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Abstract: This work contributes to the literature demonstrating an important role for psychological traits in labor market decisions. We show that West German workers with an internal locus of control sort into jobs with performance appraisals. Appraisals provide workers who believe they control their environment a tool to demonstrate their value and achieve their goals. We confirm that workers who are risk tolerant also sort into jobs with performance appraisals but explain why the influence of the locus of control and risk tolerance should not be additive. We demonstrate this by estimating a routinely large and significantly negative interaction in our sorting equations. We also show that important patterns of sorting are revealed only when taking into account the interaction of locus of control and risk tolerance.

JEL: D03, J33, M52.

Keywords: Locus of control, risk attitude, performance appraisal, performance pay, sorting, extrinsic rewards, intrinsic motivation.

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1. Introduction

Economists increasingly recognize the role of non-cognitive skills in both human capital formation and the functioning of the workplace (Heckman et al. 2006, Borghans et al. 2008, Almlund et al. 2011). Cobb-Clark (2015: p. 1) identifies the recent reframing of traditional models to accommodate such skills as drivers of market outcomes as "one of the most exciting developments in labor economics over the past decade." Among the fundamental personality characteristics researchers examine has been the locus of control, the extent to which individuals think that their actions cause the consequences they encounter. Those who see a tighter connection are identified as having a more internal locus (they more nearly think they control outcomes). Those who see a looser connection are identified as having a more external locus (they more nearly believe that luck, chance or other people control outcomes). While this concept has played a long role in psychology (Rotter 1966, Gatz and Karel 1993), it came into economics first as a "soft skill" and later as part of the new emphasis on "non-cognitive" skills.

Those economists who see it as driver of outcomes take locus of control to be stable and, if not completely exogenous, unlikely to change in response to the outcomes being examined. Indeed, Cobb-Clark and Schurer (2013), examine this issue directly as part of trying to test the underpinnings of using the locus of control in labor economics. They show that typical measures of the locus change only very modestly over the short to medium run, that any changes are concentrated among the young and very old and that the changes are not related to demographic, labor market or health events. They conclude that the locus of control is "remarkably stable" and that applied researchers who limit their sample to working age subjects can, with

suitable caution, take measures of the locus as drivers of economic behavior rather than as merely the reflection of labor market outcomes.

Previous research by economists has confirmed a role for the locus of control in a variety of settings. Those with a more internal focus believe that an investment in human capital has a higher return than do those with an external locus. As a consequence, they show better performance in school (Hadsell 2010, Mendolia and Walker 2014) and are more likely to complete high school and attend college (Coleman and DeLeire 2003).[1] They are also more likely to make long-term investments in personal health (Chiteji 2010, Cobb-Clark et al. 2014). Those unemployed with an internal locus believe that their search effort generates a larger increase in the job offer rate and they have been shown to search more and retain higher reservation wages than those with an external locus (Caliendo et al. 2015, McGee 2015, McGee and McGee 2016). Similarly, individuals with an internal locus are more likely to become entrepreneurs (Caliendo et al. 2014). All of these follow work showing that there exists a persistent earnings return for the "soft skill" of an internal locus (Bowles et al. 2001a, Duncan and Dunifon 1998, Stefanec 2010). While not exhaustive, this short summary suggests that perceptions of returns can be critical in understanding behavior and that those perceptions reflect, in part, a reasonably stable locus of control.

We present a unique examination focused on performance appraisals. Performance appraisals remain the most common form of performance management.[2] They measure individual worker performance and base this on combinations of objective and subjective evaluation. Such appraisals are used to provide feedback to workers, in making job assignment, in determining training needs, and in the allocation of both short- and long-term rewards including but not limited to annual

bonuses and promotion. We examine the hypothesis that the locus of control drives the sorting of workers into jobs with performance appraisal. Workers who have an internal locus should view performance appraisals as a mechanism that translates their efforts and skills into better assignments and greater earnings. Thus, they should sort into jobs with appraisals. By contrast, workers with an external locus should sort out of such jobs as they view the outcomes of their efforts as more nearly a random process such that performance appraisals are as likely to ignore as reward their efforts.

Using the German Socio-Economic Panel (SOEP), we confirm a strong and robust relationship that those with an internal locus sort into jobs that involve performance appraisal. This result is particularly strong for performance appraisals that have consequences for workers' pay. The relationship with the locus of control remains when controlling for worker characteristics, basic firm characteristics, and for industry and occupation. It also remains when accounting for other major personality characteristics, namely risk preferences, time preferences, reciprocity, trust, and the Big Five.

Our results shed light on models arguing that more productive workers sort into jobs with performance-related pay (Booth and Frank 1999, Cornelissen et al. 2011, Lazear 1986, 2000). We show that a worker's generalized expectancy that he or she can control outcomes plays an important role in such sorting. This expectancy influences the worker's motivation and job performance. We join the very few economic studies examining the association between personality characteristics and performance pay (Dohmen and Falk 2010, 2011). Only Curme and Stefanec (2007) test for an association between locus of control and performance pay. Their study is based on U.S. data.

While previous research focused on sorting into performance pay, our study provides a more nuanced view. We differentiate between performance appraisals with and without consequences for the worker's earnings. Economists may see locus of control primarily as a subjective perception of the expected value of extrinsic rewards. However, psychologists stress that locus of control contributes to self-esteem and happiness. Thus, performance appraisals may have intrinsic value to workers with an internal locus. These workers expect that they can influence performance appraisals to obtain positive feedback reinforcing their self-esteem. Thus, workers with an internal locus of control should not only sort into performance appraisals with monetary rewards but also, albeit to a lesser extent, into performance appraisals without such rewards. Indeed, our estimates provide evidence supportive of this hypothesis.

We also examine the interaction of locus of control with risk attitude. While risk attitude reflects a worker's preference towards risk, locus of control involves expectations about the risks influencing the worker's outcomes. Thus, locus of control and risk attitudes should play an intertwined role in the sorting into performance appraisals. An internal locus implies that the worker expects to control the outcome of performance appraisals so that he or she perceives little uncertainty. Risk-averse workers positively value low uncertainty whereas risk-loving workers negatively value it. Thus, a high degree of risk aversion should reinforce the propensity of workers with an internal locus to sort into performance appraisals while a high degree of risk love should weaken that propensity. This prediction is supported by our estimates showing a large and significantly negative interaction of risk tolerance and internal locus of control. Moreover, the estimates demonstrate that the full pattern of sorting is only revealed when taking into account this interaction effect.

Finally, our analysis indicates that the sorting of workers into performance appraisals also depends on the economic and cultural context. Running separate regressions for West and East Germany, we find that the relationship between locus of control and performance appraisals only holds for West German but not for East German workers. The socialist regime that existed for 45 years has had deep cultural consequences for the people in East Germany that appear to be still visible even more than two decades after reunification. Previous research has shown that East and West Germans *on average* even differ in their personality characteristics. Our findings suggest that they also differ in the way personality characteristics translate into labor market behavior.

In what follows, the next section describes the primary hypotheses and sets the stage. The third section describes the data and variables. The fourth section presents the empirical results. The fifth section concludes and suggests implications.

2. Concepts and Hypotheses

2.1 Locus of Control and Sorting into Jobs with Performance Appraisals

It has become common to return to Rotter's original formulation when explaining the locus of control. Rotter (1966: p. 2) identifies that locus as "a generalized attitude, belief, or expectancy regarding the nature of the causal relationship between one's own behavior and its consequences." Motivation largely depends on this perception of the extent of control. If individuals do not believe that they can produce desired effects, they have virtually no motivation to put forth effort (Bandura 2000). Thus, as important as incentives can be, they need not be synonymous with motivation (Cobb-Clark 2015). The individual with an external locus of control will believe that outcomes are determined by luck, the actions of others or the way the system works.

They will be weakly motivated by incentives. On the other hand, the individual with an internal locus of control will believe that outcomes are determined by their own actions. They will be strongly motivated by incentives. Thus, an internal locus of control has an incentive-enhancing effect and an external locus of control an incentive-depressing effect (Bowles et al. 2001b).

Against this background, we hypothesize that the locus of control should have an influence on workers' sorting in jobs that involve performance appraisals. To emphasize this point it is worth recognizing the functions of performance appraisals. Performance appraisals reflect the employer's need for a comprehensive measurement of worker performance. As objective indicators often exist for only a limited set of performance dimensions, the measurement requires the subjective evaluation by supervisors, co-workers or clients (Baker et al. 1988, Gibbons 1998, Jackson and Schuler 2003, Prendergast 1999). While group performance may be evaluated as an additional component, the usual object is to evaluate individual worker performance (Murphy and Cleveland 1995). The end result can be a detailed written report, performance metrics and periodic performance review meetings.

Performance appraisals provide formalized and detailed feedback to workers. The information gained from formal appraisal can also help determine which workers need additional training and how well past training worked (Noe et al. 1994). Furthermore, it can be used to assign workers to appropriate tasks and jobs. These functions of performance appraisals can be valuable to both firms and workers even if the appraisals have no direct consequences for worker earnings. Moreover, performance appraisals are often used in the private sector to provide incentives by tying workers' pay to the appraisals (Giardini and Kabst 2007). On the one hand, performance appraisals can be integrated closely to the on-going compensation

systems of firms. For example, annual bonuses may be based on appraisals. On the other hand, performance appraisals may be used to provide long-term incentives and to improve the functioning of the internal labor market of the firm. This can include the determination of promotions to jobs with greater responsibility and greater earnings.

