambivalent, supported by the mixed empirical results on this trait in the empirical literature (for an overview, see Brandstätter 2011). In the case of crafts, however, where practicing a trade or occupation in a small company (often without employees) can be a primary motivation for self-employment (see the discussion above on the 'craft entrepreneur'), individuals with lower agreeableness scores may be particularly inclined to start a business. In this way, they can earn a living and realise their ambition to accumulate skills and experience-based competence in a particular trade or occupation without the need to interact and coordinate



with co-workers or superiors. Thus, agreeableness should be negatively related to self-employment in the crafts (Hypothesis H4).

In addition to the Big Five, the narrow personality traits of LOC and risk tolerance also play an important role in self-employment decisions (Caliendo, Fossen, and Kritikos 2014; Leutner et al. 2014). A lack of belief in the effectiveness of one's own actions is likely to have a detrimental effect on self-employment in general. A higher LOC should therefore be beneficial for starting and succeeding in business ownership regardless of the sector (Hypothesis H5). A typical business owner must also be prepared to take personal risks, although it can be assumed that the relative importance of risk tolerance differs between self-employed individuals in the crafts than in non-crafts occupations. The ability to bear risk is particularly important for self-employed persons who have a strong focus on high risk-high reward projects. By contrast, it is less relevant in the case of self-employment, when only tried and tested ways are being followed – as tends to be the case in the crafts (see above). While this does not mean that the willingness to take risks is unimportant among crafts entrepreneurs (Das and Teng 1998) – indeed it is important for all forms of entrepreneurship – typically the rates of new business survival are higher in the German crafts compared with the non-crafts case (Runst and Thomä 2021). Overall, risk should therefore have a lower impact on self-employment decisions in the crafts than in the non-crafts case (Hypothesis H6).

## 3 Data and Method

### 3.1 The German Socio-Economic Panel

Our empirical analysis is based on data from the German Socio-Economic Panel (GSOEP) for 2005 to 2019, a large-scale and representative annual household survey of more than 10,000 individuals in Germany.<sup>2</sup> The SOEP has been used repeatedly in entrepreneurship research on the Big Five (e.g. Caliendo, Fossen, and Kritikos 2014; Caliendo, Fossen, and Kritikos 2022; Runst and Thomä 2023). Since 2005, a fifteen-item Big Five Inventory (BFI) has been included at regular intervals (i.e. in the five survey years of 2005, 2009, 2013, 2017 and 2019). Small item scales such as the BFI-15 have been shown to be reliable and valid compared to longer versions such as the BFI-44 (Rammstedt and John 2007). Information on the narrow personality trait of LOC is available for 2005, 2010 and 2015, while risk tolerance was surveyed in all years. For the missing years, it is assumed that a person's traits have not changed

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<sup>2</sup> Socio-Economic Panel (SOEP), data for 1984–2019, SOEP-Core v36, EU Edition, 2021, 10.5684/soep.core.v36eu.

and can be replaced by the last values available for the respective person. This assumption is plausible because personality traits are heritable and remain relatively stable over longer periods of time, especially in adulthood (Cobb-Clark and Schurer 2012; Rantanen et al. 2007; Wortman, Lucas, and Donnellan 2012).

The Big Five are generated via a factor analysis, with which the fifteen items are condensed into factor scores standardized to a mean of approximately zero and a standard deviation of approximately one for each of the five personality traits. As an example, the factor loadings for 2005 are shown in the Appendix (Table A1), which correspond to expected patterns (e.g. Hahn, Gottschling, and Spinath 2012; Lang et al. 2011).<sup>3</sup> The LOC variable is measured in the same way based on ten GSOEP questions on an individual's perceived self-efficacy, with all respondents' answers loading onto one factor.<sup>4</sup> The variable risk tolerance is derived from a single GSOEP question, a self-assessment of one's own willingness to take risks (on a ten-point Likert scale).

The dataset also contains information on a number of other socio-demographic characteristics of the survey respondents (e.g. age, nationality, educational qualification), which are controlled for in the regression analysis. In line with Caliendo, Fossen, and Kritikos (2014), and Runst and Thomä (2023), the dependent variable self-employment is equal to one if an individual is self-employed, and zero otherwise. While fully recognizing that the concept of entrepreneurship and self-employment are not the same, self-employment is one important aspect of entrepreneurship and has been widely used in empirical research as an indicator of entrepreneurship. Table 1 provides a brief description of all variables, and displays variable means and standard deviations.

The empirical analysis refers to individuals aged between 19 and 59 years of age. In addition, in line with previous research (Caliendo, Fossen, and Kritikos 2014; Caliendo, Fossen, and Kritikos 2022) we exclude certain individuals from the analysis. Disability pensioners, students, farmers, family workers, civil servants and military personnel are excluded from the sample because they have a restricted

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<sup>3</sup> The factor loadings for the other years are not shown but follow the same pattern. The corresponding results are available from the authors on request.

<sup>4</sup> The following ten items were used to measure the LOC variable: 1. "How my life turns out depends on me.", 2. "Compared to others, I have not achieved what I would have deserved.", 3. "What you achieve in life is primarily a matter of fate or luck.", 4. "I often find that others determine my life", 5. "If you are socially or politically active, you can influence social conditions.", 6. "You have to work hard to succeed", 7. "When I face difficulties in life, I often doubt my abilities.", 8. "What opportunities I have in life is determined by social circumstances.", 9. "More important than any effort are the skills you bring to the table.", 10. "I have little control over the things that happen in my life."

**Table 1:** Variable overview and descriptive statistics.

<b>Dependent variables</b>		<b>Mean</b>	<b>Std. dev.</b>
Self-employed	Dummy for being self-employed	0.085	0.279
Entry	Binary indicators for transition	0.010	0.100
Exit	in current year	0.007	0.084
<b>Employment status</b>			
1	Employed non-crafts	0.854	0.353
2	Employed crafts	0.046	0.209
3	Self-employed non-crafts	0.094	0.292
4	Self-employed crafts	0.006	0.078
Number of employees	Categories from 0 to 6	4.131	2.292
Work satisfaction	Likert scale from 0 to 10	6.947	2.032
<b>Independent variables</b>		<b>Mean</b>	<b>Std. dev.</b>
Extraversion	Metric factor scores	0.016	0.793
Conscientiousness		0.058	0.697
Emotional stability		0.018	0.737
Openness		-0.008	0.659
Agreeableness		-0.059	0.686
LOC	Metric factor score	0.017	0.816
Risk	Willingness to take risks (Likert scale from 1 to 10)	4.831	2.143
Crafts lag	Binary; 1 if crafts activity in $t - 1$ , $t - 2$ , or $t - 3$	0.090	0.286
Age	In years	44.018	9.412
University	Dummy for having a university degree	0.240	0.427
Vocational training	Dummy for individuals who finished an apprenticeship	0.751	0.433
Lag part-time work	Dummy for part-time work in the past	0.196	0.402
Female	Dummy for females	0.544	0.498
Non-employed (lag)	Dummy for individuals not in paid work because they are unemployed or have left the labor force	0.151	0.358
Foreigner	Dummy for non-German nationality	0.079	0.270
Work experience	Full-time work experience prior to the year of observation	15.090	10.776
Unemployment experience	Years of unemployment experience prior to the year of observation	1.214	2.829
High school	Dummy for individuals who received a diploma from a secondary school qualifying for university entrance	0.229	0.420
Disability	Degree of disability in percent	3.106	12.960

Table 1: (continued)

Dependent variables		Mean	Std. dev.
Father self-employed	Dummy for having a father who was self-employed when the respondent was 15 years old	0.093	0.290
North	Region dummy indicator	0.163	0.369
East		0.234	0.424
West		0.330	0.470
South		0.273	0.445
Capital income	Household income from asset flows, in 100.000 Euros per year	0.023	0.183

occupational choice set.<sup>5</sup> Furthermore, observations from the 2016 and 2017 GSOEP “Refugee samples” are not included in the analysis to ensure sample consistency over time and because there are clear personality differences between the specific group of refugees and the general German population (Runst and Thomä 2023).

