ERASMUS UNIVERSITY ROTTERDAM
Erasmus School of Economics

Master Thesis (Economics of Markets and Organisations)

CULTURE AND TEAMWORK

To what extent does (national) culture correlate with the existence of teamwork?

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Date final version: December 2, 2019

Abstract

In this thesis, I examine whether culture correlates with the presence of teamwork in European countries. Using Hofstede's national culture dimensions, individualism vs collectivism, masculinity vs femininity and the power distance index, I find that individualism is negatively correlated with the presence of teamwork for a sample of over 25.000 establishments. These effects are robust to controls for sector composition and firm size and to an alternative country-level analysis. Furthermore, I have found that there is no stronger link between culture and the presence of teamwork for independent establishments, compared to non-independent establishment. The finding that national culture correlates with the existence of teamwork has important implications for multinational managers and expatriates.

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I. Introduction

Globalization has contributed to an emerging economic interdependence of national economies across the globe. Business managers are likely to interact with stakeholders, customers and employees from outside the country of the companies' origin. This require businesses to adapt their strategies and actions to other national cultures. An important internal business choice is teamwork. In today's economy, teamwork is becoming more essential since most jobs involve interacting with other workers. In the past, most jobs consisted of repetitive manufacturing tasks, which required almost no communication. Nowadays, these repetitive tasks are being taken over by technology.

In this paper, I will examine whether there is a correlation or not between the prevalence of teamwork and national culture in European countries. If there exist a correlation between teamwork and national culture, workers with differential cultural backgrounds might encounter difficulties. Some workers might not be used to teamwork or might even feel uncomfortable in teams. Another possibility is that workers of some cultures would prefer teamwork, instead of a strict hierarchy and a separation of tasks, depending on the type of national culture. The findings of this paper may be used by multinational managers to reduce conflicts in the workplace or to enhance employee motivation and productivity. These are all ways to improve organizational performance.

There have been multinationals who underestimated the impact of national culture on human resource practices. For example, Wal-Mart left the retailing market in Germany in 2006 after ten years, because it was not able to reach a competitive advantage. Wal-Mart used the same actions and strategies as in the United States, because they have proven to be highly successful in North-America. However, the autonomous actions caused discomfort by the German employees and customers, leading to a quick exit in the German retailing market (Christopherson, 2007).

Another costly problem of multinationals who do business in other countries is the high level of failed expatriates. Former researcher has shown that 25 to 40 percent of the expatriates' assignments are unsuccessful (Forster, 1994; Sanchez et al., 2000). When expatriates move to another country, they bring behaviors and values of their own national culture. A failure of cultural adaption can have big consequences in terms of monetary costs, a bad image of the organization, a reduction in working performance and a diminished morale of the employees (Salleh and Koh, 2013).

I will use the dimensions of national culture, which are defined by Hofstede (1980), to explicate culture. Hofstede's cultural dimensions provide an excellent opportunity to point out the similarities and differences between different nations. The third wave of the European Company Survey is utilized to examine the correlation between national culture and the presence of teamwork (Eurofound, 2015). The third wave of Eurofound's European Company Survey was conducted in 2013. It surveyed employee representatives in 6,800 establishments and managers responsible in more than 24,000 establishments in 32 European countries. Since I use a cross-sectional dataset and since I lack a credible identification strategy, I am not able to make any causal inferences.

The research question that I will answer in this paper is:

"To what extent does (national) culture correlate with the existence of teamwork?"

In this research, a team is expounded as "a group of people working together with a shared responsibility for the execution of allocated tasks, within or across units of the establishment" (Eurofound, 2015, p. 11). Culture is commonly defined as a bundle of multiple values, norms and beliefs that serves as a guiding mechanism in people their lives (Hofstede 1980; Schwartz 1994). National culture is an important driving force of human behavior. In this study, I use three of Hofstede's cultural dimensions: individualism and collectivism, masculinity and femininity, and the power index as a proxy for national culture. I hypothesize that a high level of collectivism is positively correlated with the presence of teamwork, because the caring culture of 'collectivistic' countries makes the free rider problem less severe. Contrary, I expect that in countries with a more 'masculine' culture teamwork is used less often. Due to the competitive nature of 'masculine' cultures, masculine cultures do not avoid conflicts in a team and prefer maximum differentiation. Next, I hypothesize that low power distance index cultures make use of teams more often, because open and direct communication is encouraged. Lastly, I expect that the personal trait altruism correlates positively with the existence of teamwork, as mutual altruism amongst employees (partially) eliminates the free-rider problem.

The impact of culture should not be underestimated. However, there has not been much research about the influence of national culture on teamwork. The reason for this is that both national culture and organizational practices are hard to capture. Previous research mainly focused on the effects of national culture on teamwork in a single profession or industry (Chwiałkowska, 2012; Fong & Lung, 2007; Helmreich & Merrit, 2017; Wright & Drewery, 2006). Overall, they have shown that national culture influences group cohesion and the success of teamwork. However, none of these researchers primarily focused on the cultural dimensions. To my knowledge, I am one of the first to empirically examine the relationship between the presence of teamwork and national culture in a wide variety of sectors.

I have found that there is a significant negative correlation between individualism and the presence of teamwork. The power distance index is also significantly correlated with the presence of teamwork when the analysis is carried out at the establishment level, but becomes insignificant when the analysis is carried out at the country level. Furthermore, I have found that there is no stronger link between the culture and the presence of teamwork for independent establishments, compared to non-independent establishment. In fact, my results suggest that the opposite is the case.

The remainder of this thesis is split in separate parts. First, I present the theoretical framework and the corresponding hypotheses. Second I will discuss the data section in which I describe the sample and the variables. In the next part I will specify my model. Thereafter I will present the results and the robustness check. Finally, I base my conclusion on the results of my research and I give recommendations for further research.

II. Theoretical framework & the hypotheses development

Teamwork

The definition of teamwork that is used in this paper is "a group of people working together with a shared responsibility for the execution of allocated tasks, within or across units of the establishment" (Eurofound, 2015, p. 11). Working in teams can be beneficial due to synergy effects. Teams share a common vision or goal, whereby teams can accomplish more than the sum of individuals separately. Individuals are often specialized and therefore do not have a broad set of skills, experience and knowledge (Scarnati, 2001). Team members can complement each other by filling the other's knowledge and skill gaps.

Successful teamwork heavily relies on monitoring, adaptability, back up behavior, team orientation and leadership (Salas et al., 2005). Members of a team need to adapt their own effort to the total effort of the team in order to be successful (Brannick & Prince, 1997; Dickinson & McIntyre, 1997). A potential danger to successful teamwork is free-riding. Free-riding occurs because a team member's benefits are dependent on the effort of the other team members. A free rider contributes nothing or little towards the costs of a good, while enjoying the benefits of the good as any other member of a team (Kim & Walker, 1984). A classic example of the free-rider problem is the "Tragedy of the Commons". This economic theory shows that when people don't take the interest of the group or society as a whole into account, or in other words; behave solely in their own interest, they end up with a sub-optimal outcome (Hardin, 1968). A solution to the free-riding problem is monitoring. According to the principal agent theory, an agent's effort will be higher and the free-riding problem will be smaller when a company applies a tight monitoring system (Eisenhardt, 1989). However, there are also costs associated with monitoring. Monitoring will only prevail in companies in which the benefits of monitoring exceed the costs of the monitoring system. Monitoring costs are sector related, because they heavily depend of the type of work of the agent. This is one of the reasons that teamwork is more prevalent in some sectors. For example, monitoring is less costly in manufacturing firms than in service firms, simply because the output and the quality of the output is easier visible. Another reason is that teamwork is simply impossible or hard to achieve in some sectors, due to the nature of work.