Workers' views of performance appraisals will depend to a large extent on their locus of control. At one extreme, workers could believe that they cannot influence performance appraisals as their performance is largely beyond their control and potentially subject to a large degree of randomness. They may also view the process of appraisal itself as something that "happens" and for which the decisions are uncertain and cannot be influenced. At the other extreme, workers could believe that their actions determine their performance and that higher performance is accurately reflected in positive appraisals. Even if workers see the process of appraisal as imperfect, they may feel that, in the end, their performance is the deciding factor or that they can possibly manipulate the process of appraisal to their advantage.[3] These two extremes of randomness vs. complete efficacy represent the extremes of external and internal locus of control. Recognizing this we identify our first hypothesis.

Hypothesis 1: Workers with an internal locus of control sort into performance appraisal when that appraisal influences the earnings of workers.

This hypothesis flows immediately from the extrinsic motive to earn more money. The locus of control influences the workers' expectations about the extent to which the presence of performance appraisal allows them to translate effort and competence into compensation. Sorting takes place because workers with an internal locus believe that outcomes depend on their own effort and competence so that they can earn more

money in jobs that tie pay to their performance (Spector 1982). Seen this way, it is similar to other studies of labor market outcomes. When workers believe they can influence the quality of an appraisal, they seek out such an appraisal just as when they feel they can influence the flow of job arrivals, the unemployed search more intensively.

However, from a psychological viewpoint, locus of control is not simply a generalized expectancy. Locus of control is an important part of a person's self-esteem (Ng et al. 2006, Judge and Bono 2000, 2001, Judge et al. 1998). People with an internal locus of control have a higher self-esteem which, in turn, increases their happiness. Those with an internal locus of control enjoy their belief in a greater potential for power (Phares 1976: pp. 71-79). This belief satisfies the desire to control outcomes and to rely upon oneself. As a consequence, workers with an internal locus of control engage in activities that reinforce their positive self-concept. They prefer tasks in which they can demonstrate their competence and control and are more sensitive to information related to their self-worth.[4] They have a stronger need for achievement.

Given this, the sorting of workers with an internal locus into performance appraisals may be driven not only by the extrinsic motive to earn more money. Performance appraisals provide feedback to workers about their performance. Workers with an internal locus of control believe that they can succeed in their job and, thus, expect positive feedback reinforcing their self-esteem. This motive of receiving positive reinforcement can lead workers with an internal locus to sort into performance appraisal even when not tied to earning more money. By contrast, workers with an external locus of control (those who do not believe in themselves) would not expect positive feedback as they do not believe that they can succeed or

that, if they did, they would necessarily be recognized. Thus, they tend to avoid performance appraisal jobs and the negative experiences and feelings they expect in those jobs. These considerations lead to hypothesis 2.

Hypothesis 2: Workers with an internal locus of control sort into performance appraisal jobs in which they get feedback about their performance as they expect to perform well and, hence, to get a positive feedback.

This sorting can involve both performance appraisals with and without financial consequences. Sorting into performance appraisals without financial consequences should be rather driven by the intrinsic motivation to feel competent and self-determining. By contrast, sorting into performance appraisals with financial consequences should be driven by a mix of extrinsic and intrinsic motivation. Some economists have built on the psychological literature to argue that extrinsic incentives can crowd out intrinsic motivation (Frey and Oberholzer-Gee 1997, Gneezy et al. 2011, Kreps 1997). If extrinsic incentives interfere with intrinsic motivation, the sorting into performance appraisals with financial consequences might not be clear-cut. However, the psychological literature provides a more differentiated view of the relationship between extrinsic and intrinsic motivation. Extrinsic incentives can be perceived by workers as controllers of their behavior or, alternatively, as indicators of their competence (Deci et al. 1999, Gagne and Deci 2005). In the first case, extrinsic incentives undermine intrinsic motivation whereas, in the latter one, they enhance intrinsic motivation. Importantly, locus of control plays a critical role in workers' perceptions of extrinsic rewards (Earn 1982, Malik et al. 2015). Workers with an internal locus of control are more likely to perceive extrinsic rewards as indicators of their competence so that those rewards strengthen their intrinsic motivation. Against

this background, we expect that while workers with an internal locus of control are attracted to both performance appraisals with and without financial consequences, the link will be stronger for appraisals with financial consequences.

2.2 Locus of Control and Risk Attitudes

While personality traits have only recently found their way into economics, risk preferences have long played an important role in research on performance pay. Performance pay brings with it various types of risk for workers (Milgrom and Roberts 1992: pp. 207-208). First, the workers' performance may depend on stochastic influences such as markets, production technology, health or weather. Second, the measurement of performance itself can be stochastic as subjective performance appraisals depend on superiors' idiosyncratic perceptions (Prendergast and Topel 1996). Economic theory suggests that risk-averse workers avoid performance appraisal and its contingent consequences while risk-loving workers are attracted to performance appraisal (Cornelissen et al. 2011). This prediction has been confirmed by empirical research (Bandiera et al. 2015, Bellemare and Shearer 2010, Grund and Sliwka 2010). However, a possible interaction with locus of control has not been considered.

Economists have been concerned about the extent to which locus of control may be simply duplicative of preferences over risk. Yet, Becker et al. (2012) show that locus of control retains predictive power in explaining labor market outcomes even after controlling for risk and time preferences. Moreover, Almlund et al. (2011) emphasize the weak correlations between standard measures of economic preferences and key non-cognitive skills such as locus of control. These findings suggest that

locus of control is, indeed, not a simple proxy for underlying risk preferences and is important in its own right.

Nonetheless, while locus of control is distinct from preferences over risk, the two personality characteristics likely play an intertwined role. A higher internal locus of control not only means that a worker expects to receive more money and positive feedback when sorting into performance appraisals but also means that the worker perceives performance appraisals as less random. The worker believes that the appraisals depend on his or her effort more than on luck. Whether the latter aspect is positively or negatively valued by the worker, depends on his or her risk preference. A risk-averse worker positively values low uncertainty. Thus, a high degree of risk aversion reinforces the propensity of a worker with an internal locus of control to sort into performance appraisals. By contrast, a risk-loving worker negatively values low uncertainty. Hence, a high degree of risk loving weakens the tendency of a worker with an internal locus of control to choose a job with performance appraisal.

Put differently, if workers are risk-averse, both the expectation of high earnings and positive feedback and the perception of low uncertainty work to increase utility. However, if workers are risk-loving, the two aspects work in opposite directions. While expectations of high earnings and positive feedback increase utility, the perception of low uncertainty decreases it. This implies a negative interaction effect of locus of control and risk tolerance. The propensity of workers with an internal locus of control to sort into performance appraisals should be stronger for those with low risk tolerance than for those with high risk tolerance. This allows us to state our final hypothesis.

Hypothesis 3: The interaction of internal locus of control and risk tolerance will decrease sorting in performance appraisal as the two influences are less than additive.

2.3 East and West Germany

We recognize that the relationship between personality traits and performance pay may depend on the cultural and economic context. This context differs between East and West Germany. More than two decades after unification, East Germany retains an output per capita that is only 71 percent of the West German (Brenke 2014). Moreover, there remain deep behavioral differences with East Germans showing stronger preferences for state intervention and redistribution (Alesina and Fuchs-Schuendeln 2007). East and West Germans even differ *on average* in personality characteristics such as trust and honesty (Ariely et al. 2014, Ockenfels and Weimann 1999, Rainer and Siedler 2009). Most importantly, East Germans are less likely to have an internal locus of control than West Germans (Friehe et al. 2015). Such differences indicate that 45 years of the regime in East Germany left deep cultural and behavorial consequences.

Against this background, we hypothesize that East and West Germans may differ not only in their average personality traits but in how personality traits translate into labor market behavior. If East Germans have not fully adapted to a market economy, they may respond differently to performance appraisals. Thus, we also perform separate regressions to examine if East and West German employees differ in the way psychological attributes influence sorting in performance appraisal jobs.

3. Data and Variables

3.1 Dataset

Our empirical analysis uses data from the SOEP (Wagner et al. 2007). The SOEP is a large representative longitudinal survey of private households in Germany. Based on face-to-face interviews, routine socio-economic and demographic questions are asked annually. Different 'special' topic questions appear in specific waves.

Measures of locus of control appear in 2010 and indicators of performance appraisal appear in 2011. Thus, our key variables are closely consecutive in time.[5] For our empirical analysis, we focus on private sector employees aged 18 to 59 years. This reflects the typical working age population and our concern that the private sector is more likely to have the competitive markets associated with economic sorting models. We exclude worker representatives as they are often released from work and we exclude marginally employed individuals (with monthly earnings of less than 450 Euros) who are unlikely to face a choice of sorting into performance appraisal.

3.2 Performance Appraisal

Our dependent variable is built up from a two stage question asking first if the employee is subject to regular and formalized performance appraisals by a superior. The underlying question is: "Is your own performance regularly assessed by a superior as part of a formalized procedure?" Second, if the employee answers in affirmative, he or she is asked whether the performance appraisal has consequences for his or her earnings. Table 1 provides the relative frequencies with 68 percent of the employees not subject to performance appraisal, 6 percent subject to performance

appraisal without financial consequences and 26 percent subject to performance appraisal with financial consequences.