The crafts case is captured in the data by using an occupation-based approach (for more details, see Runst and Wyrwich 2023). Depending on the empirical model used, it is based on a person’s past or current occupational status and thus on the concrete professional activities. This allows a relatively clear distinction between crafts and non-crafts in the sense of the hypotheses formulated above. The sorting of persons in crafts and non-crafts occupations is undertaken according to the scheme developed by Runst et al. (2019) and Haverkamp, Wesling, and Seibert (2019), based on the official German classification of occupations (KldB 92 and KldB 2010). Due to the long-time horizon of the GSOEP, this study has opted for the KldB92 classification. A complete list of KldB92 occupations and their crafts or non-crafts assignment can be found in Runst et al. (2019). The craft occupations in our sample, including their respective sample shares, are listed in Table A2 in the Appendix. As a robustness test, this list of crafts trades in Germany is further restricted to crafts occupations that belong to cultural and creative industries (artisan trades, see Table A2), i.e. what might be called the traditional core of crafts entrepreneurship (see the conceptual paper of Hoyte 2019).

<sup>5</sup> Farmers are more or less automatically self-employed, as farms in Germany are generally family businesses. The self-employment of farmers here has a family or regional tradition, which means that different self-employment drivers are at work than in the rest of the private sector (Fritsch 2013).

### 3.2 Regression Models

In this study, we use a multi-step analysis design. *As a first step*, we examine the impact of broad Big Five personality traits, along with narrow traits such as LOC and risk tolerance, on the likelihood of individuals falling into one of four employment categories: wage employment or self-employment, either inside or outside the crafts sector. We therefore run a multinomial logistic regression of the form:

$$\log \frac{\Pr(y = k|x)}{\Pr(y = k_o|x)} = \alpha^k + \beta^k \text{Trait}_{it}^k + \gamma \text{Crafts}_{it-n}^k + \delta X_{it}^k + \varepsilon_{it}^k \quad (1)$$

where the dependent variable is the probability of falling into a certain employment status relative to the baseline category in period  $t$ , i.e. wage employment in the non-crafts.<sup>6</sup> The variable ‘Trait’ corresponds to either the broad BF traits or the narrow traits LOC or risk. The lagged ‘Crafts’ indicator equals one if a person was economically active in a crafts occupation at time  $t - 1$ ,  $t - 2$ , or  $t - 3$  and zero otherwise. This lagged crafts variable controls for the fact that the choice of occupation usually precedes the decision to become self-employed (Fritsch 2013). It should be noted, however, that the categorial nature of the dependent variable does not assume that occupational choice precedes the decision to become self-employed, but allows them to be determined simultaneously. If an individual is unemployed at  $t - 1$ , we cannot determine the crafts status. In this case we have to rely on  $t - 2$  and  $t - 3$  in order to assign the crafts status. If a person is unemployed in three previous periods, we treat them as belonging to the non-crafts sample.<sup>7</sup>

A number of control variables are used, such as person’s age, education and training qualifications, a dummy for lagged part-time employment, gender, nationality, lagged unemployment status, work experience in years, the disability status, and a binary indicator for whether the father was self-employed, and capital income (see Table 1 for an overview). We also control for year and region fixed effects. The main research question of this first step is therefore: Is the decision to become self-employed in the crafts or the non-crafts related to personality traits, and are there effects that are specific to the crafts sector, in line with the hypotheses developed in Section 2.3?

*In a second step*, we take an alternative approach to validate and deepen the results of the first step and run a random effects panel regression model. We test whether personality traits, moderated by crafts sector affiliation in the last three

<sup>6</sup> This model specification therefore does not include people who are unemployed or are out of the labor force in period  $t$ .

<sup>7</sup> While there is a small probability that some of these have been wrongly classified, the total number of these cases is negligible ( $n = 16$ ).

years, are associated with the likelihood of being self-employed in the current period. The model is as follows:

$$\text{Self - employed}_{it} = \alpha + \beta \text{Crafts}_{it-n} + \gamma \text{Trait}_{it} + \delta \text{Crafts}_{it-n} \times \text{Trait}_{it} + \theta X_{it} + \varepsilon_{it} \quad (2)$$

The binary self-employment indicator equals one if an individual is currently self-employed and zero otherwise. The lagged crafts indicator equals one if an individual was economically active in a crafts occupation at time  $t - 1$ ,  $t - 2$ , or  $t - 3$  and zero otherwise. The coefficient of the lagged crafts by trait interaction thus captures the effect of a trait on self-employment for a person who has worked in the crafts in the past. In this specification, self-employment is allowed to take place inside or outside the crafts sector. Our hypotheses developed in Section 2.3 suggest that the interaction between the binary variable ‘Crafts’ and certain personality traits will be significantly different from zero, which would imply that the relationship between personality traits and the likelihood of self-employment is not stable across sectors.<sup>8</sup> In addition to the main dependent variable ‘self-employment’, we also use ‘entry’ into self-employment as an additional entrepreneurship indicator using the same model specification.

In this second step of the regression analysis, we can also examine the possible relationship between certain personality traits and self-employment from an additional perspective: On the basis of a split sample design, we divide the dependent variable for self-employment status into groups of self-employed according to the number of employees they have (i.e. self-employed in general, solo self-employed, self-employed with 1–5 employees) in order to examine whether the craft-specific self-employment drivers we have identified depend on firm size.<sup>9</sup> This question is relevant in the present context, because as discussed in the theory section above, one of the central motivations of the ‘craft entrepreneur’ is not growth and profit, but the pursuit of personal autonomy, self-realization and the acquisition of experiential skills in one’s own trade or occupation.

*The third step* in our empirical analysis is to examine whether self-employment success depends on personality traits. This serves to investigate whether the crafts-specific determinants of self-employment identified in the first two steps are

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<sup>8</sup> Nevertheless, the differences between the empirical approaches of the first and second step should be noted: the analysis design of the second step examines the self-employment decisions of people who have been economically active in the crafts in the past, regardless of the sector of current self-employment. The multinomial logit regression of the first step, on the other hand, examines whether personality effects differ between paid employment and self-employment within and outside the crafts sector.

