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# **Interrelationships among Locus of Control and Years in Management and Unemployment: Differences by Gender**

Eileen Trzcinski<sup>a</sup> and Elke Holst<sup>b</sup>

## **Abstract**

This paper focuses on gender differences in the role played by locus of control within a model that predicts outcomes for men and women at two opposite poles of the labour market: high level managerial / leadership positions and unemployment. Based on data from the German Socio-Economic Panel, we investigated the extent to which gender differences occur in the processes by which highly positive and negative labour market outcomes are determined and in the processes underlying the development of one particular aspect of personality, that is, locus of control. Overall gender differences were more pronounced in the results for years in managerial/ leadership positions than for locus of control. Negative labour market states were also marked by gender differences, but not to the same degree observed for positive states.

JEL classification: J01, J24, J60, M51

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## **I. INTRODUCTION**

The purpose of this paper is to focus on gender differences in the role played by locus of control within a model that predicts outcomes for men and women at two opposite poles of the labour market: high level managerial / leadership positions and unemployment. Economists have increasingly begun to incorporate personality constructs into labour market analyses and labour market outcomes. Together with a number of other economists, James Heckman has, for example, recently published a series of articles explicitly advocating for the inclusion of such variables in order to enhance our understanding of labour market processes<sup>1</sup>.

In order to contribute to this literature, this paper jointly examines the extent to which gender differences and similarities are observed in the processes by which highly positive and negative labour market outcomes are determined versus the processes underlying the development of one particular aspect of personality, locus of control. We hypothesize that gender differences will be observed both in the processes that influence employment outcomes and in the processes that influence the level of locus of control, but that the observed differences will be greater for labour market outcomes than for locus of control.

Locus of control is an important predictor of long-term educational and labour market outcomes. It has also been found to be a personality construct that is not fixed, but is influenced by socio-economic conditions, a range of environmental conditions and demographic variables as well as by less malleable factors, such as stable personality traits. It is also a factor that economists have identified as an important predictor of labour market outcomes. The rationale for focusing on the most favourable and the least favourable employment outcomes stems from the theoretical importance of these two labour market states in affecting not only individual economic outcomes but also broader societal and labour market outcomes, such as influence within the workplace and the degree of social exclusion. In western market economies, those with relatively greater influence within the workplace also tend to exert relatively greater influence within the society as a whole. Unemployment, particularly long term unemployment, is associated with a wide range of negative psychological and health outcomes in addition to its contribution to poverty and social exclusion for unemployed individuals, their families, and their communities. Furthermore gender differences clearly exist in the extent to which women and men occupy positions of leadership in the labour market and unemployment, but most of the existing literature linking locus of control and these two employment outcomes tends to focus exclusively on one of

these states, but not both. Thus a study that simultaneously examines the link between locus of control and these two labour market outcomes offers the possibility to understand more deeply and more comprehensively how the dynamics of gender operate within the labour market as a whole. Specifically, a three equation simultaneous model was estimated with data from the German Socio-Economic Panel (SOEP) where locus of control measured in 2005, years with unemployment from 2001-2005, and years in high level managerial/leadership positions from 2001-2005 were endogenous variables. Exogenous variables included locus of control measured in 1999, the Big Five personality traits, a measure of risk taking in career, and a set of demographic variables. In a second model, we also estimated changes in the locus of control from 1999 – 2005, where personality factors, years in three different employment states, and changes in demographic variables were included in the model.

#### **a. Locus of Control**

For decades, researchers have examined the links between locus of control and educational and labour market outcomes. This research has established strong links between internal locus of control and positive educational and labour market outcomes. Most of this research has not, however, explicitly examined gender differences in terms of how labour market outcomes influence reported levels of locus of control. The direction of the examined relationship has primarily focused on how locus of control influences labour market outcomes, but not on the influence of labour market outcomes, particularly highly favourable labour market outcomes, on the locus of control. Several meta-analyses have examined links between locus of control and different aspects of success in the workplace. In a meta-analysis conducted by Timothy Judge and Joyce Bono (2001), locus of control was strongly correlated with both job performance and job satisfaction. In a second meta-analysis conducted by Thomas Ng, Kelly Sorensen and Lillian Eby (2006), locus of control was related to a variety of employee attitudes, such as job satisfaction and commitment as well as to employee behaviours, such as job performance and attendance. A third meta-analysis conducted by Thomas Ng et al. (2005) found that locus of control was weakly related to salary, not related to promotions, and strongly related to job satisfaction. Recent work that examined this link includes James Heckman, Jora Stixrud, and Sergio Urzua (2006), who found that noncognitive skills, including a measure of locus of control, strongly influenced schooling decisions, employment, work experiences, and choice of occupation; Timothy Judge and Charlice Hurst (2007), who found that core self-evaluations which include locus of control as one dimension predicted both economic success in the short and long run; and Melissa Groves

(2005), who found that higher levels of internal control were associated with higher wages for women.

In addition to its impact on educational and labour market outcomes, locus of control also influences outcomes in a number of other dimensions. The wide range of areas where locus of control plays a role provides a strong rationale for including locus of control within our study as both an endogenous and explanatory variable. Previous research has indicated that locus of control is an important variable in predicting life satisfaction, health behaviours, and patterns of adjustment after stressful events. External locus of control has been found to be associated with many different negative outcomes, including adjustment patterns and depression following divorce (Lisa Hill & Jeanne Hilton, 1999, Helen Barnett, 1990) ; the level of work-family conflict (Noraini Noor, 2002); the risk of child abuse (Sharon A. Stringer and Annette M. la Greca, 1985) and suicide ideation (R. Vilhjalmsson, G. Krisjansdottir, and E. Sveinbjarnardottir (1998). Internal locus of control has likewise been shown to be associated with positive outcomes, such as the quality of the home environment provided by mothers (Elizabeth Menaghan and Toby Parcel, 1991) and level of engagement in positive family health behaviours (Marilyn Ford-Gilboe, 1997). A consistent finding of the literature on subjective life satisfaction is the positive association between internal locus of control and measures of subjective life satisfaction and subjective well-being (see Christopher Peterson, 2003, for an extensive review of the literature). Bruce Heady (2008) also found an internal locus of control predicted positive changes in subjective well-being over time.

### **b. Micro and Macro Outcomes of Unemployment**

Within the European Union, one of the goals for gender equality centres on eliminating gender differences in unemployment within the context of lowering the overall unemployment rate. Figure 1 presents a time series of the unemployment rates by gender in Germany and in the European Union as a whole. As Figure 1 indicates, Germany is an exception within the European Union because women have recently had lower rates of unemployment than men. Although gender differences have been observed both in the level of unemployment and in its psychological and socio-economic consequences, negative psychological, mental health and economic consequences for women and men who have experienced unemployment have been well-documented in the literature (see Signe Andersen, 2009; Kenneth Cole, Anne Daly, and Anita Mak, 2009; Bruno Frey and Alois Stutzer, 2002; Ed Diener et al. 1999; Andrew Clark and Andrew Oswald, 1994; Liliana Winkelmann and Rainer Winkelmann, 1998; Cynthia Murray, Lan Gien, & Shirley Solberg, 2003). Observed negative effects of unemployment

tend to be more severe for men than for women (Lucia Artazcoz et al., 2004, Clifford Broman et al., 1995). One exception is the observed effect of unemployment on locus of control. Arthur Goldsmith, Jonathan Veum & William Darity (1996) found that unemployment and joblessness negatively influenced locus of control for young women, but not young men.