For those with financial consequences, the survey asks if the performance appraisals have consequences for monthly gross wage, annual bonus, future wage growth or potential promotion. Multiple answers are possible. Table 2 presents the descriptive statistics and shows that 45 percent have consequences for monthly gross wage, 66 percent have consequences for annual bonus, 65 percent have consequences for future wage growth and 59 percent have consequences for potential promotion. We will use these categories to distinguish between shorter and longer term financial consequences in a robustness check.

3.3 Locus of Control

Our measure of locus of control follows from the nine separate items in the Rotter (1966) scale. Table 3 provides the underlying statements and the descriptive statistics. Interviewees responded to each of the statements on a seven-point Likert scale ranging from 1 “disagree completely” to 7 “agree completely”. Higher scale points of items 1 to 3 reflect a more internal locus of control while higher scale points of items 4 to 9 reflect a more external locus of control.

Building on the literature (e.g., Caliendo et al. 2015), we construct an overall index of locus of control by adding up the nine survey items with items 4 to 9 being recoded in inverse order before adding up. The sum is divided by 9 so that the overall index ranges from 1 to 7. Higher values of the index correspond to a more internal locus of control. Table 4 provides the definitions and descriptive statistics for the index and for the other explanatory variables.

3.4 Risk Attitude

The SOEP also contains a unique measure of risk attitude. The underlying question is: "How do you see yourself: Are you generally a person who is fully prepared to take risks or do you try to avoid taking risks?" Interviewees respond to the question on an eleven-point Likert scale ranging from 0 "not at all willing to take risks" to 10 "very willing to take risks". This measure has been validated by Dohmen et al. (2011) who demonstrate that it is highly correlated with actual risk taking in lottery experiments.

3.5 Other Personality Traits

Information on other personality traits comes from different waves of the SOEP. As a robustness check, we include variables for patience, reciprocity, trusting behavior, and the Big Five (conscientiousness, extraversion, agreeableness, openness, and neuroticism). This tests whether the estimated influence of locus of control simply reflects the effects of other personality traits. As including these variables implies fewer observations, estimates with and without these controls are provided.

Patience, in particular, plays an important role in some recent examinations of performance pay and we recognize that there could be opposing effects of patience on workers' propensity to sort into jobs with performance appraisal. On the one hand, if good performance is not rewarded immediately, impatient workers may be less interested in performance appraisal (Graham et al. 2013). On the other hand, impatience may be associated with problems of self-control. Workers with self-control problems do not exert as much effort as they would like. Performance pay can help mitigate such problems (Jain 2012, Kaur et al. 2010, 2015, O'Donoghue and Rabin 1999). To the extent that rewards depend on meeting specific deadlines and performance targets, workers with self-control problems are encouraged to work

harder. Thus, they may prefer such arrangements as a self-commitment device to control their impatience.[6]

3.7 Further Explanatory Variables

Performance appraisals should also depend on the complexity of the job. If a job involves simple tasks, workers typically have limited scope to vary effort. They follow narrow instructions and are easily monitored by their supervisors. As jobs become more multifaceted, workers have greater scope to vary their effort and to allocate their effort across various tasks such as increasing output, striving for quality, maintaining equipment, helping colleagues or cultivating customer goodwill (Holmstrom and Milgrom 1991). In order to provide appropriate incentives, employers can use subjective performance appraisals by supervisors for a more comprehensive measurement of performance (Gibbons 1998, Prendergast 1999). This suggests that workers performing more complex tasks are more likely to receive performance pay based on appraisals. We capture job complexity by a series of variables. First, assuming that education correlates with job complexity, we include dummies for a completed apprenticeship training and for a university degree. Second, we use a variable for blue-collar jobs as an inverse indicator of job complexity (Berman et al. 1998). Third, we include a variable that ranks jobs according to occupational autonomy and the degree of responsibility (Hoffmeyer-Zlotnik and Geis 2003). Fourth, industry dummies take into account that the nature of production varies across industries. By including all these variables we hold the complexity of tasks constant and examine the role of personality traits in the sorting into performance appraisal jobs.

Furthermore, workers in larger firms should be more likely to receive performance appraisal. Larger firms typically make more use of performance appraisal systems (Brown and Heywood 2005, Jirjahn and Poutsma 2011, Heywood and Jirjahn 2014). Implementing a performance appraisal system involves a fixed cost and the fixed cost per employee diminishes with number of employees subject to performance appraisal. This, in turn, increases the net benefits of a performance appraisal system to the employer. As a consequence, we include a series of firm size dummies.

Industrial relations may also play a role. In Germany, works councils provide a highly developed mechanism for codetermination at the firm level. Works councils foster the use of performance-related management practices including performance appraisal systems (Heywood et al. 1998, Heywood and Jirjahn 2002, 2014). A works council ensures that workers' interests are taken into account and, hence, increases their cooperativeness when the employer implements performance-related management practices. As a consequence, the practices are more widespread among codetermined firms so that workers in these firms should have a higher probability of being subject to performance appraisal. Hence, we include a dummy for the presence of a works council.

Regional differences in the likelihood of receiving performance appraisal are taken into account by dummy variables for residing in East Germany, Southern West Germany or Northern West Germany. Finally, we include a series of controls for employee characteristics. Socio-demographic characteristics are controlled for by migration background, age and gender. Moreover, variables for work experience, part-time work and the employee's tenure with the employer are included.

4. Empirical Results

4.1 Initial Estimates

Table 5 presents the initial regression results for the combined sample of East and West German employees. It shows the multinomial probit with the categories of appraisal with and without financial consequences measured relative to the base of no performance appraisal. In regression (1), we do not account for the additional personality characteristics, but include the full set of other controls. It confirms the role of many of the explanatory variables in the anticipated direction. Full-time work, firm size and works council presence are positively associated with the probability of being subject to appraisal. Furthermore, our indicators for complex tasks (job autonomy, white-collar jobs, and having a university degree) suggest that employees performing multifaceted jobs are more likely to receive appraisals with financial consequences. Regional differences also play a role with workers in Southern West Germany having a higher probability of being subject to appraisal. Moreover, risk tolerance is a positive determinant of receiving performance appraisals as anticipated.

The initial estimation provides no evidence that locus of control is associated with workers' sorting into jobs which provide appraisal without financial consequences. In contrast, it suggests that locus of control plays a significant role when sorting into jobs which provide appraisals with financial consequences. As workers have a more internal locus of control they are increasingly likely to receive a performance appraisal with consequences. The magnitude of this association is meaningful. An additional point on the one to seven scale of the internal locus is associated with a marginal increase in the probability of being in a job with a performance appraisal of 1.8 percentage points. This is supportive of the notion that

workers who feel they can control their work environment want to be in job in which they are rewarded for good performance.

As shown by estimation (2), the relationship between locus of control and performance appraisals with financial consequences persists even when controlling for other personality traits. Indeed, the coefficient has increased in magnitude and level of statistical significance. The marginal effect is now 2.5 percentage points for a one unit increase in the locus scale. As the original share of workers in appraisal with consequences was about 26 percent, this would represent a 10 percent increase on that base. The evidence of sorting by risk attitude that was evident in the estimate without the personality traits fades in the specification that adds those traits. Yet, most of the additional traits do not emerge with significant coefficients. Patience, however, emerges as a negative covariate of receiving performance appraisals with financial consequences. This may suggest that less patient workers do sort into performance pay as a self-commitment device to control their impatience.

Our background discussion suggests that the relationship between locus of control and performance appraisal may differ between West and East Germans. Thus, in a next step, we divide the sample by residence in West or East Germany. Table 6 presents the results for West Germany. The estimation without the additional personality traits continues to show no role for locus of control in sorting into appraisals without consequences. It also continues to reveal that those with a greater internal locus of control sort into appraisal with consequences. These results persist in the estimates that add the additional personality traits. The coefficient on locus of control implies a 2.7 percentage point increase in the likelihood of receiving appraisals with consequences for a one point increase in the index. Unlike the sample for the entire country, the measure of risk tolerance now remains statistically

significant and supports the notion that those with greater risk tolerance sort into performance appraisal with consequences as do those with a more internal locus of control.

The East German subsample in Table 7 reveals far less. The sample size is obviously smaller which influences precision yet the coefficients also imply smaller marginal effects. There is no significant association between locus of control and either type of appraisals. The coefficients on risk tolerance are also insignificant and even take paradoxical negative signs for the appraisals with consequences. Moreover, one can reject the hypothesis that the overall estimates in Table 7 are identical to that in Table 8. Altogether, this is consistent with there still being deep behavioral differences between East and West Germans. If East Germans have not fully adapted to a market economy, personality traits may not translate into the same pattern of sorting as in West Germany. Thus, in the remainder of our estimates we focus on the West German sample but summarize the results for East Germany in the Appendix.

The initial estimates provide supportive evidence for Hypothesis 1 (an association between internal locus and appraisal with consequences) in the full sample and West German subsample. They fail to provide support for Hypothesis 2 (an association between internal locus and all appraisals that provide feedback both those with and without consequences). However, the full pattern of sorting may remain obscured until the interaction effect with risk attitude is taken into account. Hence, we now turn to an examination of Hypothesis 3 which suggests a negative interaction of locus of control and risk tolerance.