<sup>9</sup> In the split sample regressions by number of employees of the self-employed, the self-employed in the other size classes are dropped.

effective in terms of performance, i.e. whether self-employed persons with corresponding traits do better on various measures. We therefore restrict our sample to the self-employed in crafts and non-crafts occupations and run various regression models of the following form:

$$\text{Success}_{it} = \alpha + \beta\text{Crafts}_{it} + \gamma\text{Trait}_{it} + \delta\text{Crafts}_{it} \times \text{Trait}_{it} + \theta X_{it} + \varepsilon_{it} \quad (3)$$

Self-employment success is assessed using three different measures: growth (i.e. the number of employees, measured as an ordinal variable with 7 categories), work satisfaction (measured as an ordinal variable with 11 categories) and the probability of exit. Ordered logistic models are used for growth and work satisfaction, and a random-effects panel regression model is used for the dependent variable on exit from self-employment. In contrast to the first and second step regressions, here ‘Crafts’ is defined as an indicator of current economic activity in the crafts sector. The coefficient of the corresponding crafts by trait interaction therefore captures the effect of a personality trait on a measure of self-employment success in the crafts sector.

## 4 Empirical Results

### 4.1 Employment vs. Self-Employment in Crafts Compared to Non-crafts

The results of the multinomial logit regression (model 1) are shown in Table 2. The coefficients should be read in relation to the base group of non-crafts wage employment. Most importantly, columns (3) and (4) show the coefficients for self-employment in the non-craft and craft sectors respectively. Extraversion is positively associated with self-employment regardless of the sector. A one unit increase in the extraversion score increases the multinomial log odds of preferring self-employment (over non-craft wage employment) by 0.20–0.22, holding everything else constant.<sup>10</sup> A test of equality between these two coefficients cannot be rejected (see column 5, Table 2). The effect is statistically significant at the 1 percent level. This is supported by the marginal effects reported in Table 3. A one unit increase in the extraversion score increases the absolute probability of being self-employed by 1.6 and 0.1 % respectively. Given the baseline probabilities of 9.4 % and 0.6 % of falling into the self-employment categories of non-crafts and crafts, the size of the effect should be considered to be large.

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<sup>10</sup> As mentioned in Section 3, we use factor scores for the personality traits that are standardized to have a mean of approximately 0 and a standard deviation of approximately 1.

**Table 2:** Multinomial logit regression (dep. variable: employment status).

	(1)	(2)	(3)	(4)	(5)	(6)
	Employed		Self-employed		Test	Test
	Non-crafts	Crafts	Non-crafts	Crafts	(3) vs. (4)	(2) vs. (4)
Extraversion		-0.0431 (0.0271)	0.2009*** (0.0165)	0.2184*** (0.0636)	-	***
Conscientiousness		0.1051*** (0.0311)	-0.0461** (0.0183)	0.1677** (0.0726)	**	-
Emotional stability		-0.0410 (0.0291)	-0.0713*** (0.0174)	-0.2338*** (0.0661)	**	***
Openness		0.0273 (0.0318)	0.3292*** (0.0194)	0.1938*** (0.0738)	-	**
Agreeableness		0.0077 (0.0302)	0.0219 (0.0180)	-0.1156* (0.0661)	***	**
Risk		0.0305*** (0.0100)	0.1496*** (0.0061)	0.1406*** (0.0232)	-	***
LOC		-0.0909*** (0.0256)	0.2471*** (0.0165)	0.2182*** (0.0608)	-	***
Crafts lag		4.0384*** (0.0491)	0.5757*** (0.0444)	4.2476*** (0.1132)		
Age		-0.0526*** (0.0186)	0.2189*** (0.0133)	0.3946*** (0.0547)		
Age squared		0.0007*** (0.0002)	-0.0019*** (0.0002)	-0.0041*** (0.0006)		
University		-1.4938*** (0.1117)	0.3839*** (0.0319)	-0.8283*** (0.1869)		
Vocational training		-0.1933*** (0.0618)	-0.1101*** (0.0309)	0.3078* (0.1690)		
Lag part-time work		-0.0420 (0.0682)	-0.9215*** (0.0423)	-1.0440*** (0.2410)		
Female		-0.6075*** (0.0560)	-0.2147*** (0.0289)	-0.9921*** (0.1453)		
Non-employed (lag)		1.3915*** (0.0717)	-0.0603 (0.0607)	0.8312*** (0.2287)		
Foreigner		0.3476*** (0.0709)	-0.0042 (0.0513)	0.2781 (0.1904)		
Work experience		-0.0113*** (0.0035)	-0.0159*** (0.0020)	-0.0001 (0.0098)		
Unemployment experience		0.0141 (0.0091)	0.0080 (0.0065)	-0.0029 (0.0259)		
High school		-1.3116*** (0.1100)	0.4990*** (0.0316)	0.2748* (0.1587)		
Disability		-0.0046*** (0.0017)	-0.0109*** (0.0013)	-0.0171*** (0.0057)		



Table 2: (continued)

	(1) Employed		(3) Self-employed		(5) Test	(6) Test
	Non-crafts	Crafts	Non-crafts	Crafts	(3) vs. (4)	(2) vs. (4)
	Father self-employed		0.1141 (0.0725)	0.5075*** (0.0384)		
Capital_income		-2.4934*** (0.5621)	1.2230*** (0.0799)	1.2964*** (0.1636)		
Region dummies	Yes	Yes	Yes	Yes		
Year dummies	Yes	Yes	Yes	Yes		
N	95,294	95,294	95,294	95,294		

Notes: Multinomial logit regression; the coefficients represent the change in the probability of falling into a particular employment category relative to the baseline category (employed non-crafts) in response to a one-unit change in a personality score. Standard errors in parentheses: \* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ . Column (5) reports the results of a test evaluating the equality of the coefficients in columns (3) and (4), column (6) test the equality of (2) and (4).

Table 3: Multinomial logit regression (dep. variable: employment status, marginal effects).

	(1) Employed		(3) Self-employed	
	Non-crafts	Crafts	Non-crafts	Crafts
	Extraversion	-0.015***	-0.002***	0.016***
Conscientiousness	0.001	0.003***	-0.004***	0.001*
Emotional stability	0.007***	0.000	-0.005***	-0.001***
Openness	-0.026***	0.000	0.025***	0.001**
Agreeableness	-0.002	0.000	0.002	-0.001*
Risk	-0.012***	0.000	0.011***	0.001***
LOC	-0.017***	-0.004***	0.019***	0.001***
Baseline probability	0.854	0.046	0.094	0.006
Controls	Yes	Yes	Yes	Yes
Region dummies	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes
N	95,294	95,294	95,294	95,294

Notes: This table reports marginal effects for the multinomial logit model in Table 2. They can be interpreted as the change in the probability of falling into one of the four categories in response to a one-unit change in a personality trait. \* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ .

Next, conscientiousness appears to affect self-employment in the opposite direction in the non-crafts and crafts occupations. A one unit increase in the conscientiousness score reduces the probability of preferring self-employment to wage

employment by 4.6 % in non-crafts but increases it by 16.8 % in the crafts. According to the marginal effects (Table 3), the former effect is rather small, while the latter amounts to a substantial one-sixth increase compared to the baseline probability. Interestingly, conscientiousness has a similarly positive effect on wage employment in the crafts sector (relative to non-craft wage employment, Table 2), so it seems to be an overall crafts effect. The corresponding equality test between these two coefficients cannot therefore be rejected (see column 6, Table 2). However, the marginal effects in Table 3 suggest that the size of this effect is much stronger in crafts self-employment than in crafts paid employment, when compared to the baseline probability.