National culture

Professional cultures can cause difficulties in teamwork. Hall (2005) has pointed out that inter-professional teamwork in the health care sector is often unsuccessful, because each profession has their own culture with different attitudes, beliefs and customs. National culture differences have an even bigger impact on team interactions than professional culture differences (Helmreich & Merritt, 2017). A national culture is a set of expected behaviors, customs, norms, values and beliefs which are shared by a population of a country (Hofstede 1980; Schwartz 1994). This set has an impact on the relationship between workers (Bae et al., 2012). In this regard, a nation's culture can determine the suitability of firms' choice for teamwork in the nation.

Hofstede has developed a model which is able to identify the effects of culture on companies. Hofstede's model initially contained four cultural dimensions: the power distance index, individualism and collectivism, masculinity and femininity and the power distance index (Hofstede, 1980). Later, Hofstede has added a fifth cultural dimension in his model. This cultural dimension is called long term orientation (Hofstede et al., 1991). Even though Hofstede's model has some limitations, researchers concluded that Hofstede's cultural dimensions are still relevant for cross-cultural research (Kirkman et al., 2006).

In this study, I use the three cultural dimensions; individualism and collectivism (IND), masculinity and femininity (MAS) and power distance index (PD) as a proxy for national culture. Next, I will explain each of the dimension separately and form my hypotheses.

Individualism and collectivism

The first cultural dimension I discuss is the dimension individualism and collectivism. Individualistic people are motivated by personal benefits. An individualist only takes care of himself and his relatives, while a collectivist focuses on personal relationship and shared team goals. Inhabitants of collectivistic countries can be afraid of rejections, whereas inhabitants of individualistic countries may suffer from loneliness. An individualist does not want to rely on other persons and promotes individual achievements. Relying on other persons can even be seen as shameful for them (Hofstede, Hofstede, & Minkov, 1991).

The level of individualism is not equally distributed in Europe (see Figure 1). Overall, Western European countries are more individualistic than Eastern European countries. This may have important implications for organizations. Because individualists particularly care about individual achievements and gains, individualists will allocate their effort to tasks that will satisfy their personal interests (Wagner & Moch, 1986). In contrast to individualists, collectivists value cooperation and are more likely to allocate effort to the shared goals (Wagner, 1995). In other words, individualistic members of a group have higher incentives to free-ride as their utility is solely based on their personal interest, while collectivistic group members care about the group. Following this, I have set up the following hypothesis:

H1: Individualism does correlate negatively with the existence of teamwork.

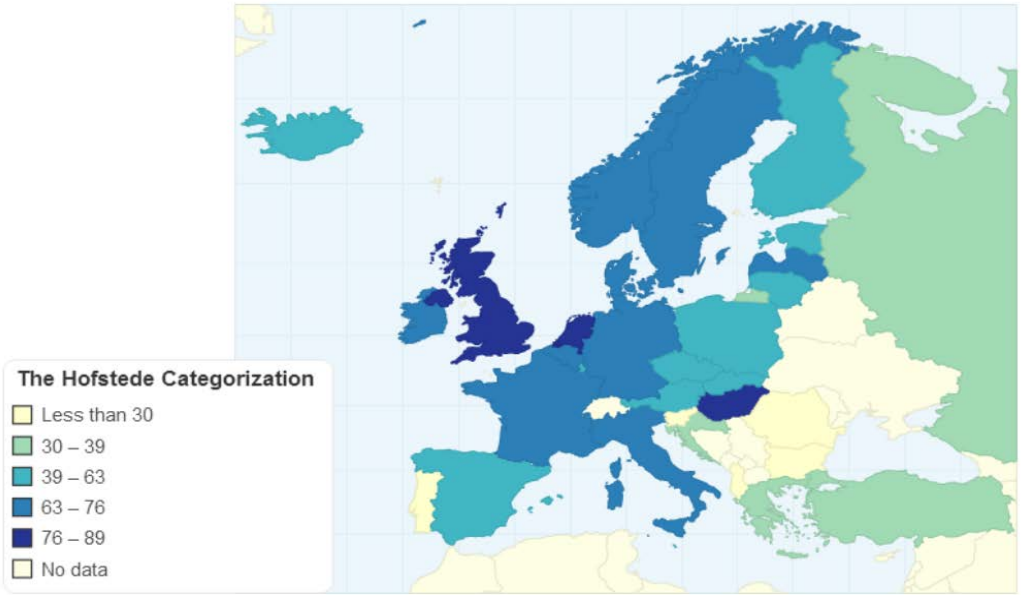

Figure 1 Individualism (high end) and collectivism (low end) in Europe

Masculinity and femininity

The second cultural dimension is called masculinity and femininity. Masculine cultures are oriented towards the goal, while feminine cultures value the process towards the goal. Masculine cultures are characterized by material rewards, a preference for achievement and a highly competitive society. On the other hand, feminine cultures value cooperation, a high quality of life and equality. Masculine cultures are called tough, because winning, status and standing are seen as important. Contrary, feminine cultures are called soft since they believe that the less successful should be helped (Hofstede, Hofstede, & Minkov, 2010).

Central and Southern European countries are more masculine than Northern and Eastern European countries, as shown in Figure 2. Masculine cultures do not avoid conflicts in a group. Furthermore, they value maximum differentiation between gender and race. Hofstede (1980) showed that masculinity highly negatively correlates to the willingness to spend money on aid, or in other words; to help others out. I believe that these masculine values are not a fertile ground for successful teamwork. That is why I have set up the following hypothesis:

H2: Masculinity does correlate negatively with the existence of teamwork.

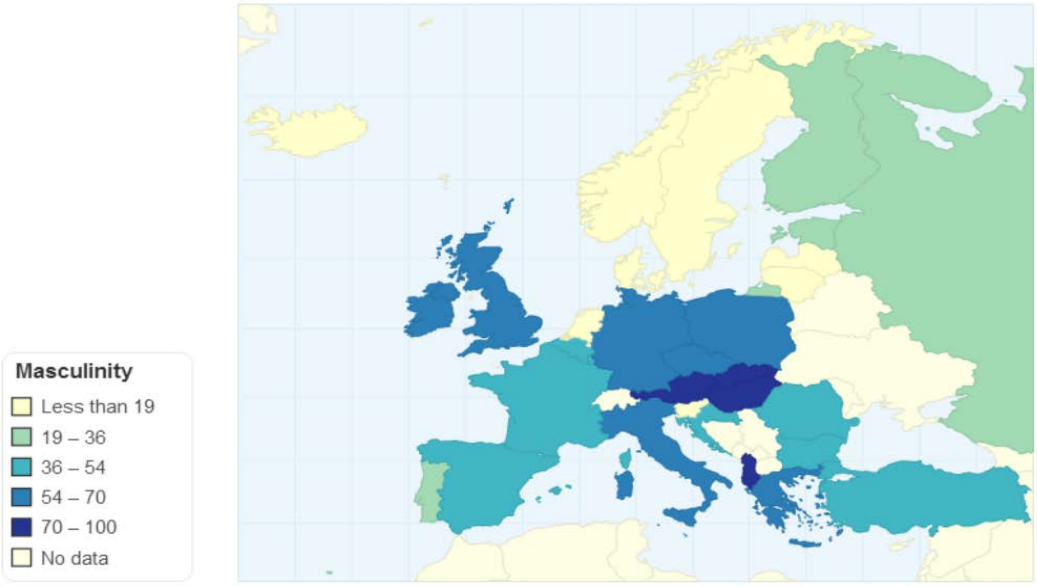

Figure 2 Masculinity (high end) and femininity (low end) in Europe

Power distance index

The next cultural dimension I use is called the power distance index. This index deals with the degree to which inhabitants of a country accept and expect social inequality. On corporate level, this index determines the corporate hierarchy. In cultures with a high power distance index, decision power is centralized. Workers accept the orders and decisions made by managers without questioning. In societies with a lower power index, workers communicate fearlessly with their manager. Choices are made democratically, as everyone is encouraged to express their thoughts (Hofstede, Hofstede, & Minkov, 2010).