4.2 The Interaction of Locus of Control and Risk Attitude

Table 8 presents the West German results with the interaction. As before, the first estimation is the multinomial probit without the additional personality traits. For the first time, the estimate on appraisal without consequences shows statistically significant coefficients for locus of control and risk tolerance. This more complete pattern of sorting is only revealed when accounting for the interaction of these two variables. The pattern that emerges for the appraisals without consequences is broadly matched by that for the appraisals with consequences. In both cases, locus of control takes a significantly positive coefficient. Thus, this estimation provides evidence supporting Hypothesis 2. Workers with an internal locus of control sort into performance appraisal not only because they earn more money but also because they expect to reinforce their self-esteem. Risk tolerance now emerges with significantly positive coefficients for the two types of performance appraisal. Furthermore, the coefficient on the interaction of the locus and risk tolerance is significantly negative for appraisals both with and without financial consequences supporting Hypothesis 3. While an internal locus of control and risk tolerance are each associated with increased sorting into performance appraisals, their influence is not additive.

The inclusion of the other personality traits does not change the pattern of key results. This pattern suggests that the locus of control influences both sorting into appraisal without consequences and into appraisal with consequences. The role of this influence is most dramatic when risk tolerance is low. At the extreme when the risk tolerance score takes a value of zero the influence is entirely given by the coefficient on locus of control alone. As the degree of risk tolerance increases, the influence includes the partially offsetting effect of the interaction.

This point is made explicit in Figure 1 which plots the marginal effects of the locus of control on the probability of receiving performance appraisals. If risk tolerance equals zero, a one point increase in the locus scale involves a 1.4 percentage point increase in the probability of receiving performance appraisal without financial consequences and an 8.1 percentage point increase in the probability of receiving performance appraisal with financial consequences. Taking into account that the shares of workers in appraisals without and with financial consequences are 6 and 26 percent, this implies increases in the respective probabilities of 23 and 31 percent. These marginal effects make clear that the sorting into performance appraisals is stronger when the appraisals are coupled with extrinsic rewards than when they only provide feedback. Due to the negative interaction, the marginal effects decrease as risk tolerance increases. For appraisals without financial consequences, the negative interaction dominates for risk tolerance scores greater than 3 causing the marginal effects to turn negative. For appraisals with financial consequences, the negative interaction dominates for risk tolerance scores greater than 6. In summary, Figure 1 illustrates the supportive evidence on all three hypotheses.

Further insight comes from dividing the financial consequences into two categories. When the consequences are on future earnings growth and promotion, we identify them as long-term consequences. When they are on an annual bonus or on monthly gross wage, we identify them as short-term. Recalling that respondents can choose any of the four underlying consequences, we identify three mutually exclusive categories: appraisals with only short-term financial consequences, appraisals with only long-term financial consequences and appraisals that have both short- and long-term financial consequences. Together with the categories of no financial consequences and the base category of no performance appraisal, we have five

categories that are used in the multinominal probit estimation. In addition to dividing short- and long-term consequences, we again want to test all three hypotheses and so include the interaction.

Table 9 presents the multinomial probit across the five categories. The first critical point is the continued support for the locus of control as a determinant of sorting. In all four categories of performance appraisal, the locus of control takes a positive coefficient. It is significant for appraisals with no financial consequences and for appraisals that have long-term or short- and long-term consequences. Risk tolerance is routinely significant and positive. The interaction is always negative and statistically significant. In sum, the new five-way split broadly supports the earlier estimation but shows that locus alone has no significant effect on the short-term consequences category. Thus, we delete it from our presentation of the associated magnitudes.

The marginal effects of the estimates from column 2 of Table 9 are shown in Figure 2. The lowest curve is that for appraisals without consequences. The estimated effect is positive for the first four risk tolerance categories and is then dominated by the negative interaction effect. The middle curve is that for appraisals with only long-term consequences. The estimated effect is positive for the first six risk tolerance categories. Finally, the highest curve is that for appraisals with both long and short-term consequences. It is positive with the exception of the highest risk tolerance category. Thus, the appraisals that have the greatest influence on sorting are those with both long and short term financial consequences.

We emphasize that the estimation supports the third hypothesis for all categories of appraisal. The influence of an internal locus of control is at its strongest when workers have low risk tolerance and it shrinks as their risk tolerance grows. We

also note that the role of risk tolerance itself is not in doubt. It plays a positive role in sorting toward performance appraisals and this role is strongest for those with an external locus of control. Thus, all in all, the division between long- and short-term consequences continues to provide support for all three hypotheses. The refinement found is that sorting is strongest on appraisals with both short and long-term consequences.

Finally, we performed the regressions with the interaction variable for the East German subsample. Tables A.1 and A.2 in the Appendix summarize the results and show that the estimates differ sharply from those for West Germany. Most coefficients are insignificant and there appears to be no coherent pattern. This again confirms the hypothesis that there remain still deep behavioral differences between East and West Germans.

5. Conclusions

Recognizing basic personality traits as drivers of economic choices has been hailed as an important addition to the perspective of labor economists and others interested in worker behavior. Among these traits, seen as largely fixed in grown adults, the locus of control seems central for understanding the sorting of workers across jobs. We focus on performance appraisals systems arguing that workers who think they control outcomes will see such systems as a method for accomplishing their objectives while workers who don't think they control outcomes will view them as random noise at best. Thus, our fundamental assertion has been that workers with an internal locus of control will sort into jobs with performance appraisals. The evidence on this association is very clear for West Germany. The association is strongest for appraisals with financial consequences. This confirms the hypothesis that extrinsic rewards play

an important role in the sorting of workers with an internal locus of control. However, the estimates also suggest that intrinsic motivation plays a role as an association, albeit weaker, also emerges with performance appraisals without financial consequences. This supports the hypothesis that workers with an internal locus also sort into performance appraisal because they expect positive feedback reinforcing their feeling of competence and self-determination.

Finally, the results on the interaction are routinely supportive of the anticipated tension between the locus of control and risk tolerance. The locus of control plays a larger role in sorting into appraisals when workers have a low tolerance of risk. As the acceptance of risk grows, workers are more likely to be in a job with performance appraisal but the influence of the locus of control on that sorting diminishes. Thus, while both risk tolerance and an internal locus of control make being in a job with performance appraisal more likely, the combined influence of both is smaller than the addition of the two individual influences.

The estimates for East Germany show no association between locus of control and performance appraisal. While the smaller sample results in a loss of precision, there exists a very different pattern of results. This difference fits the notion that East Germans have not fully adapted to a market economy and respond differently to performance appraisal than West Germans. Future research could fruitfully examine the reasons behind the behavior of East Germans in more detail.

Also, left for future work is whether there are other differences across jobs that the locus of control may influence. We have consciously limited our attention to the private sector as the nature of performance appraisals is more homogenous. Yet, we recognize that appraisals are increasingly common in the public sector and this may provide a valuable avenue for future research.

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Table 1: Distribution of Employees with and without Performance Appraisal

Performance appraisal	*Percent*
No performance appraisal	67.8
Performance appraisal without financial consequences	5.9
Performance appraisal with financial consequences	26.3

N=3,521

Table 2: Distribution of Consequences of Performance Appraisal

Consequences of performance appraisal	*Percent*
Monthly gross wage	44.9
Annual bonus	66.0
Future wage growth	65.1
Potential promotion	58.5

N=768. The descriptive statistics are calculated for employees subject to performance appraisal with financial consequences. Multiple answers are possible.

Table 3: Components of Locus of Control

Item	*Questionnaire wording and descriptive statistics (mean, std.dev.)*
Item1	How my life takes course is dependent on me (5.481, 1.220).
Item2	Success is gained through hard work (5.964, 1.085).
Item3	Inborn abilities are more important than any efforts one can make (4.707, 1.322).
Item4	Compared to others, I have not achieved what I deserve (3.270, 1.736).
Item5	What one achieves in life is, in the first instance, a question of destiny or luck (3.378, 1.598).
Item6	I often experience that others have a controlling influence over my life (3.183, 1.616).
Item7	When I encounter difficulties in my life, I often doubt my own abilities (3.133, 1.594).
Item8	The opportunities that I have in life are determined by the social conditions (4.442, 1.420).
Item9	I have little control over things that happen in my life (2.594, 1.399).

N=3,521. The introduction to the statements was: „The following statements apply to different attitudes towards life and the future. To what degree to you personally agree with the following statements?" Interviewees respond to each statement on a seven-point Likert scale ranging from 1 "disagree completely" to 7 "agree completely".