While the coefficient of emotional stability is negative for self-employment in both sectors, its size is economically significant only in the crafts, where a one unit increase in the respective factor score reduces the baseline probability by about one sixth (see Tables 2 and 3). In contrast, openness has a positive effect on self-employment in both crafts and non-crafts, and the effect size is large in both cases. The final BF characteristic, agreeableness, is only statistically significant and negative in crafts occupations (Table 2). Again, the marginal effects (Table 3) suggest that the corresponding effect size is quantitatively meaningful. Finally, the narrow personality traits are similarly associated with self-employment in all sectors. An increase in risk or LOC increases the likelihood of preferring self-employment in the crafts and non-crafts to wage employment.

Overall, these results suggest that some traits affect self-employment decisions similarly across sectors (extraversion, openness, risk and LOC), but others seem to be craft-specific, most notably conscientiousness, emotional stability and agreeableness. We therefore find support for hypotheses 2, 3, 4 and 5, while hypotheses 1 to 6 are not confirmed. On the basis of these results, it is possible to imagine an entrepreneurial personality that theoretically maximizes the likelihood of becoming self-employed (in crafts or otherwise). A one-unit deviation increase or decrease in the scores of the seven traits examined here can theoretically double the baseline probability of being self-employed in the craft sector and almost double it in the non-craft sector. Thus, we conclude that personality effects are economically significant.

## 4.2 Drivers of Self-Employment in General

Table 4 shows the differential impact of the personality traits on the likelihood of being currently self-employed (regardless of sector) for those who have been economically active in the crafts sector in the last three years and those who have not (column 1, Table 4). In addition, a distinction is made according to the number of employees of the self-employed in order to obtain more detailed information

**Table 4:** Panel regression (dep. variable: likelihood of self-employment, entry).

	(1) Self-employed general	(2) Solo self-employed	(3) Self-employed 1 to 5 employees	(4) Entry
Crafts lag	0.0068 (0.0062)	−0.0008 (0.0055)	0.0025 (0.0039)	0.0008 (0.0033)
Extraversion	0.0051*** (0.0016)	0.0049*** (0.0012)	0.0025** (0.0010)	0.0009 (0.0007)
Extraversion × crafts lag	0.0045 (0.0043)	0.0054 (0.0035)	0.0016 (0.0029)	0.0018 (0.0019)
Conscientiousness	−0.0053*** (0.0015)	−0.0037*** (0.0013)	−0.0018** (0.0009)	−0.0009 (0.0007)
Conscientiousness × crafts lag	0.0119** (0.0047)	0.0114*** (0.0036)	0.0038 (0.0036)	0.0060*** (0.0020)
Emotional stability	0.0001 (0.0015)	0.0011 (0.0012)	0.0004 (0.0009)	0.0011 (0.0007)
Emotional stability × crafts lag	0.0003 (0.0040)	−0.0014 (0.0035)	−0.0007 (0.0024)	0.0002 (0.0018)
Openness	0.0081*** (0.0016)	0.0061*** (0.0014)	0.0027*** (0.0009)	0.0045*** (0.0008)
Openness × crafts lag	−0.0001 (0.0036)	−0.0005 (0.0032)	0.0016 (0.0023)	−0.0041** (0.0017)
Agreeableness	0.0008 (0.0016)	0.0012 (0.0013)	−0.0004 (0.0010)	−0.0002 (0.0007)
Agreeableness × crafts lag	−0.0093** (0.0047)	−0.0080* (0.0043)	−0.0011 (0.0029)	−0.0014 (0.0022)
Risk	0.0026*** (0.0004)	0.0015*** (0.0003)	0.0009*** (0.0002)	0.0014*** (0.0002)
Risk × crafts lag	0.0001 (0.0010)	0.0013 (0.0009)	−0.0001 (0.0006)	0.0007 (0.0006)
LOC	0.0062*** (0.0018)	0.0033** (0.0015)	0.0030*** (0.0011)	0.0006 (0.0008)
LOC × crafts lag	0.0006 (0.0038)	0.0034 (0.0033)	−0.0009 (0.0025)	0.0007 (0.0018)
Age	0.0096*** (0.0013)	0.0066*** (0.0010)	0.0049*** (0.0008)	0.0021*** (0.0005)
Age squared	−0.0001*** (0.0000)	−0.0001*** (0.0000)	−0.0000*** (0.0000)	−0.0000*** (0.0000)
University	0.0246*** (0.0068)	0.0132** (0.0054)	0.0021 (0.0043)	0.0082*** (0.0030)
Vocational training	−0.0067 (0.0053)	−0.0021 (0.0047)	−0.0040 (0.0035)	0.0013 (0.0022)
Lag part-time work	−0.0232*** (0.0030)	−0.0133*** (0.0025)	−0.0103*** (0.0017)	−0.0015 (0.0015)

Table 4: (continued)

	(1) Self-employed general	(2) Solo self-employed	(3) Self-employed 1 to 5 employees	(4) Entry
Female	−0.0268*** (0.0044)	−0.0151*** (0.0037)	−0.0154*** (0.0030)	−0.0066*** (0.0018)
Non-employed (lag)	−0.0186*** (0.0030)	−0.0131*** (0.0028)	−0.0075*** (0.0016)	0.0168*** (0.0021)
Foreigner	−0.0029 (0.0058)	−0.0032 (0.0054)	−0.0016 (0.0031)	−0.0027 (0.0023)
Experience work	0.0008*** (0.0003)	−0.0002 (0.0002)	0.0010*** (0.0002)	−0.0002* (0.0001)
Experience unempl.	−0.0013** (0.0006)	−0.0002 (0.0005)	−0.0006** (0.0002)	−0.0003 (0.0003)
High school	0.0593*** (0.0061)	0.0376*** (0.0051)	0.0298*** (0.0041)	0.0121*** (0.0027)
Disability	−0.0002** (0.0001)	−0.0002** (0.0001)	−0.0001* (0.0001)	−0.0000 (0.0000)
Father self-employed	0.0444*** (0.0067)	0.0202*** (0.0054)	0.0210*** (0.0047)	0.0063** (0.0028)
Capital_income	0.0226*** (0.0061)	0.0087** (0.0041)	0.0162*** (0.0059)	0.0033 (0.0024)
<i>Region dummies</i>	Yes	Yes	Yes	Yes
<i>Year dummies</i>	Yes	Yes	Yes	Yes
<i>N</i>	111,559	107,204	105,110	102,168

Notes: Random effects panel regression. The coefficients can be interpreted as the change in the likelihood of being self-employed (or entering self-employment, col. 4). Standard errors in parentheses: \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

on the possible origin of the craft-specific effects identified in the previous section (columns 2 to 4, Table 4). As a robustness test, a further specification uses entry as an alternative dependent variable. This measures whether entry into self-employment took place in the current period (column 5, Table 4).

In line with the multinomial logit results, the trait extraversion is generally positively associated with self-employment, however, there is no evidence for a stronger impact in the crafts. In line with the previous set of results, we find a negative association for conscientiousness and self-employment in general but a positive one in the crafts sector. The latter is mainly due to the group of solo self-employed, where there is a positive association with the trait conscientiousness (column 2, Table 4). At the same time, the craft-specific conscientiousness effect is confirmed when entry is used as dependent variable (column 5). At this point, the question

could be asked whether the crafts-specific conscientiousness effect might simply compensate for the negative effect in the non-crafts sector, and thus only have a relative effect. However, an additional test to check the total (or absolute) effect by personality traits on self-employment in the crafts sector shows that conscientiousness has a positive total effect on self-employment in the case of solo self-employed and in the case of entry (see Table A3 in the Appendix).