Somewhat less explored are the wider economic implications of unemployment for the labour force and for society as a whole. Both theory and empirical work do, however, support the premise that the impact of unemployment extends beyond individual, micro level outcomes. William Darity and Arthur Goldsmith (1996) have developed a theory in which they attempt to integrate the negative social and psychological effects experienced by unemployed individuals into a model of the macroeconomy. In this theory, “a deterioration in psychological well-being brought about by a recession triggers a subsequent decline in productivity across the labour force” (William Darity and Arthur Goldsmith, 1996: 132). In their theory, this deterioration has implications not only for unemployed individuals, but for the entire macro economy. Heinz Welsch and Udo Bonn (2008) provided empirical support for macro effects of unemployment. They found that life satisfaction in the EU was significantly linked to per capita income, unemployment and inflation. These macro factors explained about 30 percent of the inter-country and intertemporal variation in average life satisfaction. Rafael Di Tella, Robert MacCulloch, and Andrew Oswald (2003) also found that macroeconomic movements, including changes in unemployment rates, exerted strong effects on the happiness of nations and concluded that “standard economics tends to ignore what appear to be important psychic costs of recessions” (2003: 823). They argued that these losses were large and exceeded changes that would have been expected on the basis of reductions in GDP and increases in the number of the unemployed.

Neighbourhood and community effects and impacts on other family members have also been documented in the literature. Maria-Victoria Zunzunegui et al. (2006) explored the impact of community unemployment in Montreal and found that community unemployment had negative effects on health outcomes for immigrant groups within these communities. Kristina Sundquist et al. (2006) also found that neighbourhood unemployment increased the risk of coronary heart disease in an urban setting in Sweden. In addition, an extensive literature exists that documents a wide range negative outcomes for family members when at least one family member is unemployed (See Sara Ström, 2003, for a review of this literature).

### **c. Micro and Macro Effects of Women in Leadership Positions**

A second goal of the European Commission gender policy concerns gender parity within leadership and management positions:

Promoting equal participation of women and men in decision-making is one of the priorities of the European Commission's Roadmap for equality between women and men (2006-2010). Women of all walks of life continue to be under-represented at all levels of the decision-making process in most EU Member States, despite the progress already achieved.

The EU has long recognised the need to promote gender equality in decision-making and has encouraged the process in various ways. In 1996, the EU's Council of Ministers made a formal recommendation to Member States to introduce legislative, regulatory and incentive measures to promote gender balanced participation in decision-making (European Commission, 2009).

Figures 2 and 3 present data on the proportion of women in leadership position and in management across the European Union. In Germany, women hold only 1.5 percent of the leadership positions in the 100 largest German companies and 2.5 percent in the 200 largest companies. (Elke Holst and Julia Schimeta, 2009). The lack of women in such positions strongly suggests that optimal levels of social justice are absent; that women are not being allowed to develop and fully use their full range of innate capabilities. Although the processes are easily delineated by which leadership and managerial positions for women will increase the economic well-being and social status of women who hold these positions, other processes also exist by which greater representation of women in leadership and high managerial positions may benefit not only women in positions of power, but also women and other less privileged members of society who do not occupy such positions and who are unlikely to do so.

Both sociological and economic theory do offer mechanisms by which women as a whole may benefit by greater representation of women in leadership and managerial positions, even if they themselves do not hold such positions. The sociological theory of status characteristics and the economic theory of statistical discrimination each deal with questions of why economic outcomes for an individual may be influenced by group membership as well as by individual characteristics. Bina Agarwal (1997) has also developed a conceptual model in which she explores how women's bargaining power is affected by direct and indirect interactions in the household, the market, the community, and the State. In her model, an increase in the overall status of women in the market would lead to greater bargaining power



in all domains—even if one individual woman is not directly affected by the positive change, all women could theoretically enjoy enhanced bargaining power.

Status characteristics theory deals with the question of how inequalities in society as a whole result in status differentials among groups within the society. It also deals with the maintenance of existing status differentials. Thus this theory presents one potential explanation concerning why the presence of women in leadership positions could have positive implications for women as a group both within the labour market and within the society as a whole. According to Joseph Berger and M. Hamit Fisek (2006), a status characteristic comprises four major features:

- (1) a socially significant characteristic such as gender, race, and occupational position;
- (2) states of the characteristic such as male-female, white-black, and higher-lower occupational positions, which can partition the relevant population;
- (3) different status evaluations of these states relative to each other in terms of honour, prestige, and general social worth; and
- (4) high and low conceptions of the generalized capacities of the individuals who possess these different states, where these high and low conceptions are consistent with the status evaluation of the states (p. 1039).

In an extension of their previous work (Joseph Berger et al., 1998; Joseph Berger, Cecilia L. Ridgeway and Morris Zelditch, 2002), they provide a mathematical proof of a number of theorems that purport to explain why a diffuse status characteristic, such as gender, may exist for a population at a given time if the members of that population hold differential status evaluations for males and females. The absence of females in leadership positions reinforces and maintains the perception that males are superior and more capable than women on a wide range of dimensions. Conversely, greater representation of women in leadership and high level managerial positions would over time lead to a different status characterization for women relative to men.

The theory of statistical discrimination holds that employers assess potential employees and promotion opportunities for current employees based on group characteristics as well as individual characteristics (Edmund Phelps, 1972). The rationale for such behaviour rests on the notion that information from any single, given individual is imperfect and that group membership provides additional information that needs to be considered in hiring and promotion decisions. The theory has usually been used to justify the existence of economic

disadvantages for women, holding that all women are penalized because employers expect more intermittent labour market behaviour from women compared to men because of labour market withdrawals on account of childbirth and child rearing.

To the extent that gender continues to be a category with practical implications within the labour market and within the society as whole, this theory predicts that increases in the number of women in management and leadership will have spill over effects for all women. This theory would predict that the positive group characteristics deriving from the labour market success of these women will be used to weight the characteristics of all women, including women who are not in these positions. With a more positive individual and group composite rating, the theory would predict that women as a whole would be offered better economic opportunities both at the point of labour market entry and beyond.

Empirical research does lend support to these theories. In an experimental study, Jeffrey Lucas (2003) found that the institutionalization of female leadership positively affected the influence of women in positions of authority. Based on data from the World Values Survey from 1990 to 2001, which covered over eighty countries, Stephanie Seguino (2007) found that gender norms shifted over the period under study and that women's economic empowerment was clearly one factor in the observed shift. A report by McKinsey & Company (2007) found that companies with a greater percentage of women in management and leadership positions experienced positive impacts on both organizational excellence and on financial performance. In a Catalyst study examining the impact of women on corporate boards in Fortune 500 companies, Joy (2008) found that, on average, Fortune 500 companies with higher percentages of women board directors financially outperformed companies with the lowest percentage of women board members. The report concluded that "increasing the number of women on corporate boards is important for both financial performance and gender diversity in the corporate officer ranks (2008: 9)."