Table 4: Variable Definitions and Descriptive Statistics of the Explanatory Variables

Variable	*Definition and descriptive statistics (mean, std.dev.)*
Locus of control	Score of adding up items 1 to 9 shown in Table 3. Items 4 to 9 are recoded in inverse order before adding up. The sum of items is divided by 9. (4.906, 0.737)
Risk tolerance	Score of risk tolerance. The interviewee answers the question „How do you see yourself: Are you generally a person who is fully prepared to take risks or do you try to avoid taking risks?" on an eleven-point Likert scale. The scale ranges from 0 "not at all willing to take risks" to 10 "very willing to take risks". (4.765, 2.089)
Patience	Score of patience. The interviewee answers the question "How would you describe yourself: Are you generally an impatient person, or someone who always shows great patience?" on an eleven-point Likert. The scale ranges from 0 "very impatient" to 10 "very patient". (6.271, 2.293)
Positive reciprocity	Score of positive reciprocity constructed from adding up three survey items measured on a seven-point Likert scale ranging from 1 "does not apply to me at all" to 7 "applies to me perfectly". The sum of the three items is divided by 3. The items are "If someone does me a favor, I am prepared to return it", "I go out of my way to help somebody who has been kind to me before", "I am ready to undergo personal costs to help somebody who helped me before". (5.843, 0.843)
Negative reciprocity	Score of negative reciprocity constructed from adding up three survey items measured on a seven-point Likert scale ranging from 1 "does not apply to me at all" to 7 "applies to me perfectly". The sum of the three items is divided by 3. The items are "If I suffer a serious wrong, I will take revenge as soon as possible, no matter what the cost", "If somebody puts me in a difficult position, I will do the same to him/her", "If somebody offends me, I will offend him/her back". (3.175, 1.398)
Trust in others	Score of trust in others constructed from adding up three survey items measured on a four-point Likert scale ranging from 1 "agree completely" to 4 "disagree completely". The sum of items is divided by 3. The items are "On the whole one can trust people", "Nowadays one can't trust people", "One has to be careful, when dealing with strangers". The first item was recoded in inverse order before adding up. (2.372, 0.523)
Conscientiousness	Score of conscientiousness constructed from adding up three survey items measured on a seven-point Likert scale ranging from 1 "does not apply to me at all" to 7 "applies to me perfectly". The sum of items is divided by 3. The items are: I see myself as someone who… "does a thorough job", "does things effectively and efficiently", "tends to be lazy". The last item was recoded in inverse order before adding up. (5.892, 0.862)
Extraversion	Score of extraversion constructed from adding up three survey items measured on a seven-point Likert scale ranging from 1 "does not apply to me at all" to 7 "applies to me perfectly". The sum of items is divided by 3. The items are: I see myself as someone who… "is communicative", "is sociable", "is reserved". The last item was recoded in inverse order before adding up. (4.797, 1.141)
Agreeableness	Score of agreeableness constructed from adding up three survey items measured on a seven-point Likert scale ranging from 1 "does not apply to me at all" to 7 "applies to me perfectly". The sum of items is divided by 3. The items are: I see myself as someone who… "is sometimes somewhat rude to others", "has a forgiving nature", "is considerate and kind to others". The first item was recoded in inverse order before adding up. (5.260, 0.986)
Openness	Score of openness constructed from adding up three survey items measured on a seven-point Likert scale ranging from 1 "does not apply to me at all" to 7 "applies to me perfectly". The sum of items is divided by 3. The items are: I see myself as someone who… "is original ", values artistic experiences", "has an active imagination". (4.320, 1.146)

Neuroticism	Score of neuroticism constructed from adding up three survey items measured on a seven-point Likert scale ranging from 1 "does not apply to me at all" to 7 "applies to me perfectly". The sum of items is divided by 3. The items are: I see myself as someone who… "worries a lot", "gets nervous easily", "deals well with stress". The last item was recoded in inverse order before adding up. (3.723, 1.188)
Autonomy	Jobs are ranked on a five-point scale according to occupational autonomy and the degree of responsibility with higher scores reflecting greater autonomy and responsibility. Variable constructed by the SOEP survey team. (2.679, 1.038)
Work council	Dummy equals 1 if the employee works for a firm that has a work council. (0.470, 0.499)
Firm size 20-199	Dummy equals 1 if the worker is employed in a firm with 20-199 employees. (0.303, 0.460)
Firm size 200-1,999	Dummy equals 1 if the worker is employed in a firm with 200-1,999 employees. (0.193, 0.395)
Firm size $\geq$ 2,000	Dummy equals 1 if the worker is employed in a firm with more than 1,999 employees. (0.222, 0.416)
Part-time	Dummy equals 1 if the employee works part-time. (0.217, 0.412)
Tenure	The worker's tenure with the firm in years. (10.670, 9.462)
Blue-collar	Dummy equals 1 if the worker has a blue-collar job. (0.348, 0.476)
Work experience	The worker's work experience in years. (19.220, 10.267)
Skilled	Dummy equals 1 if the worker's highest educational attainment is a completed apprenticeship training. (0.628, 0.483)
University degree	Dummy equals 1 if the worker has a university degree. (0.298, 0.457).
Age	The worker's age in years. (42.562, 10.049)
Male employee	Dummy equals 1 if the worker is a man. (0.550, 0.498)
Migration background	Dummy equals 1 if the worker is a first-generation or second-generation immigrant (0.178, 0.382)
East Germany	Dummy equals 1 if the worker resides in a federal state located in East Germany (Berlin, Brandenburg, Mecklenburg-West Pomerania, Saxony, Saxony Anhalt, Thuringa). (0.253, 0.435)
Southern West Germany	Dummy equals 1 if the worker resides in a Southern federal state of West Germany (Bavaria, Baden-Wuerttemberg). (0.286, 0.452)
Northern West Germany	Dummy equals 1 if the worker resides in a Northern federal state of West Germany (Schleswig-Holstein, Hamburg, Lower Saxony, Bremen). (0.135, 0.342)
Sector dummies	14 sector dummies.

N=3,521. The reference group of the firm size dummies (education dummies, region dummies) consists of firms with less than 20 employees (unskilled workers, workers residing in the West German federal states North Rhine-Westphalia, Hesse, Rhineland-Palatinate or Saarland). For the personality traits patience, positive reciprocity, negative reciprocity, trust in others, conscientiousness, extraversion, agreeableness, openness and neuroticism, the number of observations is equal to 2,633.

Table 5: Determinants of Receiving Performance Appraisal (East and West Germany)

	(1)		(2)	
	Appraisal without financial consequences	*Appraisal with financial consequences*	*Appraisal without financial consequences*	*Appraisal with financial consequences*
Locus of control	-0.019 [-0.0043] (0.30)	0.099 [0.0181] (1.91)*	-0.008 [-0.0045] (0.10)	0.141 [0.0251] (2.17)**
Risk tolerance	0.002 [-0.0012] (0.09)	0.051 [0.0089] (2.77)***	0.005 [0.0004] (0.18)	0.032 [0.0055] (1.44)
Patience	---	---	-0.031 (1.09)	-0.047 (2.45)**
Positive reciprocity	---	---	0.002 (0.04)	0.008 (0.15)
Negative reciprocity	---	---	-0.122 (2.77)***	-0.004 (0.13)
Trust in others	---	---	-0.080 (0.70)	0.077 (0.88)
Conscientiousness	---	---	-0.011 (0.15)	-0.009 (0.17)
Extraversion	---	---	0.073 (1.34)	0.011 (0.29)
Agreeableness	---	---	0.025 (0.35)	-0.039 (0.85)
Openness	---	---	0.053 (1.00)	0.005 (0.11)
Neuroticism	---	---	0.034 (0.64)	-0.029 (0.74)
Autonomy	-0.148 (1.90)*	0.261 (4.63)***	-0.173 (1.91)*	0.216 (3.27)***
Work council	0.402 (2.98)***	0.372(3.69)***	0.446 (2.84)***	0.396 (3.42)***
Firm size 20-199	0.628 (3.98)***	0.561 (4.59)***	0.762 (4.10)***	0.662 (4.63)***
Firm size 200-1,999	0.901 (4.74)***	1.183 (8.36)***	1.022 (4.56)***	1.285 (7.79)***
Firm size ≥ 2000	1.279 (6.46)***	1.959 (13.5)***	1.352 (5.83)***	2.031 (12.10)***
Part-time	-0.152 (1.09)	-0.274 (2.36)**	0.018 (0.11)	-0.190 (1.40)
Tenure	-0.026 (1.62)	-0.039 (2.97)***	-0.024 (1.29)	-0.032 (2.10)**
Tenure squared	0.001 (1.08)	0.001 (2.54)**	0.001 (0.92)	0.001 (1.99)**
Blue-collar	-0.329 (2.04)**	-0.260 (2.09)**	-0.302 (1.63)	-0.228 (1.57)
Work experience	-0.036 (1.08)	0.047 (1.63)	0.006 (0.16)	0.041 (1.17)
Work experience squared	0.001 (1.02)	-0.001 (1.23)	-4.20e-04 (0.34)	0.001 (2.40)**
Skilled	-0.135 (0.76)	0.236 (1.46)	-0.327 (1.59)	0.205 (1.06)
University degree	-0.159 (0.76)	0.442 (2.41)**	-0.399 (1.66)*	0.283 (1.31)
Age	0.183 (2.74)***	0.021 (0.40)	0.128 (1.58)	0.044 (0.67)
Age squared	-0.002 (2.52)**	-4.9e-04 (0.81)	-0.001 (1.39)	-0.001 (1.12)
Male employee	-0.226 (1.84)*	-0.091 (0.98)	-0.054 (0.35)	-0.061 (0.55)
Migration background	-0.049 (0.37)	-0.143 (1.39)	-0.147 (0.97)	-0.200 (1.67)*
East Germany	0.195 (1.48)	0.041 (0.39)	0.292 (1.93)*	0.086 (0.71)
Southern West Germany	0.037 (0.29)	0.431 (4.71)***	0.059 (0.38)	0.400 (3.75)***
Northern West Germany	0.093 (0.61)	-0.013 (0.10)	0.045 (0.25)	-0.078 (0.55)
Constant	-5.684 (4.32)***	-3.731 (3.67)***	-5.000 (2.81)***	-3.877 (2.83)***
Sector dummies	Included	Included	Included	Included
Log-likelihood	-2139.680		-1583.768	
N	3,521		2,633	

Method: Multinomial probit. Base category: No performance appraisal. The table shows the estimated coefficients. Z-statistics in parentheses are based on robust standard errors. Marginal effects are in square brackets. *** Statistically significant at the 1% level; ** at the 5% level; * at the 10% level.