There is no general effect of emotional stability on the dependent variable. In line with the multinomial logit results, there seems to be some negative impact in the crafts sector, but it is not statistically significant. Openness is positively related to self-employment in general. In the case of the crafts there is a weaker relationship only for solo self-employed and for entry, although this is only significant in the latter case.

The last BF trait, agreeableness, generally has no positive effect on self-employment. However, as with the multinomial logit results, there is an additional negative effect in the crafts sector, mainly due to being a solo self-employed. The two narrow traits, risk tolerance and LOC, are generally positively related to self-employment and there are no additional effects due to being in the crafts sector. Overall, the results of the second step of the empirical analysis are similar to the multinomial logit results presented above, despite the slightly different modelling approach and the slightly different research question underlying both models: Once again we see a positive effect of conscientiousness and a negative effect of agreeableness in the crafts case, both particularly for the solo self-employed. Thus, hypotheses 3 and 4 are again supported by the empirical evidence. As with the multinomial logit results, emotional stability shows a negative relationship (again strongest among the solo self-employed), but this is now not statistically significant.

### 4.3 Self-Employment Success

Table 5 shows the regression results on several indicators of self-employment success. As mentioned above, we examine whether the identified craft-specific personality factors (notably conscientiousness and agreeableness) also affect the performance of craftspeople once they are self-employed. First, we consider the dependent variable ‘number of employees’, which we interpret as an indicator of the growth orientation of a self-employed person. The results of an ordered logistic regression show that extraversion is generally positively related, while openness and agreeableness are negatively related to the number of employees a self-employed person has (column 1, Table 5). In contrast to agreeableness (and emotional stability), conscientiousness is again confirmed as a specific personality factor in crafts entrepreneurship: There is a negative relationship with the growth orientation of the crafts self-employed (Table 5). The marginal effects at each level

**Table 5:** Panel regression (dep. variable: success indicators).

	(1) Number of employees	(2) Work satisfaction	(3) Exit
Crafts lag	−0.1604 (0.1569)	−0.0075 (0.1672)	−0.0162 (0.0296)
Extraversion	0.0622** (0.0296)	0.1193*** (0.0282)	−0.0023 (0.0066)
Extraversion × crafts lag	−0.1643** (0.0665)	0.0878 (0.0811)	0.0087 (0.0178)
Conscientiousness	0.0291 (0.0339)	0.2383*** (0.0314)	−0.0066 (0.0065)
Conscientiousness × crafts lag	−0.2169*** (0.0751)	0.1923** (0.0950)	0.0008 (0.0166)
Emotional stability	−0.0274 (0.0319)	0.4837*** (0.0313)	−0.0006 (0.0064)
Emotional stability × crafts lag	0.1437* (0.0738)	0.0806 (0.0831)	0.0080 (0.0128)
Openness	−0.1296*** (0.0337)	0.1322*** (0.0345)	0.0033 (0.0071)
Openness × crafts lag	0.0094 (0.0971)	0.0576 (0.1053)	−0.0189 (0.0190)
Agreeableness	−0.0922*** (0.0318)	0.1742*** (0.0326)	−0.0015 (0.0062)
Agreeableness × crafts lag	0.0832 (0.0783)	0.0995 (0.0887)	0.0246* (0.0147)
Risk	−0.0005 (0.0106)	0.0213* (0.0110)	0.0002 (0.0019)
Risk × crafts lag	−0.0192 (0.0269)	−0.0086 (0.0297)	−0.0009 (0.0046)
LOC	0.1340*** (0.0282)	0.4345*** (0.0299)	−0.0184*** (0.0064)
LOC × crafts lag	−0.0432 (0.0691)	−0.0388 (0.0787)	0.0050 (0.0151)
<i>Regression Type</i>	Ordered logit	Ordered logit	Panel regression
<i>Controls</i>	Yes	Yes	Yes
<i>Region dummies</i>	Yes	Yes	Yes
<i>Year dummies</i>	Yes	Yes	Yes
<i>N</i>	9,345	9,359	9,519

Notes: The dependent variable is the number of employees (column 1), measured on a Likert-scale that ranges from 0 to 6. Similarly, work satisfaction (column 2) is measured on a scale from 0 to 10. The binary variable exit (column 3) is equal to one if the individual was self-employed in period  $t - 1$  but is no longer self-employed in period  $t$ . Standard errors in parentheses; \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

of the ordinal categories of the dependent variable are presented in Figure A1. It reiterates the role of the solo self-employed: Once a self-employed person starts to hire employees in his or her crafts enterprise, the effect of conscientiousness becomes negatively significant. This effect diminishes as firm size increases, but always remains negatively significant.

In contrast, the results in column 2 of Table 5 suggest that work satisfaction is generally affected by personality characteristics. All BF traits are positively associated with work satisfaction as well as LOC, and to some extent this is also true for risk. In line with our theoretical outline above, we find an additional conscientiousness premium in the crafts, i.e. higher levels are positively related to work satisfaction among self-employed craftspeople (Table 5, see also Figure A2). Thus, in line with the above findings on the probability of self-employment, conscientiousness can be singled out as a trait specific to the crafts.

Finally, we find no evidence of personality effects on the likelihood of exit, except for two traits: Higher levels of LOC generally have a negative effect on exit, highlighting the favorable influence of this trait on self-employment success. There is also a positive effect of agreeableness in the case of the crafts self-employed, which is in line with the above findings on the effect of agreeableness in the crafts sector.

Overall, therefore, the multi-step analysis that has been carried out provides a conclusive picture, particularly with regard to the trait of conscientiousness (Hypothesis H3). In the theoretical discussion of the ‘craft entrepreneur’, we hypothesized that conscientiousness in the craft sector corresponds to the desire of many self-employed to realize themselves on the basis of their experience-based skills and competences and, for this reason, to deliberately keep their own firm small in order to avoid being overburdened with the management and organizational tasks that automatically go hand in hand with increasing firm size (Hypothesis H3). The empirical results support this hypothesis by showing that conscientiousness is a craft-specific driver that has a positive effect on the decision to become self-employed in the crafts sector. Indeed, it is associated with lower growth orientation and, at the same time, higher work satisfaction among crafts self-employed.

#### 4.4 Additional Specifications

To check the robustness of our results, as mentioned in Section 3.1, we repeat the multinomial logit regression with an artisan sample (see Table A4 in the Appendix). The results are mostly similar to those in Section 4.1, with two exceptions. There is no longer a statistically significant positive openness effect for self-employed craftsmen, although the coefficient is still positive. Instead, we find a higher openness for employed artisans. Moreover, while the agreeableness coefficient is still negative in

the case of self-employed artisans, but it is no longer statistically significant. Taking into account the significantly reduced number of observations, we therefore conclude that these results are consistent with the above findings.

We also run the random effects panel regression of Section 4.2 with the artisan sub-sample (Table A5 in the Appendix). Again, we find similar results as before, with two notable exceptions in the case of solo self-employed. In contrast to the total sample of craftspeople, openness and LOC have a positive effect on the decision to become a solo self-employed. This seems plausible given the artistic and creative nature of artisans. Other results show the same coefficient signs, for example in the case of agreeableness, but are not statistically significant. Again, the smaller sample size must be taken into account.