Northern and Central European countries are less relaxed when it comes to accepting social inequality compared to Southern and Eastern European countries (see Figure 3). Teamwork plays an important role in these cultures, as many workers are involved in the choices made by the company. A low level of power distance encourages direct and open communication and makes teamwork easier (Schneider & Barsoux, 2003). The success of teamwork heavily relies on the participation of the team members. When team members feel uncomfortable in expressing their thoughts and feelings, the synergy benefits of teamwork will decline. That is why I believe that businesses in high power distance cultures make use of teamwork less often. Following this reasoning, I have set up the following hypothesis:

H3: The power distance index correlates negatively with the existence of teamwork.

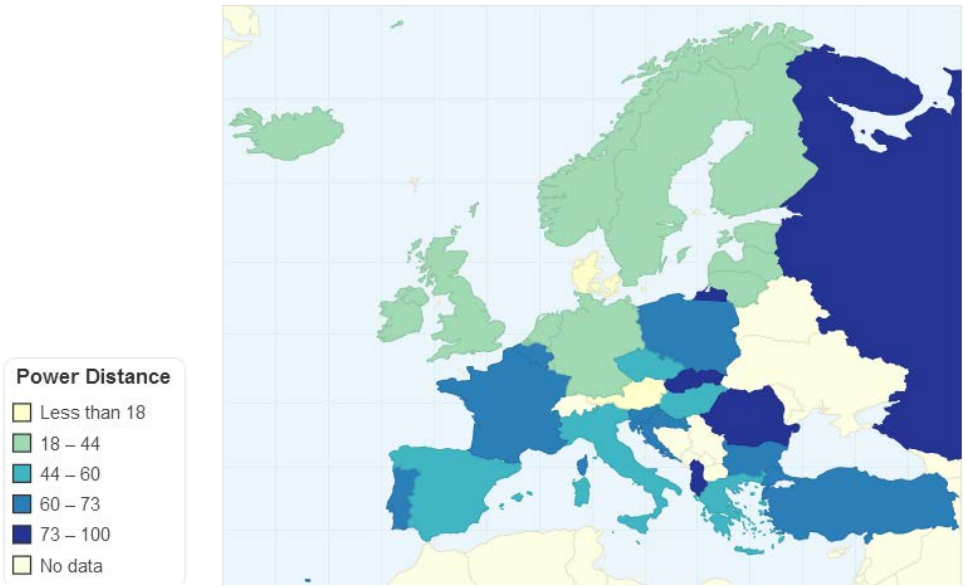

Figure 3 The power distance index in Europe

Personal traits

Not only cultural traits are related to teamwork, but also personal traits. Assigning personal traits to the existence of teamwork is difficult, since these traits are hard to capture. However, they should not be neglected. Former research showed that individual differences in conscientiousness and cognitive ability are associated with team performance (Kickul & Neuman, 2000). Yet, I believe that altruism is the personal trait that impacts the emergence of teams the most. Altruistic persons derive intrinsic motivation from trying to increase the intrinsic motivation of someone else, without the expectation of getting something in return (Smith, 1981). Altruism goes against the belief that all humans are only interested in themselves. A classic example of altruism is the "Dictator Game" (Eckel & Grossman, 1996). The "Dictator Game" consists of 2 players; the dictator and the second player. The dictator moves first and can choose how to split a certain sum of money (or another reward) between himself and the second player. The second player can only accept or reject the offer, but cannot determine how the prize will be split. This game is seen as a famous example of altruism, as most dictators choose to send some money to the other player, instead of keeping the entire prize to themselves. This goes against the classic economic view. This view predicts that the dictator will keep all the money for himself, since he only cares about his own welfare.

When team-related performance pay is absent, employees invest too little in social relationships with their co-workers (Dur & Sol, 2010). Employees might rationally choose to become altruistic towards other co-workers when workers are paid according to (a mix of individual incentives and) team-based performance pay. Mutual altruistic feelings amongst employees is desirable for employees themselves, because it (partially) eliminates the free-riding problem which is inherent in team related performance pay (Rotemberg, 1994). Furthermore, altruistic feelings amongst employees is desirable for employers, as it allows employers to retain its workers at a lower wage due to higher job satisfaction (Borzaga & Depedri, 2005).

The European Company Survey does not include any information about the level of altruism of the employees in each establishment. That is why I use the female/male ratio in companies as a proxy for the level of altruism. Females are, on overall, more altruistic than men are (Eckel & Grossman, 1998; Dietz et al., 2002). Since females are more altruistic than men and since I believe that there is a positive relationship between altruism and teamwork, I have set up the following hypothesis:

H4: The female/male ratio in a company does correlate positively with the existence of teamwork.

Next I will discuss the data section. Figure 4 provides an overview of the expected correlations with the existence of teamwork.

Figure 4 The signs of the hypothesized correlations with the existence of teamwork

III. Data

Data source

The cross-sectional data used for the empirical analysis has been provided by Eurofound. The European Company Survey is undertaken by telephone. The interviews take place in the language(s) of the European country of the respondent. The human resource managers and (when possible) the employee representatives are interviewed in this survey. The third wave of the European Company Survey is used to examine the correlation between national culture (and altruism) and teamwork (Eurofound, 2015). The aim of the survey is to gain insight in the policies of the European companies. The main focus of the survey was on performance, innovation, organizational design, human resource practices and employee involvement. The survey was conducted in the spring of 2013.

The sample of the European Company Survey consists of over 27,000 establishments in 32 European countries (see Table 1). However, there are no cultural dimensions available for Cyprus, Macedonia and Montenegro. For this reason, these three countries are dropped from the dataset. Therefore, the final sample that I use in this analysis consists of 25,838 countries.

Table 1 European Company Survey 3th wave

Country	Amount of responses	Country	Amount of responses	Country	Amount of responses
Austria	972	**Greece**	1,001	**Poland**	1,436
Belgium	971	**Hungary**	1,016	**Portugal**	1,002
Bulgaria	504	**Iceland**	451	**Romania**	503
Croatia	450	**Ireland**	488	**Slovakia**	496
Czechia	987	**Italy**	1,528	**Slovenia**	498
Denmark	981	**Latvia**	505	**Spain**	1,474
Estonia	497	**Lithuania**	494	**Sweden**	997
Finland	992	**Luxembourg**	505	**Turkey**	1,367
France	1,474	**Malta**	280	**UK**	1,501
Germany	1,462	**Netherlands**	1,010		
				Total	**25,838**

Teamwork

The dependent variable in the analysis is the existence of teamwork in an establishment. The definition of teamwork that is used in this paper is "a group of people working together with a shared responsibility for the execution of allocated tasks, within or across units of the establishment" (Eurofound, 2015, p. 11). This definition was first explained by the interviewer to the manager responsible for human resources in the establishment. Next the interviewer asked the following question: "Do you have any teams fitting this definition in your establishment?". The interviewee could provide the following answers; "Yes", "No, "Don't know" and "Don't want to say". All the interviewees who did not know the answer or who did not want to answer, are removed from the dataset. This data exclusion will not have an impact on the results, as only 0,4% of the entire sample did not answer the question with "Yes" or "No". In the analysis, the dependent dummy variable is called Teamwork. The value 1 means that there exist teamwork in the establishment, while the value 0 means that there is no teamwork in the establishment.

The presence of teamwork is not homogeneous across countries. In Austria there exists teamwork in 91.24% of the establishments, while there is teamwork in only 62.28% of the Turkish establishments (see Figure 5). Table 8 in the Appendix provides an exact overview of the presence of teamwork for each European country.