Table 6: Determinants of Receiving Performance Appraisal (West Germany)

	(1)		(2)	
	Appraisal without financial consequences	*Appraisal with financial consequences*	*Appraisal without financial consequences*	*Appraisal with financial consequences*
Locus of control	-0.015 [-0.0044] (0.21)	0.119 [0.0218] (2.00)**	0.005 [-0.0036] (0.05)	0.154 [0.0271] (2.01)**
Risk tolerance	-0.009 [-0.0025] (0.31)	0.068 [0.0124] (3.22)***	-0.006 [-0.0016] (0.18)	0.045 [0.0080] (1.75)*
Patience	---	---	-0.051 (1.56)	-0.051 (2.35)**
Positive reciprocity	---	---	-0.024 (0.29)	-0.047 (0.76)
Negative reciprocity	---	---	-0.113 (2.18)**	0.002 (0.06)
Trust in others	---	---	0.018 (0.13)	0.065 (0.64)
Conscientiousness	---	---	-0.010 (0.12)	-0.023 (0.39)
Extraversion	---	---	0.097 (1.46)	0.037 (0.79)
Agreeableness	---	---	0.069 (0.83)	-0.072 (1.36)
Openness	---	---	-0.027 (0.44)	0.014 (0.30)
Neuroticism	---	---	0.065 (1.03)	-0.050 (1.05)
Autonomy	-0.183 (1.94)*	0.190 (2.90)***	-0.259 (2.48)**	0.119 (1.50)
Work council	0.352 (2.34)**	0.330 (2.73)***	0.448 (2.56)**	0.359 (2.58)***
Firm size 20-199	0.761 (3.99)***	0.609 (4.12)***	0.872 (3.88)***	0.827 (4.65)***
Firm size 200-1,999	1.034 (4.75)***	1.365 (8.01)***	1.144 (4.53)***	1.501 (7.31)***
Firm size ≥ 2000	1.360 (6.00)***	2.107 (12.15)***	1.456 (5.60)***	2.242 (10.76)***
Part-time	-0.365 (2.12)**	-0.343 (2.56)**	-0.159 (0.79)	-0.261 (1.66)*
Tenure	-0.019 (1.01)	-0.029 (1.90)*	-0.015 (0.65)	-0.024 (1.36)
Tenure squared	0.001 (0.96)	0.001 (1.63)	4.81e-04 (0.70)	0.001 (1.32)
Blue-collar	-0.395 (1.99)**	-0.417 (2.84)***	-0.436 (1.94)*	-0.404 (2.34)**
Work experience	-0.038 (0.93)	0.021 (0.64)	0.023 (0.45)	0.010 (0.26)
Work experience squared	4.06e-04 (0.48)	-3.24e-04 (0.46)	-0.001 (0.98)	1.03e-04 (0.12)
Skilled	-0.170 (0.90)	0.362 (2.09)**	-0.357 (1.63)	0.369 (1.82)*
University degree	-0.301 (1.31)	0.566 (2.87)***	-0.455 (1.76)*	0.511 (2.22)**
Age	0.197 (2.45)**	0.087 (1.40)	0.132 (1.34)	0.129 (1.68)*
Age squared	-0.002 (2.20)**	-0.001 (1.72)*	-0.001 (1.12)	-0.002 (2.04)**
Male employee	-0.217 (1.45)	-0.022 (0.21)	0.039 (0.21)	0.025 (0.19)
Migration background	-0.060 (0.42)	-0.145 (1.31)	-0.210 (1.25)	-0.207 (1.59)
Southern West Germany	0.026 (0.20)	0.453 (4.83)***	0.067 (0.43)	0.435 (3.96)***
Northern West Germany	0.064 (0.41)	-0.023 (0.18)	0.019 (0.10)	-0.077 (0.52)
Constant	-5.866 (3.74)***	-5.099 (4.30)***	-5.253 (2.44)**	-5.102 (3.12)***
Sector dummies	Included	Included	Included	Included
Log-likelihood	-1577.068		-1144.767	
N	2,630		1,941	

Method: Multinomial probit. Base category: No performance appraisal. The table shows the estimated coefficients. Z-statistics in parentheses are based on robust standard errors. Marginal effects are in square brackets. *** Statistically significant at the 1% level; ** at the 5% level; * at the 10% level.

Table 7: Determinants of Receiving Performance Appraisal (East Germany)

	(1)		(2)	
	Appraisal without financial consequences	Appraisal with financial consequences	Appraisal without financial consequences	Appraisal with financial consequences
Locus of control	-0.013 [-0.0039] (0.10)	0.095 [0.0156] (0.86)	0.005 [-0.0027] (0.03)	0.124 [0.0193] (0.95)
Risk tolerance	0.042 [-0.0044] (0.86)	-0.018 [-0.0040] (0.44)	0.041 [0.0043] (0.72)	-0.026 [-0.0051] (0.52)
Patience	---	---	0.010 (0.19)	-0.052 (1.21)
Positive reciprocity	---	---	0.060 (0.52)	0.208 (2.13)**
Negative reciprocity	---	---	-0.139 (1.75)*	-0.022 (0.31)
Trust in others	---	---	-0.262 (1.31)	0.214 (1.21)
Conscientiousness	---	---	-0.096 (0.73)	-0.007 (0.07)
Extraversion	---	---	0.035 (0.34)	-0.044 (0.53)
Agreeableness	---	---	-0.049 (0.35)	0.106 (0.99)
Openness	---	---	0.279 (2.65)***	-0.055 (0.62)
Neuroticism	---	---	-0.057 (0.56)	0.036 (0.45)
Autonomy	-0.069 (0.47)	0.426 (3.75)***	-0.046 (0.27)	0.420 (3.32)***
Work council	0.567 (2.02)**	0.526 (2.77)***	0.538 (1.69)*	0.555 (2.63)***
Firm size 20-199	0.420 (1.46)	0.473 (2.15)**	0.634 (1.83)*	0.298 (1.21)
Firm size 200-1,999	0.668 (1.75)*	0.740 (2.79)***	0.846 (1.86)*	0.862 (2.92)***
Firm size ≥ 2000	1.288 (3.18)***	1.617 (5.56)***	1.196 (2.52)**	1.738 (5.53)***
Part-time	0.324 (1.29)	-0.173 (0.72)	0.314 (1.11)	-0.195 (0.70)
Tenure	-0.040 (1.26)	-0.081 (2.90)***	-0.047 (1.41)	-0.065 (2.06)**
Tenure squared	3.32e-04 (0.35)	0.002 (2.74)***	0.001 (0.79)	0.002 (2.09)**
Blue-collar	-0.086 (0.30)	0.106 (0.42)	-0.036 (0.11)	0.041 (0.14)
Work experience	-0.055 (0.86)	0.130 (2.10)**	-0.050 (0.73)	0.109 (1.47)
Work experience squared	0.002 (1.39)	-0.002 (1.59)	0.002 (1.13)	-0.001 (0.94)
Skilled	0.351 (0.52)	-0.525 (1.15)	0.009 (0.01)	-0.520 (0.91)
University degree	0.551 (0.78)	-0.318 (0.64)	-0.031 (0.04)	-0.664 (1.08)
Age	0.224 (1.77)*	-0.127 (1.13)	0.214 (1.51)	-0.148 (1.10)
Age squared	-0.003 (1.74)*	0.001 (0.81)	-0.002 (1.46)	0.001 (0.79)
Male employee	-0.319 (1.39)	-0.298 (1.60)	-0.347 (1.24)	-0.215 (0.97)
Migration background	-0.165 (0.41)	-0.080 (0.23)	0.142 (0.34)	0.104 (0.26)
Constant	-7.024 (2.85)***	-0.342 (0.16)	-6.427 (2.05)**	-1.320 (0.50)
Sector dummies	Included	Included	Included	included
Log-likelihood	-527.351		-402.964	
N	891		692	