Finally, the sensitivity of the above results to the influence of the control variables is analyzed. Table A6 in the Appendix shows the multinomial logit regression for the total sample from Section 4.1 without controls. The positive effect of conscientiousness is again evident for self-employment in the crafts sector. At the same time, the positive effects of openness and risk and the negative influence of agreeableness are confirmed. Extraversion, emotional stability and LOC are no longer significant, although the signs of the coefficients are in the expected direction. With regard to the crafts-specific effects (especially conscientiousness), our results from Section 4.1 are thus confirmed. The same applies to the random effects regression from Section 4.2. The main results are confirmed in the no-control specification (Table A7 in the Appendix): In the case of solo self-employed, belonging to the crafts sector has a positive conscientiousness effect on self-employment, while in the case of agreeableness it has a negative effect.

## 5 Conclusions

The renewed scholarly interest in the craft-based mode of competition, work, learning and innovation suggests that there are some unique aspects of the crafts' way of doing business. This paper explores this issue further by examining the personality patterns of crafts entrepreneurship. Using a representative panel data set of German individuals, we investigate the relationship between broad (Big Five) and narrow (locus of control, risk tolerance) personality traits and self-employment in crafts trades. By comparing this with self-employed people from non-crafts occupations, we empirically identify the specificities of crafts entrepreneurship at the fundamental level of human personality.

Our results confirm previous studies that an individual's personality influences the likelihood of self-employment, but they also show that certain traits have a different effect in the case of crafts than in the non-crafts case – a finding that fits well



with established business owner typologies. In the context of entrepreneurial personality, it is therefore useful to distinguish between universalistic effects of traits that have a general impact on self-employment (e.g. extraversion) and particularistic effects that positively affect the decision to become self-employed, for example, only in the crafts sector (e.g. conscientiousness).

This suggests that there are indeed distinct characteristics of crafts entrepreneurship, which contributes to the recent research on the craft-based mode of doing business. Moreover, using the German crafts sector as a case study, our results imply that personality traits can influence the decision to become self-employed differently depending on the sector or field of entrepreneurship. Our findings also show that the impact of personality on self-employment is highest in very small firms. At the fundamental level of human personality, this confirms the well-known fact that, in small-sized firms, the owner is the focal point for a wide range of business-relevant decisions and functions. An interesting implication here is that the robust personality effects on the likelihood of self-employment presented in the prior literature (see e.g. Caliendo, Fossen, and Kritikos 2014; Runst and Thomä 2023) are likely to be driven primarily by the solo self-employed without employees.

Against this background, we suggest that future research on the influence of personality effects on self-employment should distinguish between universalistic traits, that is, personality traits that influence self-employment in general, and particularistic effects, that is, traits that influence self-employment decisions more strongly (or only) in specific sectors. The latter finding in particular can provide valuable information, for example for business start-up counselling. Potential business owners may feel more attracted to certain sectors than others, due to their specific personality traits. For example, while there are certain traits – such as extraversion – that are generally conducive to self-employment, others – such as conscientiousness – are only associated with self-employment in the crafts sector, where they also have a positive effect on self-employment success. Such information can therefore improve career guidance, for example by targeting young, conscientious people with a strong desire for self-realization, personal autonomy and experience-based competence, by making them aware of the opportunities offered by self-employment in the crafts sector. At the same time, the influence of personality traits should not be overestimated: once in business, the self-employed are subject to various market forces which affect the survival and success of their business and which may trump the effects of the personality traits of the owner.

Future research efforts can also build on the findings of the present paper and examine other potential sources of heterogeneity in the relationship between personality and self-employment (such as other sectors or gender differences). Our

study is also thematically related to Caliendo, Fossen, and Kritikos (2022) – both suggesting that personality traits play a role in hiring employees and firm growth (or, alternatively, the conscious choice to remain small), all of which opens up viable avenues for future inquiry. Another starting point for future research could be a more in-depth analysis of the personality of craft owners, in order to make a further contribution to the growing literature on the craft-based mode of competition, work, learning and innovation, suggesting – in line with Sennett (2008) – that there is something ‘unique’ about the craft’s way of doing business.

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**Informed consent:** Not applicable.

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**Data availability:** The raw data can be obtained on request from SOEP Research Data Center at DIW Berlin.

## Appendix

**Table A1:** Factor loadings after factor analysis (SOEP wave 2005).

	Extraversion	Conscientiousness	Neuroticism (emotional stability)	Openness	Agreeableness
Thorough	0.13	<b>0.66</b>	−0.02	0.05	0.11
Communicative	<b>0.66</b>	0.21	−0.04	0.14	0.09
Too rough	0.05	−0.09	0.15	0.15	<b>−0.48</b>
Inventive	0.37	0.20	−0.08	<b>0.50</b>	−0.08
Worried	−0.02	0.11	<b>0.50</b>	0.05	0.09
Forgiving	0.16	0.15	−0.01	0.10	<b>0.39</b>
Lazy	−0.06	<b>−0.45</b>	0.06	0.16	−0.18
Social	<b>0.67</b>	0.10	−0.06	0.21	0.11
Artistic	0.21	0.07	0.03	<b>0.41</b>	0.15
Nervous	−0.06	−0.07	<b>0.63</b>	0.04	−0.04
Efficient	0.17	<b>0.60</b>	−0.06	0.18	0.14
Reserved	<b>−0.48</b>	0.08	0.15	0.05	0.22
Friendly	0.15	0.28	−0.01	0.12	<b>0.58</b>
Imaginative	0.32	0.04	0.01	<b>0.52</b>	0.09
Stress resilient	0.15	0.15	<b>−0.51</b>	0.21	0.15

Notes: Inverting the neuroticism value scale yields the variable emotional stability. Dominant loadings that define a factor are shown in bold.

**Table A2:** List of crafts occupations.

Occupation	Sample share	Occupation	Sample share
Optician	1.02 %	Container and apparatus builder	0.03 %
Baker*	2.16 %	Concrete block layer	0.08 %
Boat builder*	0.10 %	Musical instrument maker*	0.48 %
Well builder	0.23 %	Brewer and maltster*	0.20 %
Gunsmith	0.65 %	Bookbinder*	0.74 %
Surgical mechanic	0.15 %	Book printer*	2.19 %
Roofer*	1.52 %	Ladies' and men's tailor*	0.60 %
Electric machine builder	0.43 %	Woodturner*	0.20 %
Electrical engineer	12.47 %	Gem cutter*	0.57 %
Precision mechanic	1.80 %	Goldsmith and silversmith*	0.17 %
Butcher*	1.09 %	Screed layer	0.25 %
Hairdresser*	3.43 %	Precision optician	0.08 %
Scaffolder	0.37 %	Flexographer	0.07 %
Glassblower	0.25 %	Tiler*	1.24 %
Glazier	0.18 %	Photographer	0.74 %
Hearing aid acoustician	0.48 %	Electroplater	0.22 %
Information technician	0.50 %	Building cleaner	16.08 %
Installer and heating engineer	3.49 %	Glass painter*	0.02 %
Refrigeration system mechanic	0.22 %	Glass refiner	0.08 %
Bodywork and vehicle builder	0.70 %	Ceramist*	0.52 %
Plumber	0.25 %	Furrier*	0.00 %
Confectioner/pastry chef*	0.84 %	Metal and bell caster*	0.74 %
Automotive mechanic	7.24 %	Model maker	0.35 %
Agricultural machinery technician	0.58 %	Milliner*	0.02 %
Painter and varnisher*	4.61 %	Miller*	1.72 %
Bricklayer and concrete builder	4.21 %	Parquet layer	0.97 %
Metalworker	4.14 %	Roller shutter and sound insulator	0.28 %
Stove and air heating installer	0.02 %	Saddler and fine leatherworker*	0.08 %
Orthopedic technician	0.58 %	Sign maker & neon sign manufacturer	0.05 %
Orthopedic shoemaker	0.27 %	Sailmaker*	0.64 %
Chimney sweep	0.30 %	Screen printer*	0.23 %
Ropemaker	0.10 %	Embroiderer*	0.10 %
Stonemason*	0.55 %	Textile cleaner	1.70 %
Road builder	1.35 %	Watchmaker*	0.32 %
Plasterer*	0.38 %	Wax chandler*	3.24 %
Carpenter	4.65 %	Cooper (wine barrel maker) *	0.20 %
Vulcanizer	0.37 %		
Heating and cooling technician	1.39 %		
Dental technician	1.80 %		
Joiner/carpenter*	0.94 %		