## **II. MODEL AND THEORETICAL JUSTIFICATION FOR THE EXPLANATORY VARIABLES**

The above discussion provides the rationale for the selection of the endogenous variables—locus of control, years with unemployment and years in management—in the three equation simultaneous equation model that we discuss below. Specifically, we estimated the following set of equations:

$$\begin{aligned} \text{Locus of control}_{2005} = & \beta_0 + \beta_1 * \text{Years with unemployment}_{2000-2005} + \\ & \beta_2 * \text{Years with Leadership Position}_{2000-2005} + \beta_3 * \text{Locus of Control}_{1999} + \\ & \text{Big Five Personality Traits} * \beta_{4-9} + \beta_{10} * \text{Years of Education} + \\ & \text{Demographic Variables} * \beta + \varepsilon_1 \end{aligned}$$

$$\begin{aligned} \text{Years with leadership position} = & \gamma_0 + \gamma_1 * \text{Years with unemployment}_{2000-2005} + \\ & \gamma_2 * \text{Locus of Control}_{1999} + \text{Big Five Personality Traits} * \gamma_{3-8} + \\ & \gamma_9 * \text{Risk Taking} + \gamma_{10} * \text{Years of Education} + \\ & \text{Demographic Variables} * \gamma + \varepsilon_2 \end{aligned}$$

$$\begin{aligned} \text{Years with unemployment} = & \delta_0 + \delta_1 * \text{Years with unemployment}_{2000-2005} + \delta_2 * \text{Locus of} \\ & \text{Control}_{1999} + \text{Big Five Personality Traits} * \delta_{3-8} + \delta_9 * \text{Years of} \\ & \text{Education} + \text{Demographic Variables} * \delta + \varepsilon_3 \end{aligned}$$

We also estimated a second model where the dependent variable was change in the locus of control from 1999 to 2005, which included changes in the level of the demographic and human capital variables reported from 2001 to 2005:

$$\begin{aligned} \Delta \text{Locus of control}_{2005-1999} = & \beta_0 + \beta_1 * \text{Years with unemployment}_{2001-2005} + \beta_2 * \text{Years with} \\ & \text{Leadership Position}_{2001-2005} + \beta_3 * \text{Years in Market with no} \\ & \text{leadership/unemployment}_{2001-2005} + \text{Big Five Personality Traits} * \beta_{3-8} + \\ & \beta_9 * \text{Risk Taking} + \beta_{10} * \Delta \text{Years of Education} + \\ & \Delta \text{Demographic Variables} * \beta + \varepsilon_1 \end{aligned}$$

#### **a. Theoretical Justification for the Big Five Personality Traits**

The Big Five personality traits (also referred to as the “Five Factor Model”) (Paul T. Costa & Robert R. McCrae, 1992) are elements of an approach that organizes personality into five different dimensions. These five traits theoretically are intended to capture the concept of personality as extensively and exhaustively as possible. An extensive body of literature has shown that the Big Five are reasonable predictors of job performance and professional success, particularly for leaders and for the unemployed. This approach classifies and organizes personality differences between individuals on the basis of five central dimensions, i.e. neuroticism (lack of emotional stability), extraversion, openness to experience, agreeableness and conscientiousness.

Research based on the Big Five suggests that these personality traits tend to be relatively stable for adults beyond the period of young adulthood, that is, beyond 30 years of age

(Hermann Brandstätter, 1999) but changes in the traits do nevertheless occur, with some gender differences evident in the patterns of change (S. Srivastava et al., 2003). In research linking the Big Five personality traits with labour market outcomes, successful leaders have tended to exhibit high scores in the dimensions extraversion, conscientiousness and emotional stability (= low neuroticism value) and low scores in the agreeableness dimension (Murray Barrick & Michael Mount, 1991, 2005; Murray Barrick, Michael Mount, and Timothy A. Judge, 2001, J.W. John Boudreau, Wendy R. Boswell, and Timothy A. Judge, 2001; Adrian Furnham, John Crump, and Josh Whelan, 1997; Ralph Piedmont and Harold Weinstein, 1994). A highly positive link with job performance across all professional groups has also been observed for the conscientiousness dimension (Murray Barrick and Michael Mount, 1991; Robert P. Tett, Douglas N. Jackson, and Mitchell Rothstein 1991; Jesus F. Salgado, 1997). In their study of leadership ability in 160 leaders, Adrian Furnham, John Crump and Josh Whelan (1997) found strong positive influence on leadership ability for the conscientiousness and extraversion dimensions. Boudreau et al. (2001) studied the link between the Big Five and the career success of leaders in the US and Europe. They found a positive link between extraversion and a negative link between neuroticism and intrinsic career success.

In a longitudinal study, Gerrit Mueller and Erik Plug (2006) investigated how the Big Five personality traits influenced wages. The study indicated that men with low scores in the agreeableness dimension and high scores in the openness to experience and emotional stability dimensions earned more than others. In these results, openness to experience had the greatest positive influence on wages, while extraversion and conscientiousness had no influence for men. However, women achieved a wage premium if they had high scores in the conscientiousness and openness to experience dimensions. Thus while research has routinely established strong links between the Big Five personality traits and success in the labour market, not all studies find consistency in which of the traits affect outcomes and in the nature of these differences for women and men.

### **b. Theoretical Importance of Willingness to Take Risks**

In personality psychology, Burghard Andresen (1995) and other researchers have doubted the exhaustiveness of the Big Five for describing personality and have discussed the willingness to take risks as a sixth basic dimension of personality. Although gender differences are often assumed to exist in terms of risk-taking behaviour, the evidence regarding gender differences is complex and nuanced. Numerous studies based on both self-

assessments of the willingness to take risks and on experimental studies have concluded that women have a greater aversion to risk than men. In a critical literature review of this literature, Rachel Croson and Uri Gneezy (2009) found that the majority of studies did support the hypotheses that women are more risk adverse than men. They also concluded that the experiments described in the literature usually failed to account for interactions between the experimental context and the gender of the participant. A second criticism was that “journals are more likely to publish papers that find a gender difference than papers that do not” and that “this publication bias may cause researchers to invest more effort into finding differences than to finding no difference (Croson and Gneezy, 2009: 468)”.

Research conducted by Sabina Littmann-Wernli and Renate Schubert (2001) confirmed the conclusions reached by Croson and Gneezy. Based on a set of comprehensive gender-comparative experiments, Littmann-Wernli & Schubert (2001) concluded that it was incorrect to assert that women are more risk-averse. Instead their results indicated that “the ‘framing’ of information is of importance” in determining the extent and nature of differences in risk-taking behaviour for women and men (Littmann-Wernli and Schubert, 2001: 145). In context-related decision problems, their studies indicated that there were no significant differences between men and women in willingness to take risks. In other cases, however, such as abstract game situations, women were more willing to take risks when it came to a losing game but more risk averse when it came to a winning game. In addition, information about probabilities of success had different effects on the risk behaviour of women and men.