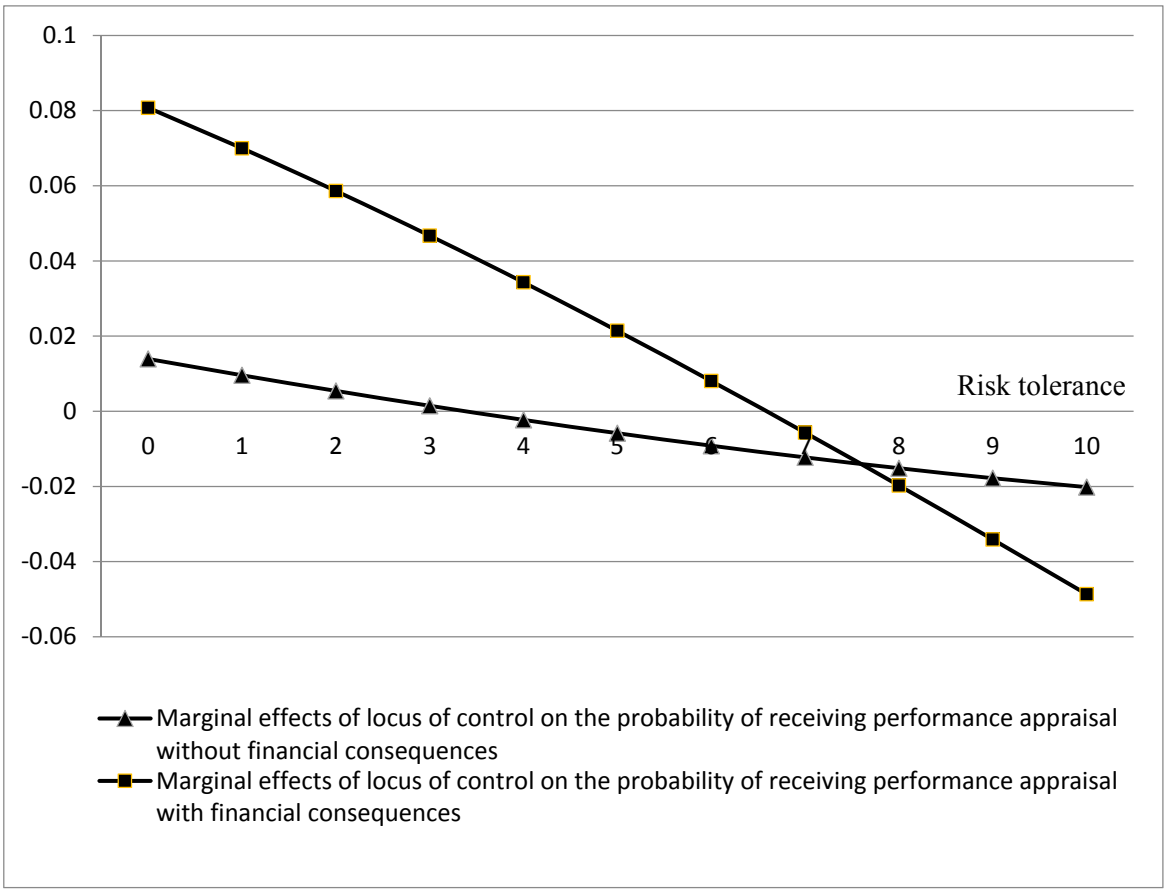
Method: Multinomial probit. Base category: No performance appraisal. The table shows the estimated coefficients. Z-statistics in parentheses are based on robust standard errors. Marginal effects are in square brackets. *** Statistically significant at the 1% level; ** at the 5% level; * at the 10% level.

Table 8: Determinants of Receiving Performance Appraisal; Interaction of Locus of Control with Risk Tolerance (West Germany)

	(1)		(2)	
	Appraisal without financial consequences	*Appraisal with financial consequences*	*Appraisal without financial consequences*	*Appraisal with financial consequences*
Locus of control	0.331 (2.11)**	0.391 (2.88)***	0.349 (1.97)**	0.547 (3.46)***
Risk tolerance	0.377 (2.30)**	0.360 (2.71)***	0.374 (2.04)**	0.472 (3.03)***
Locus of control x risk tolerance	-0.080 (2.43)**	-0.059 (2.25)**	-0.077 (2.13)**	-0.087 (2.79)***
Patience	---	---	-0.051 (1.55)	-0.051 (2.32)**
Positive reciprocity	---	---	-0.032 (0.39)	-0.056 (0.92)
Negative reciprocity	---	---	-0.114 (2.19)**	0.002 (0.05)
Trust in others	---	---	0.016 (0.11)	0.061 (0.59)
Conscientiousness	---	---	0.004 (0.04)	-0.005 (0.08)
Extraversion	---	---	0.098 (1.47)	0.039 (0.83)
Agreeableness	---	---	0.071 (0.84)	-0.073 (1.39)
Openness	---	---	-0.029 (0.47)	0.014 (0.29)
Neuroticism	---	---	0.065 (1.03)	-0.052 (1.09)
Autonomy	-0.175 (1.84)*	0.197 (3.00)***	-0.256 (2.44)**	0.127 (1.61)
Work council	0.359 (2.38)**	0.332 (2.76)***	0.457 (2.62)***	0.365 (2.63)***
Firm size 20-199	0.749 (3.92)***	0.604 (4.09)***	0.866 (3.84)***	0.825 (4.64)***
Firm size 200-1,999	1.010 (4.63)***	1.351 (7.92)***	1.127 (4.46)***	1.483 (7.24)***
Firm size ≥ 2000	1.353 (5.98)***	2.108 (12.2)***	1.460 (5.62)***	2.252 (10.8)***
Part-time	-0.381 (2.20)**	-0.353 (2.64)***	-0.178 (0.88)	-0.280 (1.77)*
Tenure	-0.019 (0.97)	-0.029 (1.87)*	-0.014 (0.60)	-0.023 (1.29)
Tenure squared	0.001 (0.93)	0.001 (1.61)	4.59e-04 (0.67)	0.001 (1.26)
Blue-collar	-0.397 (1.99)**	-0.419 (2.84)***	-0.448 (1.98)**	-0.416 (2.40)**
Work experience	-0.038 (0.93)	0.020 (0.61)	0.022 (0.43)	0.007 (0.17)
Work experience squared	-4.30e-04 (0.51)	-3.01e-04 (0.42)	-0.001 (0.95)	1.85e-04 (0.21)
Skilled	-0.183 (0.97)	0.352 (2.02)**	-0.370 (1.69)*	0.360 (1.75)*
University degree	-0.313 (1.36)	0.551 (2.79)***	-0.464 (1.79)*	0.494 (2.13)**
Age	0.198 (2.45)**	0.090 (1.45)	0.134 (1.36)	0.136 (1.76)*
Age squared	-0.002 (2.22)**	-0.001 (1.77)*	-0.001 (1.16)	-0.002 (2.14)**
Male employee	-0.236 (1.58)	-0.033 (0.30)	0.023 (0.12)	0.013 (0.10)
Migration background	-0.072 (0.51)	-0.157 (1.41)	-0.226 (1.35)	-0.228 (1.74)*
Southern West Germany	0.017 (0.13)	0.444 (4.74)***	0.063 (0.40)	0.427 (3.88)***
Northern West Germany	0.054 (0.35)	-0.034 (0.27)	0.014 (0.07)	-0.093 (0.63)
Constant	-7.521 (4.34)***	-6.469 (4.84)***	-6.957 (3.00)***	-7.138 (4.09)***
Sector dummies	Included	included	Included	included
Log-likelihood	-1573.121		-1140.329	
N	2,630		1,941	

Method: Multinomial probit. Base category: No performance appraisal. The table shows the estimated coefficients. Z-statistics in parentheses are based on robust standard errors. *** Statistically significant at the 1% level; ** at the 5% level; * at the 10% level.

Figure 1: Marginal Effects of Locus of Control on the Probability of Receiving Performance Appraisal



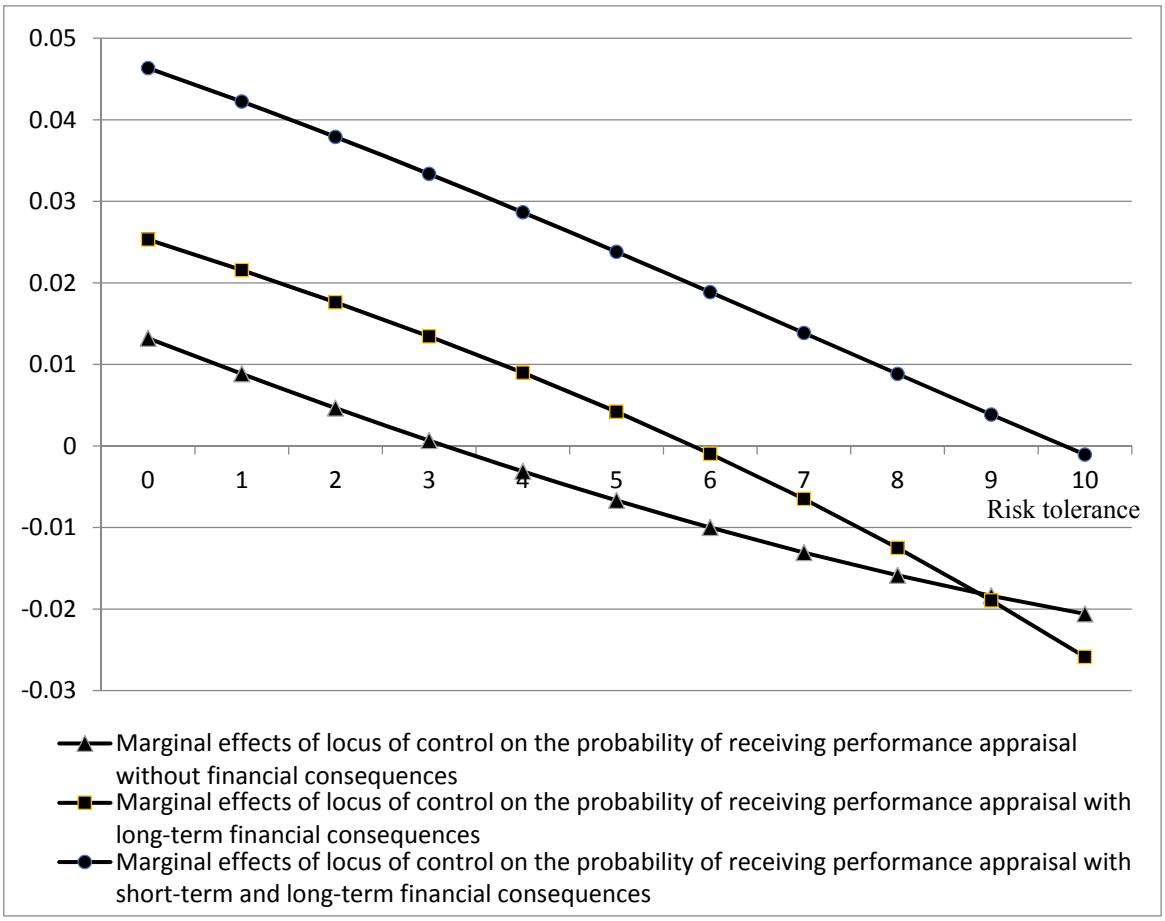
Note: Calculation of marginal effects is based on regression (2) in Table 8.