Notes: The identification of crafts occupations is based on the occupational classification available in the SOEP (KldB 1992). Artisan trades are denoted with an asterisk \*.

**Table A3:** Total crafts effects (dep. variable: likelihood of self-employment, entry).

	(1)		(2)		(3)		(4)	
	Self employed general		Solo self-employed		Self-employed 1 to 5 employees		Entry	
Extraversion	0.0096	**	0.0103	***	0.0041		0.0027	
Conscientiousness	0.0066	◇	0.0077	**	0.002		0.0051	**
Emotional stability	0.0004		-0.0003		-0.0003		0.0013	
Openness	0.008	**	0.0056	*	0.0043	*	0.0004	
Agreeableness	-0.0085	*	-0.0068	*	-0.0015		-0.0016	
Risk	0.0027	***	0.0028	***	0.0008		0.0021	***
LOC	0.0068	*	0.0067	**	0.0021		0.0013	
<i>Controls</i>	Yes		Yes		Yes		Yes	
<i>Region dummies</i>	Yes		Yes		Yes		Yes	
<i>Year dummies</i>	Yes		Yes		Yes		Yes	
<i>N</i>	111,559		107,204		105,110		102,168	

Notes: The total crafts effect of a trait is the sum of the trait coefficient and the coefficient of the interaction term (based on Table 4). \*\*\*, \*\*, and \* Denote significance at the 1 %, 5 %, and 10 % percent level. ◇ indicates a borderline significance, very close to 10 percent.

**Table A4:** Multinomial logit (dep. variable: employment status, artisan sample only).

	(1)	(2)	(3)	(4)
	Employed		Self-employed	
	Non-crafts	Artisan	Non-crafts	Artisan
Extraversion		−0.0967*** (0.0372)	0.1947*** (0.0165)	0.3542*** (0.0889)
Conscientiousness		0.1126*** (0.0435)	−0.0353* (0.0183)	0.2176** (0.1024)
Emotional stability		−0.0814** (0.0408)	−0.0712*** (0.0174)	−0.4265*** (0.0874)
Openness		0.1696*** (0.0447)	0.3305*** (0.0194)	0.0836 (0.1001)
Agreeableness		0.0333 (0.0415)	0.0160 (0.0180)	−0.0801 (0.0899)
Risk		0.0251* (0.0140)	0.1527*** (0.0061)	0.0865*** (0.0310)
LOC		−0.1201*** (0.0358)	0.2442*** (0.0166)	0.1905** (0.0825)
<i>Controls</i>	Yes	Yes	Yes	Yes
<i>Region dummies</i>	Yes	Yes	Yes	Yes
<i>Year dummies</i>	Yes	Yes	Yes	Yes
<i>N</i>	90,973	90,973	90,973	90,973

Notes: Multinomial logit regression. The crafts sector is restricted to artisanal crafts occupations (see Table A2). The coefficients represent the change in the probability of falling into a particular employment category relative to the baseline category (employed non-crafts) in response to a one-unit change in a personality score. Standard errors in parentheses: \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

**Table A5:** Panel regression (dep. variable: likelihood of self-employment, artisan sample only).

	(1) Self-employed general	(2) Solo self-employed	(3) 1 to 5 employees
Artisan lag	0.0178 <sup>*</sup> (0.0097)	0.0112 <sup>*</sup> (0.0062)	0.0095 (0.0067)
Extraversion	0.0053 <sup>***</sup> (0.0016)	0.0050 <sup>***</sup> (0.0010)	0.0024 <sup>**</sup> (0.0010)
Extraversion × artisan lag	0.0044 (0.0062)	0.0046 (0.0034)	0.0030 (0.0037)
Conscientiousness	-0.0050 <sup>***</sup> (0.0016)	-0.0034 <sup>***</sup> (0.0009)	-0.0018 <sup>**</sup> (0.0009)
Conscientiousness × artisan lag	0.0098 <sup>*</sup> (0.0058)	0.0094 <sup>**</sup> (0.0036)	0.0020 (0.0042)
Emotional stability	0.0000 (0.0015)	0.0011 (0.0009)	0.0005 (0.0009)
Emotional stability × artisan lag	-0.0041 (0.0062)	-0.0032 (0.0035)	-0.0051 (0.0037)
Openness	0.0072 <sup>***</sup> (0.0016)	0.0058 <sup>***</sup> (0.0010)	0.0022 <sup>**</sup> (0.0009)
Openness × artisan lag	0.0072 (0.0067)	0.0087 <sup>**</sup> (0.0039)	0.0037 (0.0042)
Agreeableness	0.0006 (0.0016)	0.0008 (0.0010)	-0.0003 (0.0010)
Agreeableness × artisan lag	0.0012 (0.0067)	-0.0012 (0.0037)	-0.0022 (0.0050)
Risk	0.0027 <sup>***</sup> (0.0004)	0.0016 <sup>***</sup> (0.0003)	0.0008 <sup>***</sup> (0.0003)
Risk × artisan lag	0.0005 (0.0015)	0.0016 (0.0011)	-0.0000 (0.0010)
LOC	0.0068 <sup>***</sup> (0.0018)	0.0035 <sup>***</sup> (0.0009)	0.0033 <sup>***</sup> (0.0011)
LOC × artisan lag	0.0098 <sup>*</sup> (0.0056)	0.0124 <sup>***</sup> (0.0033)	0.0018 (0.0035)
<i>Controls</i>	Yes	Yes	Yes
<i>Region dummies</i>	Yes	Yes	Yes
<i>Year dummies</i>	Yes	Yes	Yes
<i>N</i>	104,619	100,551	98,519

Notes: Random effects panel regressions. The crafts sector is restricted to artisan occupations (see Table A2). Standard errors in parentheses; \* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ .

**Table A6:** Multinomial logit (dep. variable: employment status, without controls).

	(1) Employed		(3) Self-employed	
	Non-crafts	Crafts	Non-crafts	Crafts
Extraversion		-0.0884*** (0.0200)	0.0904*** (0.0149)	0.0642 (0.0562)
Conscientiousness		0.2003*** (0.0239)	-0.0935*** (0.0164)	0.3006*** (0.0677)
Emotional stability		0.0399* (0.0220)	0.0335** (0.0157)	-0.0325 (0.0590)
Openness		-0.0868*** (0.0242)	0.4019*** (0.0177)	0.1185* (0.0665)
Agreeableness		-0.1142*** (0.0224)	-0.0283* (0.0162)	-0.3446*** (0.0579)
Risk		0.0622*** (0.0075)	0.1564*** (0.0054)	0.1679*** (0.0206)
LOC		-0.2737*** (0.0195)	0.3089*** (0.0150)	0.0902 (0.0550)
<i>N</i>	104,363	104,363	104,363	104,363

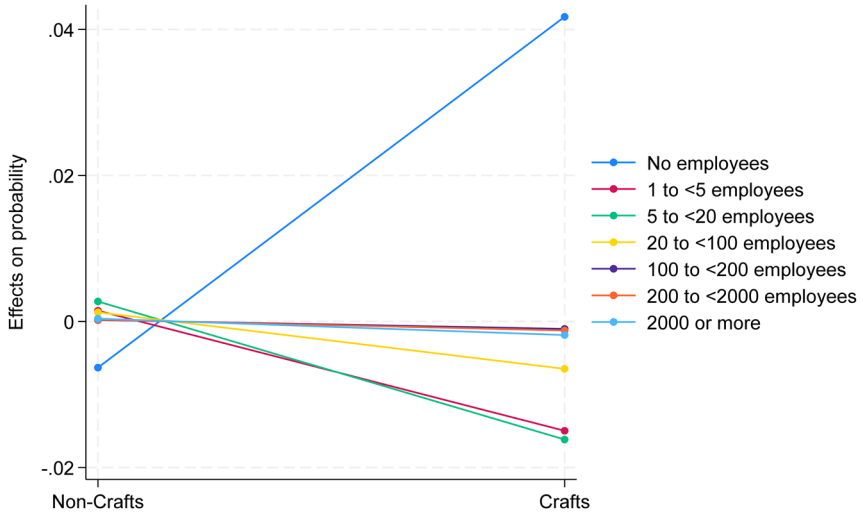
Notes: This table reports the coefficients of a multinomial regression without control variables, region or year fixed effects. The coefficients represent the change in the probability of falling into a particular employment category relative to the baseline category (employed non-crafts) in response to a one-unit change in a personality score. Standard errors in parentheses; \* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ .

**Table A7:** Panel regression (dep. variable: likelihood of self-employment/entry, without controls).

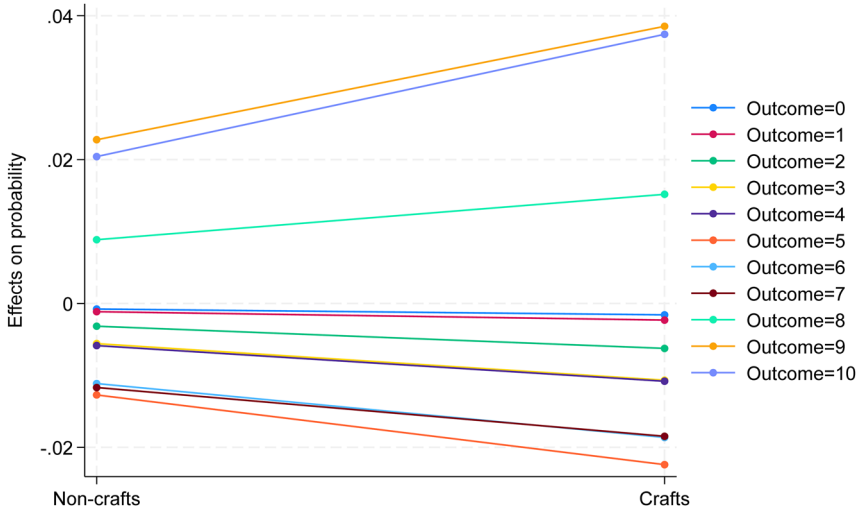
	(1) Self-employed general	(2) Solo self-employed	(3) 1 to 5 employees	(4) Entry
Crafts lag	0.0033** (0.0017)	0.0041*** (0.0013)	0.0019* (0.0011)	0.0005 (0.0004)
Extraversion	0.0090 (0.0062)	0.0011 (0.0054)	0.0029 (0.0037)	0.0011 (0.0026)
Extraversion × crafts lag	0.0038 (0.0043)	0.0045 (0.0035)	0.0006 (0.0029)	0.0011 (0.0013)
Conscientiousness	-0.0043*** (0.0016)	-0.0029** (0.0013)	-0.0015* (0.0009)	-0.0015*** (0.0004)
Conscientiousness × crafts lag	0.0127*** (0.0046)	0.0118*** (0.0035)	0.0046 (0.0035)	0.0038** (0.0015)
Emotional stability	0.0023 (0.0015)	0.0020 (0.0013)	0.0015 (0.0009)	0.0001 (0.0004)
Emotional stability × crafts lag	0.0013 (0.0040)	-0.0005 (0.0036)	-0.0006 (0.0023)	0.0012 (0.0014)
Openness	0.0082*** (0.0016)	0.0060*** (0.0014)	0.0028*** (0.0010)	0.0041*** (0.0005)
Openness × crafts lag	-0.0005 (0.0037)	-0.0007 (0.0031)	0.0016 (0.0023)	-0.0041*** (0.0016)
Agreeableness	-0.0013 (0.0017)	0.0002 (0.0014)	-0.0012 (0.0010)	0.0007 (0.0004)
Agreeableness × crafts lag	-0.0085* (0.0046)	-0.0072* (0.0043)	-0.0015 (0.0027)	-0.0016 (0.0015)
Risk	0.0025*** (0.0004)	0.0015*** (0.0003)	0.0007*** (0.0002)	0.0013*** (0.0001)
Risk × crafts lag	0.0005 (0.0010)	0.0014 (0.0009)	0.0004 (0.0006)	-0.0000 (0.0005)
LOC	0.0085*** (0.0018)	0.0045*** (0.0015)	0.0036*** (0.0011)	0.0005 (0.0004)
LOC × crafts lag	-0.0006 (0.0037)	0.0020 (0.0032)	-0.0015 (0.0024)	0.0006 (0.0013)
<i>N</i>	122,864	118,036	115,811	122,864

Notes: Random effects panel regressions without control variables, region or year fixed effects. Standard errors in parentheses; \* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ .





**Figure A1:** Conscientiousness and the number of employees (average marginal effects). Note: The ordinal regression on which the graph is based is reported in Table 5, column 1. The dependent variable is the number of employees, measured on a Likert-scale that ranges from 0 to 6. The main explanatory variable of interest is the interaction of the personality trait conscientiousness and whether an individual belongs to the crafts sector. The graph displays the marginal effects at each level of the ordinal categories of the dependent variable. The marginal effect coefficients are statistically significant at the 5 % level (not significant) for each outcome in the case of crafts (non-crafts).



**Figure A2:** Conscientiousness and work satisfaction (average marginal effects). Note: The ordinal regression on which the graph is based is reported in Table 5, column 2. The dependent variable is work satisfaction is measured on an 11-point Likert scale from low (outcome = 0) to high (outcome = 10). The main explanatory variable of interest is the interaction of the personality trait conscientiousness and whether an individual belongs to the crafts sector. The graph displays the marginal effects at each level of the ordinal categories of the dependent variable. The marginal effect coefficients are statistically significant at the 1% level (not significant) for each outcome in the case of crafts (non-crafts).

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