### **c. Education and Demographic Variables**

Additional control variables included years of education, citizenship status, whether the individual was from East or West Germany, age, marital status and number of children under age 17. In the second estimation of change in the locus of control from 1999 to 2005, number of years in market work was also included as an explanatory variable<sup>ii</sup>.

## **III. DATABASE AND METHOD**

The results of this study are based on the data of the Socio-Economic Panel (SOEP), 2007 release (1984-2006) (Gert Wagner, Joachim Frick, & Jürgen Schupp, 2007). The SOEP is a representative longitudinal survey of more than 20,000 persons in about 12,000 private households in Germany. It has been carried out every year since 1984 with the same persons

and families in the Federal Republic of Germany. The sample has been amended several times. Partial sample G from 2002, for example, provided significant numbers of cases for high-income households.<sup>iii</sup>

The initial survey covered 1,224 households with 2,671 persons. The SOEP was supplemented in 2006 by subsample H, which is meant to stabilise the number of cases and serve as a form of “regeneration” (1,506 households with 2,616 persons). In total in 2006, there was information available for more than 22,000 respondents. On the basis of the SOEP data, analyses have been presented several times on the structure and remuneration of persons in specialist and leadership positions.<sup>iv</sup> As the only long-term, longitudinal representative set of individual and household data in Germany, the SOEP provides a platform for examining not only socio-demographic and economic features but also information concerning personality traits and social indicators for a sufficiently high number of cases.

#### **a. Sample Selection**

The subjects in the study were employees between 28 and 60 years of age in the year 2001 in the private sector. The lower limit of age was chosen because of the relatively low number of individuals who have achieved high level managerial or leadership positions prior to age 28; the higher limit because of the factor of retirement. The range of years 2001 – 2005 was chosen because of the timing of when questions on locus of control and the Big Five personality traits were asked. Locus of control was included in the survey in 1999 and 2005; the Big Five personality traits were included for the first time in 2005.

#### **b. Model Estimation**

We estimated the three equation model using three stage least squares in STATA, Version 9. Descriptive statistics are presented in Table 1. We estimated the change in locus of control using OLS estimation in SPSS, Version 15. The rationale for estimating two separate models stems from the relative advantages and limitations of the two strategies. Under 3SLS estimation, a dependent variable will have its usual interpretation as the left-hand-side variable in an equation. All dependent variables are treated as endogenous within the system. Three stage least squares models allow for error terms to be correlated across endogenous variables of each equation. Limitations of such models include the need to specify different sets of explanatory variables for each of the three equations in order to allow for model identification. Although this choice is always held to be theoretically based, it can also be

argued that choice of which variables to exclude from which equation when the underlying processes may in fact be similar is difficult and sometimes ad hoc. Based on preliminary estimation, we excluded neuroticism from the leadership equation and included risk taking behaviour as the unique variable for identifying this equation. Education was excluded from the locus of control equation. The change in the locus of control OLS estimation does not allow a separate examination of all three variables simultaneously or allow for correlations among the error terms of our variables of interest, but it offers the advantage of providing the opportunity to look at how changes in the predictor variables affect the observed level of change in the locus of control. The use of two estimation techniques also provides information on the robustness of the any observed relationships between the predictor and outcome variables.

### **c. Variable Definitions**

#### *i. Locus of Control.*

In the SOEP, locus of control is surveyed with 10-items, which are based on work by Julian Rotter (1966). In 2005, all respondents were asked “To what degree do you personally agree with the following statements?” based on a seven point scale ranging from 1=disagree completely to 7= agree completely. Based on factor analyses, responses from the following nine statements were used to construct the measure of locus of control:

1. How my life goes depends on me
2. Compared to other people, I have not achieved what I deserve
3. What a person achieves in life is above all a question of fate or luck
4. I frequently have the experience that other people have a controlling influence over my life
5. One has to work hard in order to succeed
6. If I run up against difficulties in life, I often doubt my own abilities
7. The opportunities that I have in life are determined by the social conditions
8. Inborn abilities are more important than any efforts one can make
9. I have little control over the things that happen in my life.

The same set of questions was first asked in 1999, however, the scale ranged from 1 to 4. Hence we used standardized scores in the both of the two models. Higher values of locus of control in our models indicate higher levels of internal control.

*ii. Years in a Leadership Position.*

The endogenous variable, years in management / leadership position was calculated by adding the number of times from 2001 to 2005 that a respondent indicated that they were in a managerial or leadership position. The large number of definitions of leaders makes it difficult to compare the results of various studies, particularly over the course of time because “there are almost as many different definitions of leadership as there are persons who have attempted to define the concept (Bernard M. Bass, 1990: 11)”. In this study, leaders and high level managers are defined on the basis of the respondents’ own comments on their position in their occupation. The target variable was the information on whether or not the respondent was in a leadership position in the years from 2001 - 2005. Due to the extremely low proportion of women in high leadership positions, a somewhat broader definition of leaders was selected. It encompasses persons (starting at age 28 in 2001) who stated in the SOEP that they worked as employees<sup>v</sup> in the private sector<sup>vi</sup> in:

functions with extensive managerial duties (e.g. managing director, manager, head of a large firm or concern);

other managerial functions or highly qualified duties (e.g. scientist, attorney, head of department).

The term “leaders” therefore encompasses both persons in leadership positions as well as highly-qualified specialists.

*iii. Years in Unemployment.*

The endogenous variable, years with unemployment, was calculated by adding the number of years between 2001 and 2005 where the respondents indicated they had experienced a spell of unemployment.

*iv. Years in Labour Market.*

In the change in locus of control model, we also included years in labour market, which was calculated by adding the number of years where the individual was in the labour market, but did not occupy a high level position and did not experience unemployment.



*v. The Big Five Personality Traits.*

In 2005, in the style of the Big Five approach, the short version of the Big Five Inventory (BFI-S) was used for the first time in the main SOEP survey. The development of this brief scale (three questions were asked on a scale of 1 to 7 for each personality dimension) was preceded by a pre-test in the year 2004. Regarding validity and reliability, the results revealed satisfactory results (Jean-Yves Gerlitz and Jürgen Schupp, 2005). The surveying of personality dimensions in the SOEP in 2005 was based on the self-assessment of respondents on the basis of 15 adjectives used in colloquial language.<sup>vii</sup> A factor analysis confirmed that it was possible to extract from these 15 statements the five personality dimensions identified in the Big Five Inventory literature discussed above<sup>viii</sup>:

1. conscientiousness: does a thorough job; tends to be lazy; does things effectively and efficiently;
2. extraversion: is communicative, talkative; is outgoing, sociable; is reserved;
3. agreeableness: is sometimes somewhat rude to others; has a forgiving nature; is considerate and kind to others;
4. openness to experience: is original, comes up with new ideas; values artistic experiences; has an active imagination; and
5. neuroticism: worries a lot; gets nervous easily; is relaxed, handles stress well.