Table 9: Determinants of the Financial Consequences of Performance Appraisals (West Germany)

	No financial consequences	*Short-term consequences*	*Long-term consequences*	*Short-term & long-term consequences*
Locus of control	0.330 (1.84)*	0.318 (1.39)	0.651 (3.17)***	0.503 (2.92)***
Risk tolerance	0.375 (2.02)**	0.418 (1.96)**	0.603 (2.95)***	0.390 (2.34)**
Locus of control x risk tolerance	-0.077 (2.07)**	-0.075 (1.72)*	-0.112 (2.69)***	-0.070 (2.12)**
Patience	-0.050 (1.56)	0.002 (0.06)	-0.072 (2.45)**	-0.056 (2.32)**
Positive reciprocity	-0.024 (0.30)	0.001 (0.02)	-0.079 (0.93)	-0.040 (0.59)
Negative reciprocity	-0.115 (2.21)**	-0.030 (0.55)	-0.024 (0.43)	0.005 (0.13)
Trust in others	0.023 (0.16)	0.036 (0.24)	0.239 (1.79)*	0.034 (0.31)
Conscientiousness	0.011 (0.13)	-0.097 (1.23)	0.079 (0.93)	0.016 (0.24)
Extraversion	0.101 (1.56)	-0.019 (0.28)	0.006 (0.08)	0.095 (1.85)*
Agreeableness	0.062 (0.76)	-0.067 (0.95)	-0.012 (0.16)	-0.074 (1.26)
Openness	-0.026 (0.43)	0.001 (0.02)	0.048 (0.79)	0.028 (0.52)
Neuroticism	0.065 (1.04)	-0.023 (0.35)	-0.057 (0.87)	-0.055 (1.06)
Autonomy	-0.266 (2.51)**	0.167 (1.53)	-0.096 (0.78)	0.201 (2.34)**
Work council	0.401 (2.38)**	0.645 (3.04)***	0.111 (0.55)	0.324 (2.04)**
Firm size 20-199	0.830 (3.69)***	0.795 (2.59)***	0.688 (2.53)**	0.900 (4.28)***
Firm size 200-1,999	1.076 (4.28)***	1.362 (4.04)***	1.453 (4.81)***	1.396 (5.83)***
Firm size ≥ 2000	1.449 (5.64)***	1.864 (5.38)***	2.155 (6.88)***	2.194 (9.11)***
Part-time	-0.211 (1.05)	0.204 (0.95)	-0.684 (2.89)***	-0.353 (1.95)*
Tenure	-0.012 (0.52)	-0.007 (0.28)	-0.012 (0.49)	-0.027 (1.40)
Tenure squared	0.000 (0.53)	0.000 (0.56)	-0.000 (0.15)	0.001 (1.67)*
Blue-collar	-0.515 (2.22)**	-0.281 (1.20)	-0.478 (1.91)*	-0.357 (1.94)*
Work experience	0.021 (0.43)	-0.006 (0.12)	0.039 (0.76)	0.021 (0.46)
Work experience squared	-0.001 (0.97)	0.001 (0.46)	-1.75e-04 (0.16)	-3.95e-04 (0.40)
Skilled	-0.393 (1.80)*	0.185 (0.72)	0.430 (1.41)	0.266 (1.09)
University degree	-0.493 (1.88)*	0.092 (0.31)	0.396 (1.11)	0.520 (1.93)*
Age	0.134 (1.35)	0.199 (2.06)**	0.051 (0.52)	0.132 (1.48)
Age squared	-0.001 (1.14)	-0.002 (2.17)**	-0.001 (0.82)	-0.002 (1.81)*
Male employee	0.028 (0.15)	0.128 (0.74)	-0.099 (0.53)	0.101 (0.73)
Migration background	-0.225 (1.36)	-0.199 (1.09)	-0.172 (0.95)	-0.183 (1.25)
Southern West Germany	0.047 (0.30)	0.373 (2.52)**	0.068 (0.43)	0.523 (4.28)***
Northern West Germany	-0.004 (0.02)	-0.244 (1.09)	-0.005 (0.02)	-0.014 (0.09)
Constant	-6.726 (2.91)***	-8.707 (3.87)***	-7.486 (3.26)***	-8.009 (4.16)***
Sector dummies	Included	Included	included	included
Log-likelihood	-1529.234			
N	1,898			

Method: Multinomial probit. Base category: No performance appraisal. The table shows the estimated coefficients. Z-statistics in parentheses are based on robust standard errors. *** Statistically significant at the 1% level; ** at the 5% level; * at the 10% level.

Figure 2: Marginal Effects of Locus of Control on the Probability of Receiving Performance Appraisal for Different Types of Financial Consequences



Note: Calculation of marginal effects is based on the regression presented in Table 9.

Appendix

Table A1: Determinants of Receiving Performance Appraisal; Interaction of Locus of Control with Risk Tolerance (East Germany)

	(1)		(2)	
	Appraisal without financial consequences	*Appraisal with financial consequences*	*Appraisal without financial consequences*	*Appraisal with financial consequences*
Locus of control	0.394 (1.31)	0.122 (0.48)	0.532 (1.45)	0.227 (0.83)
Risk tolerance	0.464 (1.58)	0.014 (0.06)	0.604 (1.65)*	0.087 (0.32)
Locus of control x risk tolerance	-0.087 (1.47)	-0.006 (0.13)	-0.115 (1.57)	-0.023 (0.42)
Personality Traits	---	---	Included	included
N	891		692	

Method: Multinomial probit. Base category: No performance appraisal. The table shows the estimated coefficients. Z-statistics in parentheses are based on robust standard errors. *** Statistically significant at the 1% level; ** at the 5% level; * at the 10% level.

Table A2: Determinants of the Financial Consequences of Performance Appraisals (East Germany)

	No financial consequences	*Short-term consequences*	*Long-term consequences*	*Short-term & long-term consequences*
Locus of control	0.477 (1.33)	0.687 (1.84)*	-0.921 (1.56)	0.142 (0.49)
Risk tolerance	0.589 (1.67)*	0.503 (1.28)	-0.821 (1.52)	0.018 (0.07)
Locus of control x risk tolerance	-0.112 (1.55)	-0.099 (1.30)	0.195 (1.74)*	-0.019 (0.35)
N	669			

Method: Multinomial probit. Base category: No performance appraisal. The table shows the estimated coefficients. Z-statistics in parentheses are based on robust standard errors. *** Statistically significant at the 1% level; ** at the 5% level; * at the 10% level.

Endnotes

[1] We note the results from Cebi (2007) that the return to an internal locus of control as a teenager and young adult may not be in degree completion but in higher earnings later in life.

[2] In Australia and Britain, two thirds of the workplaces use formal performance appraisal systems (Heywood and Brown 2005, Addison and Belfield 2008). The share is modestly higher in the Netherlands (Jirjahn and Poutsma 2013). In Germany, slightly more than half of the establishments in the private sector use formal appraisal systems (Heywood and Jirjahn 2014).

[3] As performance appraisals are based, in part, on judgments and opinions, workers may strategically engage in influence activities that result in a positive evaluation (Acemoglu et al. 2008, Milgrom and Roberts 1988). For example, workers may conform to the opinion of their supervisors or provide flattery and private services to the supervisors (Laffont 1990, Prendergast 1993).

[4] Relatedly, the literature on goal setting emphasizes that workers with higher personal standards set harder to achieve goals and that achieving these goals yields higher satisfaction. See Gomez-Minambres (2012) for a formal model.

[5] The waves 2004 and 2008 also contain information on performance appraisal while the 2005 wave is a further wave with information on locus of control. As a clear temporal mapping of the key variables is not possible, we do not use these waves.

[6] Workers with self-control problems also under-save and delayed payment helps mitigate under-saving (Parson and van Wesep 2013). To the extent rewards are delayed, this may be a further reason why workers with self-control problems sort into performance pay.