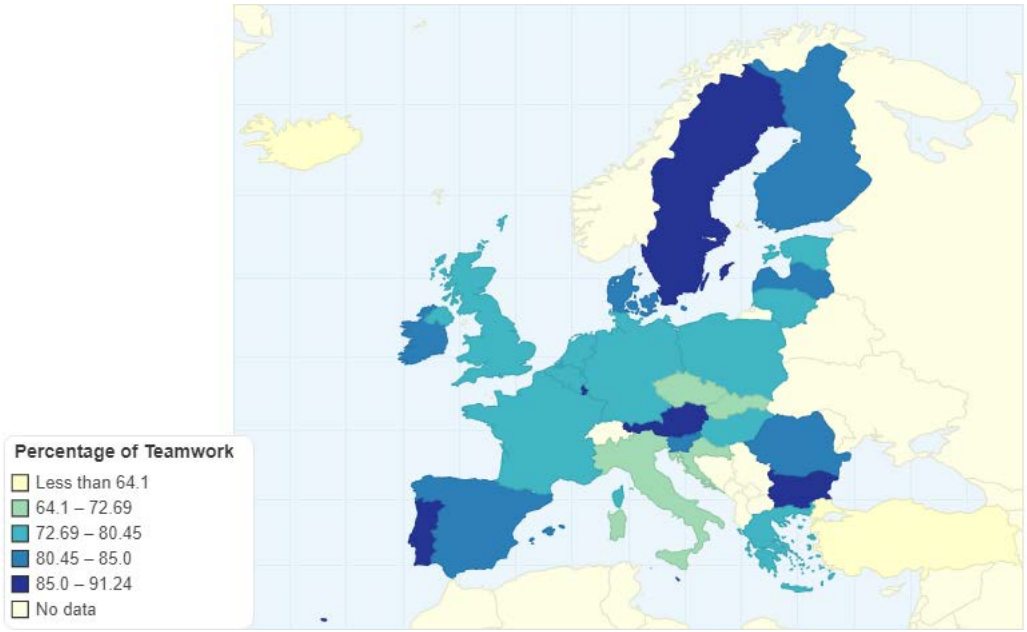

Figure 5 Presence of teamwork in Europe

National culture

The data for the cultural dimensions are coming from the Hofstede Insights. The cultural dimensions data is based on the research carried out by Geert Hofstede (2001). The first cultural dimension scores are based on a sizeable dataset within a multicultural company called International Business Machines Corporation. Hofstede has extended his analysis to other nations by using 27 different techniques. In this study, I use the three cultural dimensions; individualism and collectivism (IND), masculinity and femininity (MAS) and power distance index (PD) as a proxy for national culture. The definitions of these cultural dimensions are discussed in detail in the theoretical framework and the hypotheses development section. The exact cultural dimension scores of each country can be found in Table 2.

Table 2 Cultural dimension scores across European countries

Country	Individualism	Masculinity	Power distance
Austria	55	79	11
Belgium	75	54	65
Bulgaria	30	40	70
Croatia	33	40	73
Czechia	58	57	57
Denmark	74	16	18
Estonia	60	30	40
Finland	63	26	33
France	71	43	68
Germany	67	66	35
Greece	35	57	60
Hungary	80	88	46
Iceland	60	10	30
Ireland	70	68	28
Italy	76	70	50
Latvia	70	9	44
Lithuania	60	19	42
Luxembourg	60	50	40
Malta	59	47	56
Netherlands	80	14	38
Poland	60	64	68
Portugal	27	31	63
Romania	30	42	90
Slovakia	52	100	100
Slovenia	27	19	71
Spain	51	42	57
Sweden	71	5	31
Turkey	37	45	66
UK	89	66	35

In this part I give more insight into the relationship between the three cultural dimensions. Masculinity is significantly positively correlated with individualism (see Figure 6). However, overall the correlation is weak. Figure 6 shows that the scatterplot is broad and that some countries are located far away from the line of best fit, explaining the weak correlation of 0.127.

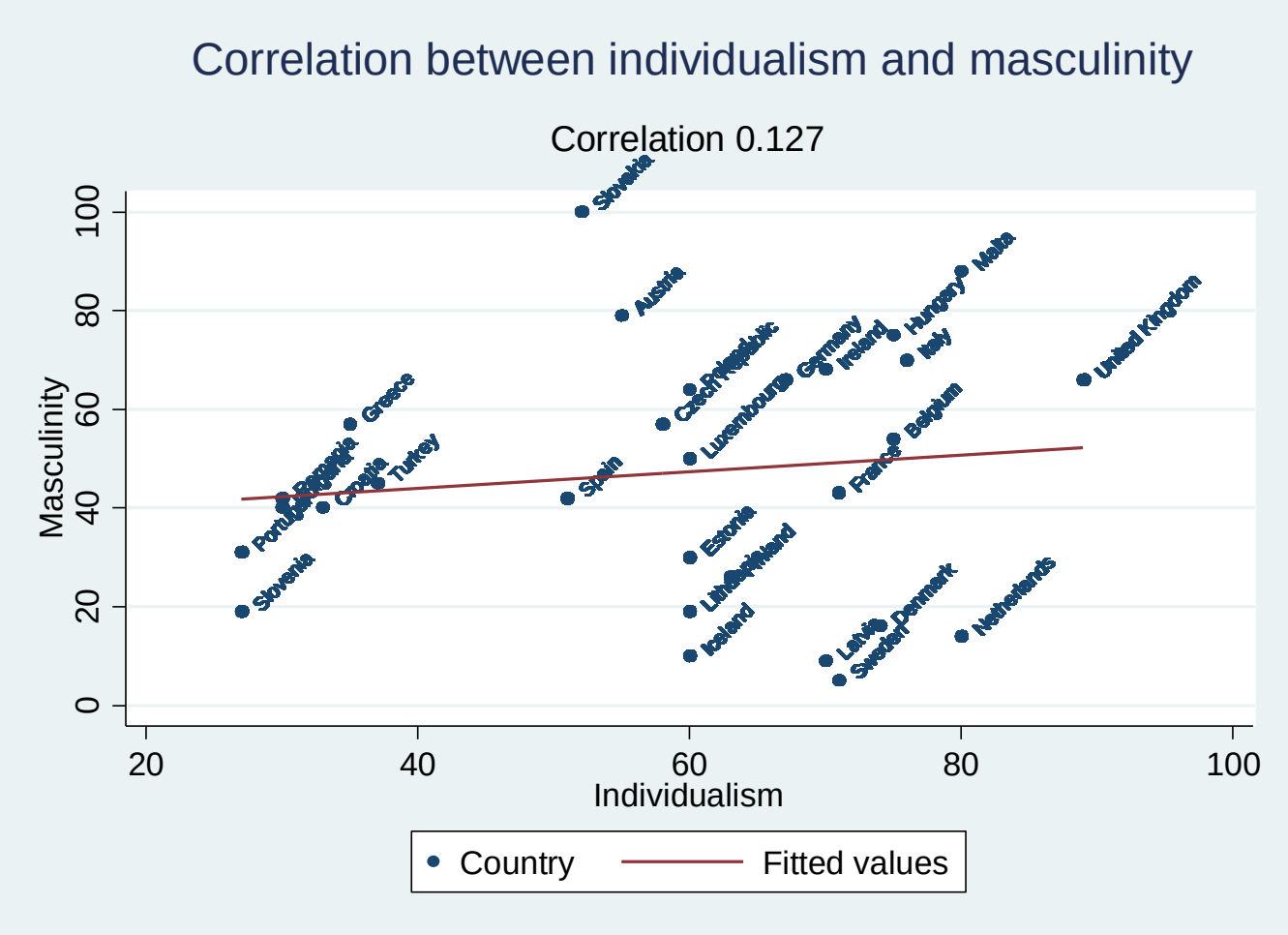

Figure 6 Correlation between individualism and masculinity

Individualism has a strong negative correlation with power distance (see Figure 7). This indicates that individualistic countries often score low on the power distance index and that collectivistic countries score high on the power distance index. Compared to Figure 6, the scatter dots are located closer to each other, explaining the stronger correlation of -0.504.