*vi. Willingness to Take Risks in One's Profession.*

Willingness to take risks was added to the SOEP in 2004 and is also based on respondent's self-assessment of a number of different dimensions of risk taking. This study focused on willing to take risks in the professional sphere. The question in the SOEP is "People can behave differently in different situations. How would you rate your willingness to take risks in the following areas? in your occupation?" The scale ranged from 0: risk averse to 10: fully prepared to take risks.

*vii. Demographic Variables.*

Finally, in our three stage estimation, we included demographic variables in year 2001: age, marital status (0=married, 1=single), number of children under 16, whether the individual was from East Germany (0=no, 1=yes) or was a foreigner (0=no, 1=yes). In the model where we estimated change in locus of control, we included variables that measured whether the

individual had a change in marital status (change to divorce and change to married—0 = no change, 1 = change occurred ; two variables that indicated changes in whether children were present (with children in household in 2005, but not in 2001 and with children in 2001, but none in household in 2005—0=no change, 1 = change occurred) and also whether a change in citizenship status occurred.

## **IV. RESULTS**

Table 1 provides descriptive statistics; Table 2 presents the results for the three stage least squares model; Table 3 presents the results for the change in locus of control model. In this section, we report our findings; in the following section, we discuss the meaning of these findings in terms of their gender implications.

### **a. Years in High Level Managerial/Leadership Positions as Predictor Variable for Locus of Control**

For both men and women, an increase in the number of years in high level managerial/leadership positions was associated in an increase in the level of locus of control in 2005. The same pattern was observed in the change in locus of control equation where the number of years in management/ leadership was associated with positive changes in the locus of control.

### **b. Years in Unemployment and in Market Work as Predictor Variables for Locus of Control**

Number of years in unemployment was associated with lower levels of locus of control in 2005 ( $\rho < .001$ ) for both men and women, however, the relative size of the effect as measured by the estimated coefficient was over 1.5 times higher for men than for women (respectively  $-.097$  for men and  $-.067$  for women). In addition, the relative size of the estimated coefficients for unemployment exceeded the size of the estimated coefficients for years in managerial/leadership positions by a factor of approximately 2.5 for men and 1.5 for women. The same pattern was observed for change in locus of control. In the change in locus of control model, number of years in the market was not associated with a change in the locus of control.

### **c. Locus of Control in 1999 as a Predictor Variable.**

Locus of control in 1999 was positively associated with locus of control in 2005 for both men and women. Results were also similar for women and men in terms of the power of locus of control to predict years of unemployment. For both genders, higher levels of locus of control were associated with fewer years in unemployment. Differences were observed, however, in the association between initial level of locus of control and the predicted number of years in management/leadership. For men, locus of control was a significant ( $p < .001$ ) predictor of years in management/leadership, whereas for women, no association between locus of control in 1999 and years in management/leadership was observed.

The results in the change of locus of control equation also strongly confirmed previous research that locus of control is not a static personality trait. The results in Table 3 indicate that a regression to the mean process occurred between 1999 and 2005, that is, those with higher than average levels of locus of control in 1999 tended to report decreases in level of control over the observed time period, whereas those with lower than average levels tended to report increases in their locus of control. Because z-scores for locus of control were used, the negative coefficient observed for locus of control in 1999 indicates that those with particularly large positive and negative deviations from the mean in 1999 had relatively large changes from 1999 to 2005 in the direction of the mean compared with those whose observed locus of control were closer to the sample mean.

To our knowledge, our finding that changes in locus of control showed a tendency of regression towards the mean is a finding that has not previously been reported in the literature. This particular finding suggests a direction for future research for locus of control. A potential hypothesis that could be investigated is that locus of control is similar to subjective well-being—a set point level of locus of control could exist that is subject to fluctuations from positive or negative life events. Most of these events might be associated with temporary fluctuations in the observed level of locus of control, with only more dramatic life experiences resulting in a shifting downward or upward of a baseline level that developed earlier in the course of personality development. If these events tend to accumulate, such as the length of time in positive labour market states, for example years in managerial/leadership positions or in negative labour market states, such as unemployment, long term changes in locus of control might occur. Given the strong associations noted above between locus of control and a wide range of non-labour market outcomes, more research is needed on what contributes to changing levels of locus of control across the life cycle.

#### **d. Big Five Personality Traits.**

Each of the Big Five Personality traits was strongly associated with the predicted level of locus of control in 2005. They were also significant predictors of the change in locus of control from 1999 to 2005. Positive associations were observed for men and women for conscientiousness, extraversion, and agreeableness; negative associations were observed for both genders for neuroticism. Men who reported a higher degree of openness to experience reported a lower level of locus of control in 2005 and a negative change in locus of control from 1999 to 2005. This association was not observed for women.

Similarities and differences were observed between men and women in the associations between the Big Five Personality Traits and years in unemployment and years in managerial/leadership positions. For neither men nor women were openness to experience and extraversion associated with number of years in the two employment states. For both men and women, neuroticism was associated with more years in unemployment, with the estimated coefficient for men 2.6 times as large as the estimated coefficient for women. Low scores on conscientiousness were associated with more years in unemployment for men, but not for women. High scores on this trait were associated with more years in management for women with no observed effect for men. Women who reported higher levels of agreeableness also reported more years in managerial/leadership positions, with no statistically significant relationship observed for years in unemployment. For men, this trait was not associated with number of years in either management or unemployment.

#### **e. Willingness to Take Risks in Profession.**

No differences were observed between men and women in terms of the observed associations between willingness to take risks in one's career and the predicted number of years in high level positions. In the change in locus of control model, willing to take risks was associated with larger positive changes in the locus of control for men than for women.

#### **f. Human Capital and Demographic Variables.**

Increases in years of education were associated with increases in years in high level positions for men and women whereas men and women with fewer years of education reported more years with unemployment. For both endogenous variables, the size of the estimated coefficients for men exceeded those observed for women by a factor of approximately 2 for years in management and 1.5 for years with unemployment. Higher years

of education were also associated with greater positive changes in locus of control from 1999 to 2005. Years in market work not marked by unemployment or work in high level employment was not associated with changes in the locus of control.

As age increased, women tended to report lower levels of locus of control with no observed association for men. Although our data may reflect differences in locus of control for younger cohorts compared with older cohorts, past research has shown that locus of control for women does tend to decrease with age (Catherine E Ross and John Mirowsky, 2002). Increases in age were also associated with increases in the years in unemployment for men and women, with the estimated coefficient larger for men than for women. In the change in locus of control equation, increases in age were not associated with observed changes in locus of control between 1999 and 2005.

Foreigners (non-citizens) reported lower levels of locus of control, with the estimated coefficient for women exceeding that for men by a factor of 1.6. Foreign men had more reported years of unemployment whereas foreign women reported more years in management/leadership positions. East German men experienced more years of unemployment and fewer years in managerial positions than men in West Germany. For women, differences between those in the East and West were observed for years with unemployment, but not for years in managerial/leadership positions.

Men and women who were single both reported more years with unemployment than their married counterparts whereas single women reported more years in management/leadership positions than married women. No differences were observed between married and single men in the predicted number of years in management/leadership.

Number of children in the household under age 17 was associated with more years in unemployment for both men and women, with the estimated coefficient for women (.082) larger than the estimated coefficient for men (.051). Not surprisingly, this variable was the only variable where the estimated coefficient in the years in management/leadership was statistically significant for both men and women, but where the direction of the observed effects differed for the two genders. Men with more children in their household had more years in managerial/leadership positions than men with fewer children, but women with more children had fewer years in such positions compared with women with fewer or no children.

In the change in locus of control equation, only one of the variables measuring a change between 1999 and 2005 achieved conventional levels of statistical significance. Foreign women living in Germany who were not citizens in 1999 but who became German citizens

sometime between 1999 and 2005 reported a negative change in locus of control. A marginally significant effect was also observed for women who experienced a change in marital status. Women who became single during this period had negative changes in locus of control.

## V. DISCUSSION

We begin our discussion by noting that the primary differences between genders occurred in the processes by which highly positive and negative labour market outcomes were determined versus the processes underlying the development of one particular aspect of personality, locus of control. That is the differences observed by gender were far more pronounced in the equation for years in managerial/ leadership positions than in the equation for locus of control. Negative labour states were also marked by differences by gender, but not to the same degree observed for positive states. Overall, our findings suggest that a greater degree of gender neutrality exists in terms of how personality, education and demographic variables influence the locus of control and the allocation of individuals to negative labour market states, that is unemployment, than exists in the allocation of individuals to highly positive labour market states.

In both the three equation model and in the change of locus of control model, four of the Big Five traits were related to level of locus of control and to observed changes in locus of control for both men and women. For these four traits, the direction of the observed relationship was the same for women and for men. The only trait for which gender differences was observed was Openness to Experience, which was associated with higher levels of locus of control in 2005 and positive changes between 1999 and 2005 for men but not for women. Willingness to take risks in occupation, another characteristic of personality, also operated similarly for men and women and increased the extent of self-reported positive change in locus of control. Furthermore positive and negative labour market outcomes also seemed to operate similarly for both genders in the association with locus of control—both men and women reported higher levels and more positive change in locus of control, the more years they spent in high level positions, with an opposite association observed for years in unemployment. Hence, our findings provide stronger support to the hypothesis that these internal processes are similar for men and for women than to an alternative hypotheses that intrinsic and internal gender differences exist in how this specific aspect of personality develops and changes over time.

It is in the area of years in managerial/leadership positions that a more sharply delineated gendered process seems to be present in determining who is and who is not allowed on-going access to high level positions within the labour market. Men with higher levels of locus of control reported more years in managerial / leadership positions, but no association was observed for women. On the other hand, women with higher levels of conscientiousness and lower levels of agreeableness reported more years in management/leadership positions than other women—a result not observed for men. Our findings are also consistent with long-standing observations that children hinder women's opportunities, while for men they have a bi-polar effect—men with greater numbers of children are both more likely to occupy high level positions within the labour market and more likely to be unemployed—a reflection of the demographics concerning the u-shape between income and number of children, that is, the rich and the poor tend to have more children than middle income families. For women, number of children was not associated with positive labour market outcomes. An additional observation is that the extent of the variance explained in female equations was lower for all equations, but this difference was most dramatic for the years in managerial/leadership positions ( $R^2 = .30$  for men versus  $R^2 = .18$  for women).

The work presented here indicates that personality traits are qualitatively different from human capital variables in that these variables do not necessarily operate in a similar fashion for women and for men in terms of their relative influence on labour market outcomes. Our results confirm past research and indicate that the rewards and penalties associated with personality traits cannot be assumed to be the same for women and men. In contrast, the relationships between Big Five Personality traits and levels of locus of control are similar for men and for women. In terms of how periods of time spent in highly positive and in negative labour market states affect levels of locus of control, our results indicate that women and men respond in similar ways—the size of their response differs, but the direction and significance are the same for both genders. As economists begin to explore the role of these variables more frequently in theoretical and empirical work, these distinctions are crucial. For processes where individuals have relatively greater control, such as how they respond to positive and negative labour market events in adjusting their perceived locus of control, our results indicate that men and women are similar in their responses. They are also similar in terms of the observed associations between their personalities as described by the Big Five Traits and their perceived locus of control. Individuals have, however, relatively less control in determining how the labour market as an institution rewards or penalizes them for their

personality. And in this case, gender differences are more pronounced. These results suggest that any policy directives, such as those of the European Commission described above, need to find ways to incorporate the growing body of literature concerning the link between differential access to high status positions within the labour market and personality traits and personality constructs, including those contained in the Big Five Personality inventory and in measures of locus of control. In a recent article, Barrick, Murray R. and Michael K. Mount, 2005, argued that “yes, personality matters” and that we now need to move onto to more important matters. Our final perspective is that one of these important matters must include the need to find creative policy alternatives and directives that can incorporate this knowledge so that women can finally achieve more equitable representation within leadership positions in the economy.