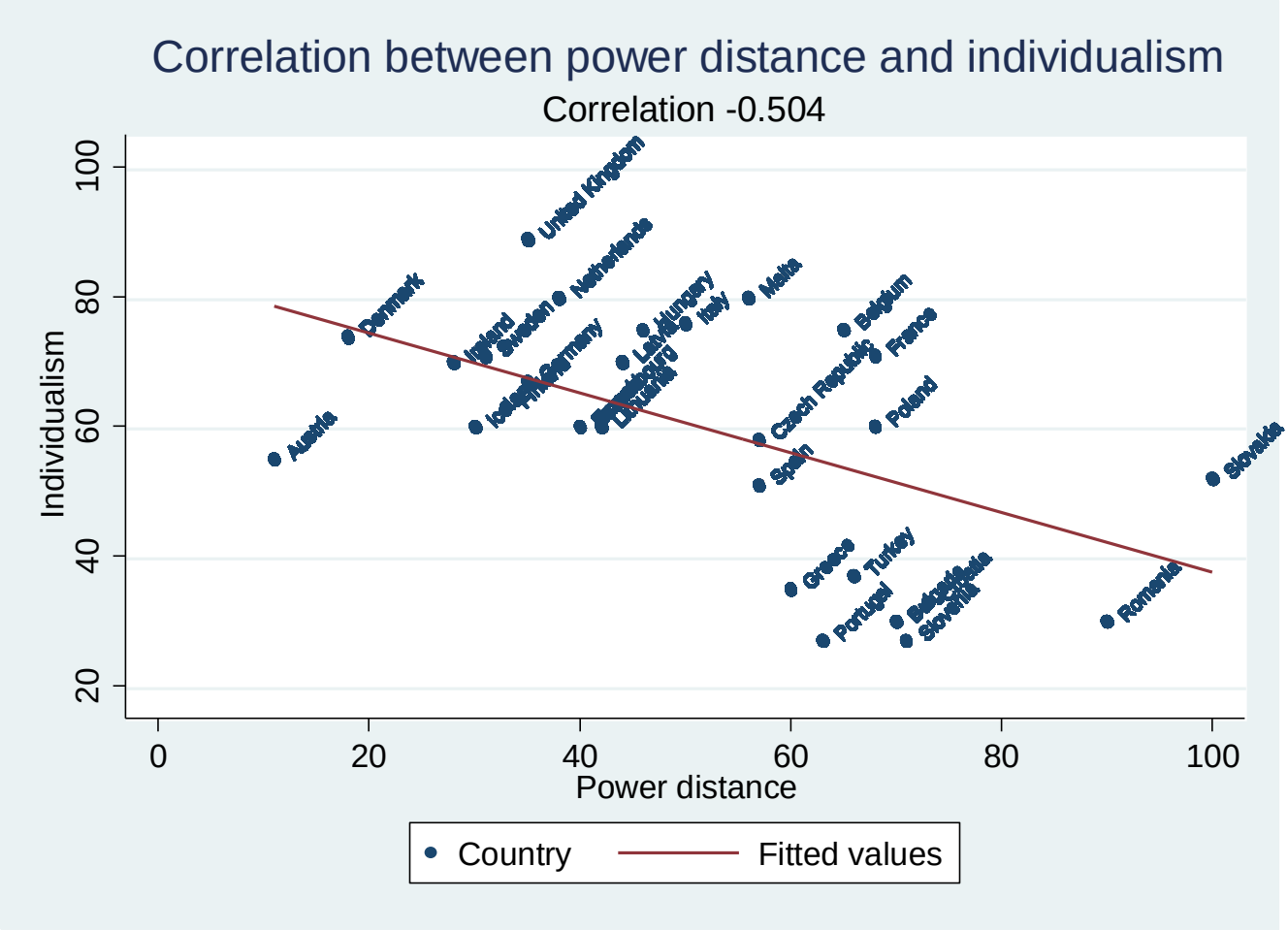

Figure 7 Correlation between the power distance and individualism

Furthermore, masculinity correlates positively with the power distance index (see Figure 8). This correlation is significant, but again weak. The scatterplot looks relatively similar to the scatterplot in Figure 6. There is barely no pattern to where the data points lie. Therefore the correlation of 0.174 is considered as weak. Table 9 in the Appendix shows the Pearson correlation matrix and the corresponding significance levels of the cultural dimensions.

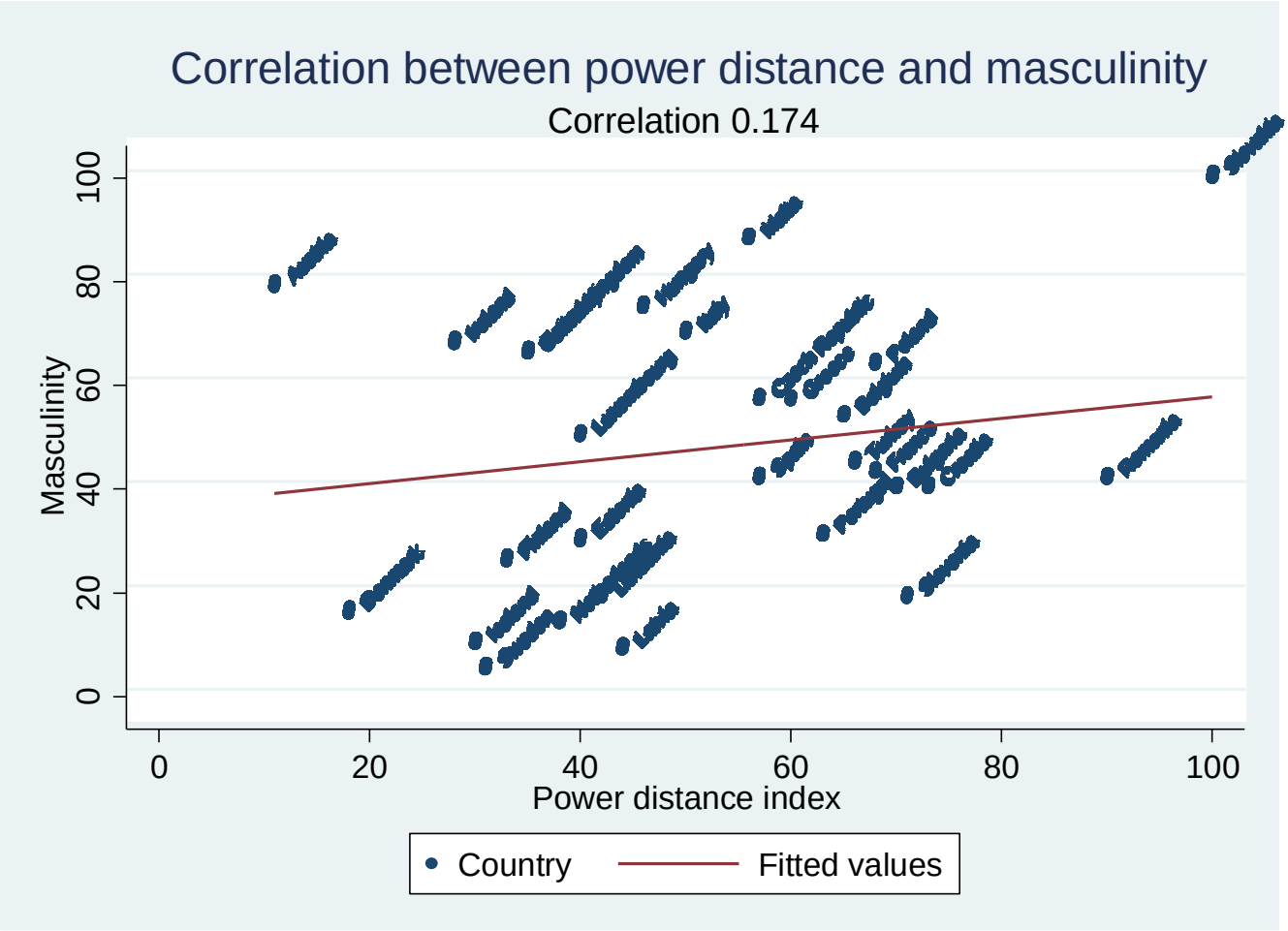

Figure 8 Correlation between the power distance index and masculinity

Female/male ratio

The last independent variable is called the female/male ratio. This ratio is used as a proxy for altruism, as discussed in the in the theoretical framework and the hypotheses development section. The respondents were asked in the questionnaire if they could provide the percentage of employees who are female in the establishment. The female/male ratio variable is not an exact percentage, but is an ordinal variable that can take on a value between 1 and 5. Originally there were 7 answer possibilities. As only 2% of the interviewees responded that there are no females working in the establishment, this response was merged with the answer possibility "20% or less of the people who work in the establishment are female". Furthermore, as only 0,8% of the respondents answered that all the people who work in the establishment are female, this answer was taken together with the answer "80% or more of the employees in the establishment are female".