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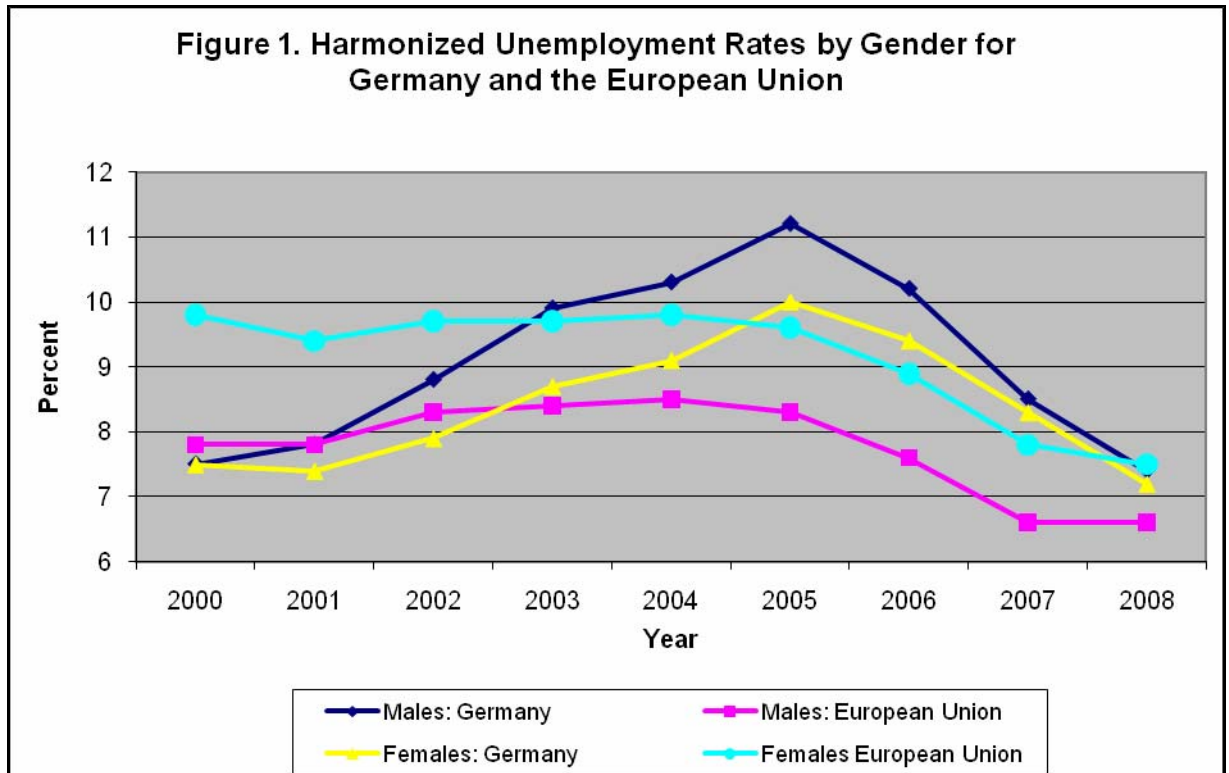
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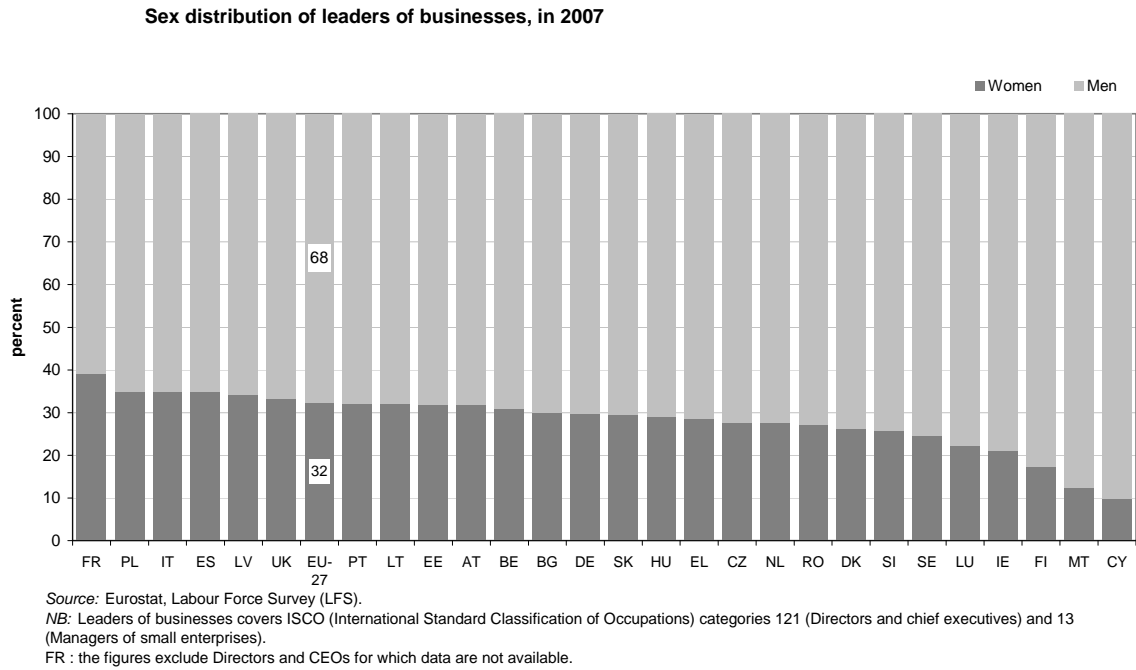
Figure 1. Harmonized Unemployment Rates by Gender, Germany and the European Union



Source: OECD Statistical Data, retrieved at

[http://stats.oecd.org/OECDStat\\_Metadata/ShowMetadata.ashx?Dataset=MEILABOUR&ShowOnWeb=true&Lang=en](http://stats.oecd.org/OECDStat_Metadata/ShowMetadata.ashx?Dataset=MEILABOUR&ShowOnWeb=true&Lang=en)

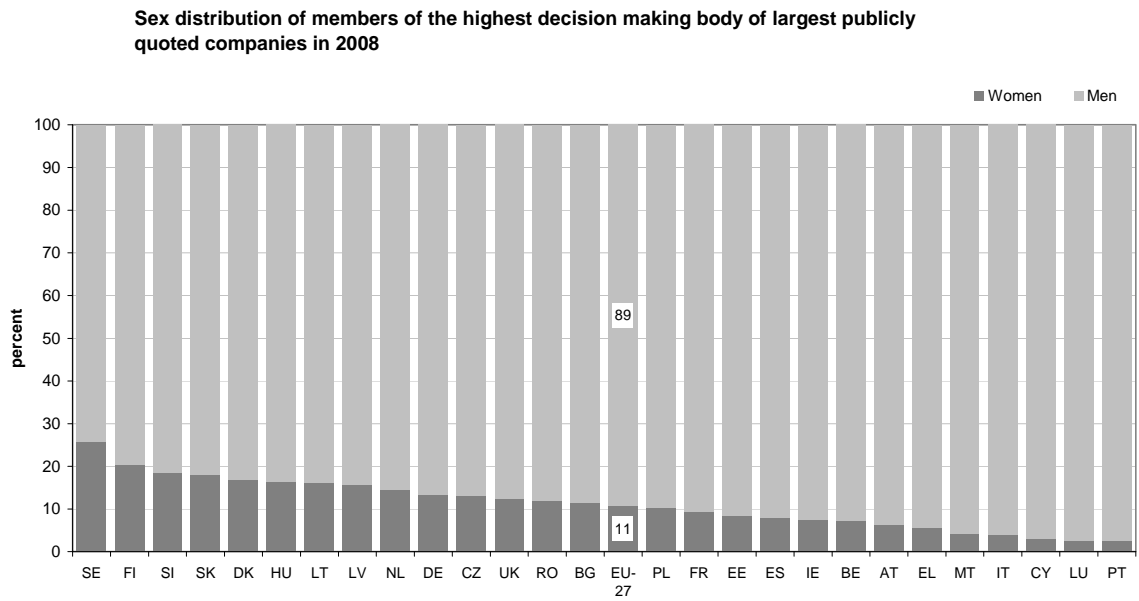
Figure 2. European Commission,



Source: Commission of the European Communities (2009, p. 13)



Figure 3. European Commission, the European Economic and Social Committee



Source: European Commission, Employment, Social affairs and Equal opportunities DG, Database on women and men in decision-making. Data have been collected in October 2008. The list of the largest publicly quoted companies is based for each country on current membership of blue-chip index. In countries for which the blue-chip index includes a small number of companies (for instance LU, SK), at least the 10 largest companies were covered.