If the female/male ratio takes on the value 1 this means that 20% or less of the people who work in the establishment are female. When the percentage of female employees who are working in the establishment is between the 20% and 40%, the variables takes on the value 2. The female/male ratio variable takes on the value 3 when the percentage of female employees is between the 40% and 60%. The value 4 is equal to a female/male ratio of between 60% and 80%, while the value 5 means that the female/male ratio in an establishment is between 80% and 100%. All the interviewees which did not know the answer or which did not want to answer, are removed from the dataset. Due to the large amount of answer possibilities, the female/male ratio variable is incorporated as a continuous variable in the analysis. In most establishments, the female/male ratio is low. The frequency of responses decreases in the female/male ratio (see Table 3). In 33.06% of the establishments the female/male ratio is 20% or lower, while in only 8.54% of the establishments the female/male ratio is 80% or higher.

Table 3 The distribution of the female/male ratio

Female/male ratio	Frequency	Percentage
0% to 20%	8,418	33.06%
20% to 40%	5,909	23.21%
40% to 60%	5,576	21.90%
60% to 80%	3,383	13.29%
80% to 100%	2,173	8.54%
Total	**26,721**	**100%**

Sector

The existence of teamwork is not only determined by (national) culture, but also by teamwork possibilities. In some sectors, teamwork is less common than in other sectors. For example, teamwork is not so usual in the communication sector, while some service sectors heavily rely on teamwork. I use the latest revision of the NACE to be able to subdivide the establishments of the interviewees to six different sectors. The NACE is a classification of economic activities introduced by the European Union, which allows me to compare companies across European countries. I include the sector variable in the analysis as a control variable.

Figure 9 gives an overview of the presence of teamwork across industries. Teamwork is the least common in the transport and communication sector (73%), while it is the most common in the other service sector (83%). The transport and communication sector includes information service activities, telecommunications, postal activities and all kinds of transportation activities.

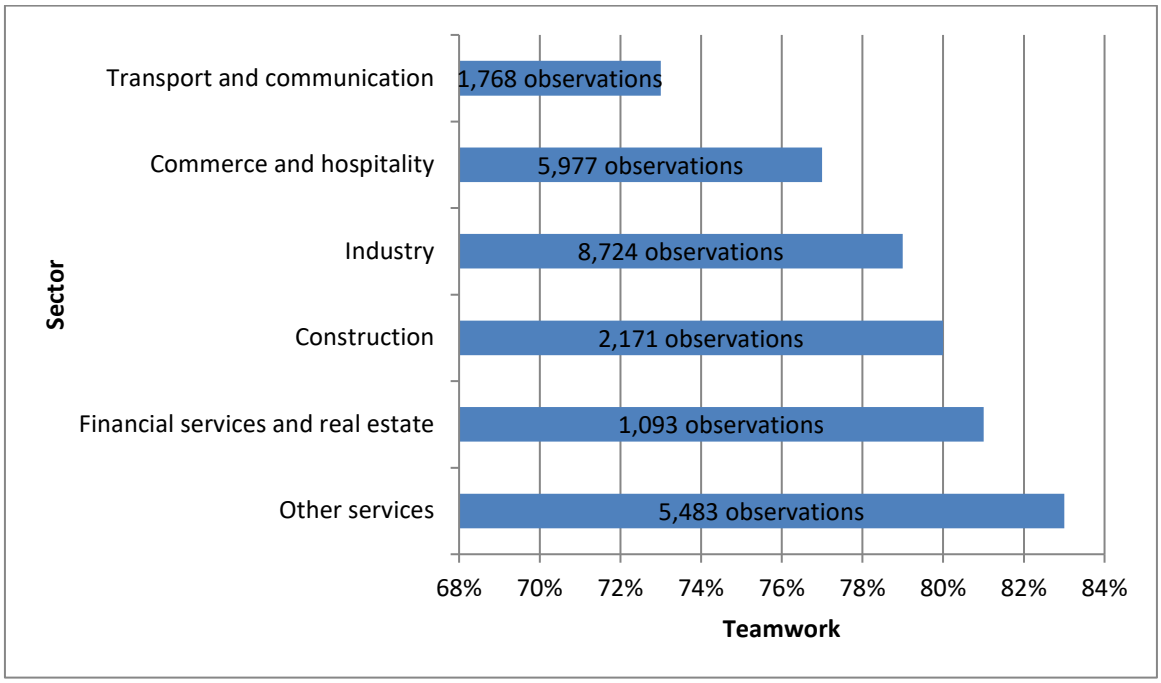

Figure 9 The presence of teamwork across industries

Establishment size

The final control variable is the establishment size. I include this variable in the analysis, because the presence of teamwork is obviously positively correlated with the establishment size. If you have more employees in your company, the chance of having at least a few employees working in a team increases. Unfortunately, the database of the 3th wave of the European Company Survey does not include the exact number of employees in the establishment, but an estimate of the amount of employees by the interviewee. This estimate can be between the 10 and 49 employees, between the 50 and 249 employees and 250 employees or more. There are no establishments with 9 employees or less. Those establishments are not invited to take part in the European Company Survey, as the requirement is to have at least 10 employees.

Teamwork is present at 90% of the establishments with at least 250 employees (see Figure 10), while there is only teamwork present in 83% of the establishments with 50 to 249 employees. As expected, small establishments with between 10 and 49 employees are involved in teamwork in 72% of the cases.

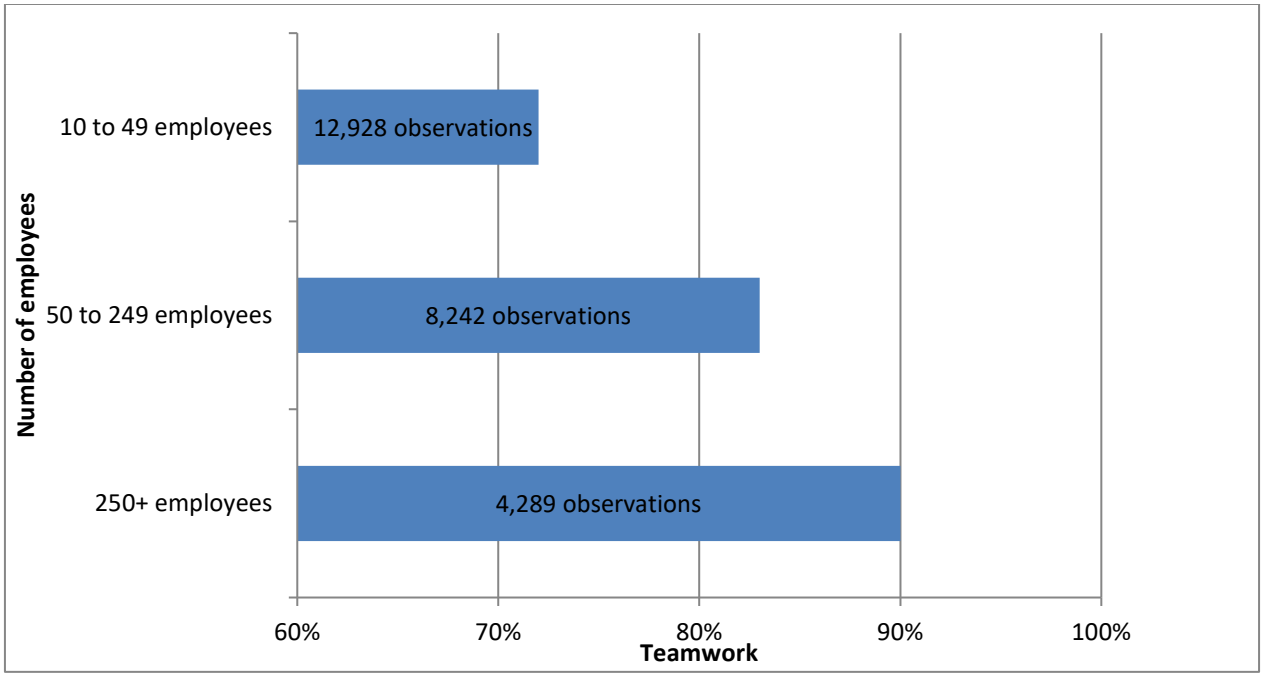

Figure 10 The presence of teamwork across establishment size

IV. Methodology

The method I will use to analyze to what extent (national) culture correlates with the presence of teamwork is a logistic regression. I will test if (national) culture significantly correlates with the presence of teamwork, in order to be able to reject or accept my hypotheses.

I will use data on establishment level. With this regression, I will calculate the probability of the presence of teamwork in each establishment by including the variables which are explained in the data section. For each establishment in a certain country, I have used the same cultural dimension score which belong to that certain country. The regression equation I will use is equal to:

$$Teamwork = \beta_0 + \beta_1 * Individualism + \beta_2 * Masculinity + \beta_3 * Power\ distance + \beta_4 * \frac{Female}{male} ratio + \beta_5 * Sector + \beta_6 * Size + \varepsilon$$

The standard errors will be clustered by sectors within countries. Teamwork choices might not solely be determined by culture, but also by the availability and the quality of labor. Furthermore, it might depend on the choices of direct competitors and technological developments within each sector. Since the final dataset consists of 29 countries and since establishments are divided into six different sectors, there are 174 (29 x 6) clusters in total.

Some independent variables seemed to be (weakly) correlated with each other. This can cause problems in terms of multicollinearity. Multicollinearity occurs when an independent variable in a multiple regression analysis is substantially correlated with another independent variable in the analysis. If so, then the coefficient of the independent variable changes inconsistently to small model and data changes. To see if multicollinearity is a problem, I use the variance inflation factor (VIF). The VIF index shows how much the variance of an independent variable increases due to multicollinearity. When the variance inflation factor is bigger than 4, I assume that there is a multicollinearity problem (Miles & Shevlin, 2001).

Headquarters and subsidiary

The European Company Survey dataset distinguishes single independent companies or organizations from subsidiary sites or headquarters. When a firm operates in multiple countries, both the culture of the country and the culture of the company's headquarter play a role in the organizational design (Drogendijk & Holm, 2015). Unfortunately, the dataset does not include data about the location of the company's headquarter or the subsidiary of the establishment of the interviewee. That is why I am unable to include cultural dimension variables of the country of the company's headquarter or subsidiary from non-independent establishments in the regression.

To see if the role of culture differs for independent companies, non-independent headquarters and non-independent subsidiaries, I run the logistic regression separately for each type of establishment. I expect to find the strongest link between national culture and the presence of teamwork for independent establishment. I expect this link to be weaker for headquarters and subsidiaries, since they possibly also have establishment outside the stated countries' borders.

V. Results

Before I can carry out the analysis, I first have to check for possible multicollinearity problems. The VIF indexes of all the independent variables are well below four, meaning that there is no multicollinearity (see Table 10 in the Appendix). For this reason, I am able to include all the independent culture variables together in the same regression.

Full set of establishments

Table 4 shows the estimation results of the logistic regression on establishment level of the full set of establishments. The first column of the table shows the results of the analysis without the control variables. In the second column, the control variables are included.

Column 1 shows that individualism, masculinity and the power distance index are all negatively correlated with the existence of teamwork. However, only individualism and the power distance are significant at a 5% level. The female/male ratio is also significantly correlated with the presence of teamwork. However, unlike the national culture variables, this relationship is positive.

The coefficients of individualism and the power index remain significant and become even more negative when the control variables are included in the model. This result is consistent with the first and the third hypothesis, which predicted that individualism/the power index is negatively correlated with the existence of teamwork. The coefficients of a logistic regression can be transformed to an odds ratio by taking the exponential of the regression coefficients. The results suggest that the odds of the presence of teamwork in an establishment is 7.4% less than in a comparable establishment, which is located in a country which has an individualism score of 10 lower (ceteris paribus). Furthermore, the odds of the presence of teamwork in an establishment is 10% less than a comparable establishment, which is located in a country which has a score of 10 lower on the power distance index (ceteris paribus).

The correlation between masculinity and the presence of teamwork becomes even more insignificant after adding the control variables to the analysis. For this reason, I have to reject the second hypothesis. This hypothesis predicted a negative correlation between the presence of teamwork and masculinity. The estimation results for the female/male ratio is only significant at a 10% level. The coefficient of this variable decreased, compared to the model without control variables. Since I use a 5% significance level as a benchmark in the analysis, I reject the fourth hypothesis which predicted a positive correlation between the female/male ratio in a company and the presence of teamwork. The analysis with the control variables included can be found in the Appendix (see Table 11).

Table 4 Establishment-level regressions of (national) culture on the presence of teamwork

The presence of teamwork	Column 1	Column 2
Individualism vs Collectivism	-0.0063** (0.0033)	-0.0074** (0.0033)
Masculinity vs Femininity	-0.0013 (0.0018)	-0.0004 (0.0016)
Power distance index	-0.0096*** (0.0024)	-0.0102*** (0.0021)
Female/male ratio	0.0635*** (0.0210)	0.0347* (0.0189)
Control variables	No	Yes
Number of observations	25216	25216

*p<0.1; **p<0.05; ***p<0.01.

Establishments sorted by type

Table 5 shows the estimation results of the logistic regression on establishment level. The logistic regressions are run separately for each type of establishment: independent establishments, non-independent headquarters and non-independent subsidiaries. Each type of establishment has two columns with results. The results without any control variables are shown in the first columns. The second column of each establishment type contains the results of the logistic regression with the control variables for sector composition and establishment size included.

Column 1 shows that only power distance and the female/male ratio in independent establishments are significantly correlated with the presence of teamwork. The correlation between the power index and the presence of teamwork is negative, which is in line with the earlier results. When the control variables are added in the analysis, only the power distance variable remains significant at the 5% level. The size of the negative power distance coefficient of independent companies (-0.0069) is smaller than the power distance coefficient of the analysis which include the full set of establishment (-0.0102).

The female/male ratio and masculinity are not significantly correlated with the presence of teamwork in non-independent headquarters is (see column 3 and 4). Individualism and the power distance index are both negatively significantly correlated with the presence of teamwork in those type of establishments. Adding control variables increases the estimation result of the individualism variable. The correlation of both the power distance index and individualism is stronger for non-independent headquarters, compared to the full set of establishments.