Source: Commission of the European Communities (2009, p. 13)

Table 1. Descriptive Statistics

	Male		Female	
	Mean or percent	Standard Deviation	Mean or percent	Standard Deviation
Locus of control, 2005 (non-standardized, z-scores used in analyses)	39.05	7.13	38.11	6.94
Locus of control, 1999 (non-standardized, z-scores used in analyses)	12.93	3.40	13.51	3.28
Years in managerial/leadership positions	0.71	1.53	0.28	0.96
Years with unemployment	0.39	0.98	0.36	0.94
Openness to experience	13.18	3.45	13.68	3.64
Conscientiousness	17.90	2.69	18.18	2.53
Extraversion	14.12	3.29	14.77	3.36
Neuroticism	11.32	3.52	12.59	3.61
Agreeableness	15.78	2.97	16.80	2.77
Willingness to take risks in occupation	4.09	2.59	3.22	2.50
Age in 2001	43.05	9.09	42.90	9.13
Years of education, 2001	12.26	2.67	11.93	2.50
Foreigner, 2001	10%		10%	
East German	24%		24%	
Single	28%		27%	
Number of children in household, 2001	.78	1.02	.80	1.01
Additional Variables in Change in Locus of Control, 1999-2005				
Years in Market with no spell of unemployment or managerial/leadership position	3.36	2.04	3.10	2.03
Change to Single/Divorced from Married	4.9%		3.9%	
Change to Married from Single/Divorced	3.7%		4.5%	
Children in household in 2005, none in 2001	4.7%		3.2%	
Children in household in 2001, none in 2005	11.7%		11.7%	
Became German Citizen	0.8%		0.6%	
Number of cases	2719		2871	

Table 2. Maximum Likelihood Estimation of Three Equation Simultaneous Equation Model  
Locus of Control, Years with Unemployment, Years in Management

Variables.	Males			Females		
	Locus of control 2005	Years with unemployment	Years in managerial/ leadership positions	Locus of control 2005	Years with unemployment	Years in managerial/ leadership positions
<b>Endogenous Variables</b>						
Years with unemployment	-.097*** (.015)			-.062*** (.015)		
Years in management	.037*** (.009)			.049*** (.014)		
Locus of control 1999 (z-score)	.395*** (.016)	-.053** (.019)	.089*** (.028)	.380*** (.016)	-.063** (.019)	.020 (.020)
<b>Personality Traits</b>						
Openness to Experience	-.014** (.005)	.000 (.006)	.004 (.008)	-.002 (.004)	.005 (.005)	-.002 (.005)
Conscientiousness	.068*** (.006)	-.035*** (.007)	.014 (.010)	.047*** (.006)	-.002 (.007)	.022** (.007)
Extraversion	.039*** (.005)	.006 (.006)	-.007 (.009)	.028*** (.005)	-.002 (.005)	-.001 (.006)
Neuroticism	-.057*** (.005)	.034*** (.006)		-.056*** (.004)	.013** (.005)	
Agreeableness	.025*** (.005)	.006 (.007)	-.011 (.010)	.035*** (.006)	.001 (.007)	-.027*** (.007)
Risk taking in career			.026* (.011)			.027*** (.008)
Years of Education		-.073*** (.007)	.340*** (.010)		-.047*** (.007)	.172*** (.007)
<b>Demographic Variables</b>						
Foreigner	-.170*** (.051)	.213*** (.060)	.060 (.087)	-.272*** (.052)	.036 (.060)	.169*** (.061)
East Germany	-.031 (.035)	.445*** (.042)	-.335*** (.062)	-.043 (.034)	.549*** (.041)	.057 (.042)

Table 2. cont.  
 Maximum Likelihood Estimation of Three Equation Simultaneous Equation Model  
 Locus of Control, Years with Unemployment, Years in Management

	Males			Females		
Variables.	Locus of control 2005	Years with unemployment	Years in managerial /leadership positions	Locus of control 2005	Years with unemployment	Years in managerial/ leadership positions
Age	-.001 (.002)	.013*** (.002)	.002 (.003)	-.005*** (.002)	.006*** (.002)	-.001 (.002)
Single	-.070 (.036)	.208*** (.043)	-.054 (.062)	-.008 (.036)	.235*** (.042)	.104* (.043)
Number of children under age 17	.000 (.016)	.051** (.019)	.071** (.0211)	.012 (.017)	.082*** (.019)	-.087*** (.019)
Obs	2697			2793		
R-squared	.30	.12	.30	.25	.10	.18
Standard errors in parentheses * p < .05; ** p < .01; ***p < .001						

Table 3. OLS Results, Change in locus of control from 1999 to 2005

	Men	Women
	Standardized Beta	Standardized Beta
Locus of Control, 1999 (z-score)	-0.599 ***	-0.588 ***
Years in Managerial/Leadership Position	0.067 *	0.053 **
Years with Unemployment	-0.080 ***	-0.050 **
Years in Market with no spell of unemployment or managerial/leadership position	0.035	0.032
Openness to Experience	-0.064 ***	-0.012
Conscientiousness	0.180 ***	0.120 ***
Extraversion	0.107 ***	0.087 ***
Neuroticism	-0.173 ***	-0.185 ***
Agreeableness	0.065 ***	0.097 ***
Willingness to take risks	0.066 ***	0.032 *
Years of Education	0.043 *	0.038 *
Age	-0.239	-0.213
Age squared	0.262	0.174
East Germany	-0.012	-0.016
Change to Single/Divorced from Married	0.006	-0.025 a
Change to Married from Single/Divorced	-0.018	-0.003
Children in household in 2005, none in 2001	0.025	-0.006
Children in household in 2001, none in 2005	-0.010	-0.010
Became German Citizen	-0.015	-0.033 *
Number of Cases	2697	2793
R squared	0.364	0.343

\* p < .05; \*\* p < .01; \*\*\*p < .001, <sup>a</sup>p < .10

## ENDNOTES

<sup>i</sup> See for example, Lex Borghans, Angela Duckworth, James Heckman, and Bas ter Weel, 2008; Flavio Cunha and James Heckman, 2007; Flavio and Heckman, 2008; Heckman, Jora Stixrud and Sergio Urzua, 2006.

<sup>ii</sup> We attempted to estimate a four equation model that included years in market work as one of the endogenous model. This model specification would not converge in either of the two statistical programs that we used to test the model—Stata Version 9 and EQS Version 6.

<sup>iii</sup> Households with a net monthly income of approx. €4,000 and above.

<sup>iv</sup> For example Anne Busch & Elke Holst (2009); Holst (2009); Holst & Schimeta (2009); Holst (2006); Holst et al. (2006).

<sup>v</sup> Leaders amongst blue-collar workers (master craftsmen and foremen) were not included in the analysis. An independent analysis of this group is not possible, particularly amongst women, due to the low number of cases.

<sup>vi</sup> Classification took place on the basis of the question "Does the organisation for which you work form part of the civil service?" "Yes" or "No".

<sup>vii</sup> The question in the SOEP is: "Now a completely different subject: our every-day actions are influenced by our basic belief. There is very limited scientific knowledge available on this topic. Below are different qualities that a person can have. You will probably find that some apply to you perfectly and that some do not apply to you at all. With others, you may be somewhere in between. Please answer according to the following scale: "I see myself as someone who..." The respondents were given 15 adjectives or statements to evaluate on a scale of 1: Does not apply to me at all to up to 7: Applies to me perfectly.

<sup>viii</sup> We used standard factor analyses techniques with varimax rotation, standard eigenvalue criteria, total variability explained and visual examination of the screen plots (Craig Mertler and Rachel Vannatta, 2005)