Column 5 and 6 show the estimation results for non-independent subsidiaries. Just like the analysis with the non-independent headquarters, only individualism and the power distance variables are significant at a 5% level, after including the control variables. The correlation between those cultural variables and the presence of teamwork is again negative. However, the correlation of both the power distance index and individualism is smaller for non-independent subsidiaries than for non-independent headquarters.

Overall, these results support the first and the third hypothesis, which predicted that individualism and the power distance index are related with the presence of teamwork. The only exception is that individualism does not significantly correlate with presence of teamwork in independent establishments. I expected the link between national culture and the presence of teamwork to be the strongest for independent establishments compared to non-independent establishments, since non-independent companies possibly have establishment outside the stated countries' borders. This would mean that (possibly a part of) these establishments would have to cope with multiple national cultures. Surprisingly, the conclusion that emerges from this table is that the opposite is the case. The analysis with the control variables included can be found in the appendix (see Table 12).

Table 5 Establishment-level regressions of (national) culture on the presence of teamwork sorted by establishment type

The presence of teamwork	Independent establishments (1)	Independent establishments (2)	Non-indep headquarters (3)	Non-indep headquarters (4)	Non-indep subsidiaries (5)	Non-indep subsidiaries (6)
Individualism vs Collectivism	-0.0059 (0.0037)	-0.0059 (0.0038)	-0.0088** (0.0035)	-0.0121*** (0.0024)	-0.0150*** (0.0040)	-0.0194*** (0.0038)
Masculinity vs Femininity	-0.0019 (0.0018)	-0.0015 (0.0017)	0.0020 (0.0025)	0.0024 (0.0023)	0.0019 (0.0034)	0.0045 (0.0032)
Power distance index	-0.0054** (0.0026)	-0.0069** (0.0025)	-0.0175*** (0.0030)	-0.0171*** (0.0026)	-0.0124*** (0.0045)	-0.0138*** (0.0043)
Female/male ratio	0.0695*** (0.0228)	0.0368* (0.0214)	0.0135 (0.0328)	0.0238 (0.0338)	-0.0940** (0.0446)	-0.0867* (0.0490)
Control variables	No	Yes	No	Yes	No	Yes
Number of observations	17336	17336	5234	5234	2605	2605

**p<0.1; **p<0.05; ***p<0.01.*

Robustness check

To further analyze the influence of culture on the presence of teamwork, I estimate the equation, which is described in the methodology section, again on country level. The full set of establishments is used to calculate the average presence of teamwork of each country. This is combined with the cultural dimensions to see if culture correlates with the presence of teamwork. I follow the approach of Shao, Kwok and Guedhami (2009) by testing the effects of national culture on individual firms both on firm level and on country level. The country level approach was used before by Sven van Kan (2016) to investigate the effects of national culture on performance pay. Since the presence of teamwork is now defined as a percentage for each country instead of a dummy variable for each establishment, I use a linear regression instead of a logistic regression.

Table 6 shows the results of the linear regression on country level. Individualism and the power distance index are negatively correlated with the presence of teamwork, but both these results are insignificant when the control variables are not included in the analysis. Masculinity and the female/male ratio are positively correlated with presence of teamwork. Only the female/male ratio is significantly correlated with teamwork at a 10% level. However, after adding the control variables to the analysis, the female/male ratio variable becomes insignificant. Individualism is the only variable

of interest which is significantly correlated with the presence of teamwork, after including the control variables. It is important to note that the coefficients of the linear regression cannot directly be compared with the coefficients of the former logistic regression. An advantage of the linear regression coefficient is that it is easily interpretable. The results suggest that a country which has an individualism score of 10 greater than a comparable country, the average presence of teamwork in a country is 2.9% less (ceteris paribus). The economic significance is smaller compared to the establishment-level approach. These results suggested that the average presence of teamwork in a country is 7.4% less, compared to a country which has an individualism score of 10 smaller (ceteris paribus). Again, the cross-sectional dataset makes it impossible to reveal causality. In sum, the conclusion that emerges from this table is that only the first hypothesis can be accepted, which predicted a negative correlation between individualism and masculinity. The power distance index is only significantly related with the presence of teamwork when the analysis is carried out on firm level. The country level regression with the control variables included can be found in the Appendix (see Table 13).

Table 6 Country-level regressions of (national) culture on the presence of teamwork

The presence of teamwork	Column 1	Column 2
Individualism vs Collectivism	-0.0010 (0.0009)	-0.0029** (0.0012)
Masculinity vs Femininity	0.0001 (0.006)	0.0003 (0.0006)
Power distance index	-0.0013 (0.0008)	-0.0010 (0.0008)
Female/male ratio	0.1240* (0.0648)	0.0978 (0.0661)
Control variables	No	Yes
Number of observations	29	29

**p<0.1; **p<0.05; ***p<0.01.*

VI. Teamwork vs Team related performance pay

Sven van Kan (2016) his research allows me to compare the effects of culture on the existence of teamwork and on the existence of team related performance pay. Sven van Kan investigated the effects of national culture on five different types on five forms of performance pay. These types included; piece rate pay, subjective performance pay, team related performance pay, profit sharing and shared ownership. Sven van Kan did not find any significant correlation between the national culture variables that are used in my analysis and any type of performance pay.

As Sven van Kan his analysis was only carried out at the country level, I only compare my results at the country level with his results. It is interesting to see that individualism does not significantly correlate with the presence of team related performance pay, but does correlate with the presence of teamwork in an establishment. This means that employees in individualistic countries are less used to teamwork, but not necessarily to team related rewards. Managers in these individualistic countries therefore might need to be careful with applying teamwork in their establishments, while applying any type of team related performance pay probably will not cause any discomfort.

Team related performance pay can exists without the presence of teamwork (see Table 7). In the third wave of the European Company Survey, 3.59% of the respondents answered that the payment of employees in their establishment is linked to team related performance pay, without the presence of teamwork (Eurofound, 2015). This can be the case when variable pay is based on the performance of the department, in the absence of teamwork within that department.

Table 7 Teamwork vs. team related performance pay

	Team related performance pay? **Yes**	*Team related performance pay?* **No**	**Total**
Teamwork **Yes**	29.11%	49.83%	**78.94%**
Teamwork **No**	3.59%	17.47%	**21.06%**
Total	**32.70%**	**67.30%**	**100%**

VII. Conclusion

In this thesis, I have answered the following research question:

"To what extent does (national) culture correlate with the existence of teamwork?"

I use the three cultural dimension, which are all defined by Hofstede, individualism vs collectivism, masculinity vs femininity and the power distance index. Furthermore, I use the female/male ratio in establishments as a proxy for altruism, to further investigate the role of culture on the existence of teamwork.

When the analysis is carried out at the establishment level, both the level of individualism and the power distance index are negatively correlated with the existence of teamwork. However, the results are not completely robust to an alternative analysis. When the analysis is carried out at the country level, only the level of individualism is significantly correlated with the existence of teamwork. Again, this correlation is negative.

The correlation between national culture and the existence of teamwork is not stronger for independent headquarters than it is for non-independent headquarters. I expected the link between national culture and the presence of teamwork to be the strongest for independent establishments compared to non-independent establishments, since non-independent companies possibly have establishment outside the stated countries' borders. If that is the case, establishments would have to cope with a blend of multiple national culture. Surprisingly, the opposite is the case and the correlation is the strongest for non-independent establishments compared to independent establishments.

I can conclude that the level of individualism of a country is the only cultural dimension which is significantly correlated with the existence of teamwork in establishments, since this is the only dimension that is significant in both the analyses carried out on country and establishment level. This means that workers from individualistic countries are less used to working in teams. Managers should keep this in mind when dividing the roles and tasks in an establishment.

A downside of this research is that it only contains establishments from European countries. National cultures between continents would vary more than national cultures between European countries, which would possibly lead to stronger results. Furthermore, it would have been desirable to know the location of the headquarter when analyzing a non-independent subsidiary and to know the location of the subsidiary when analyzing the non-independent headquarter. This would have allow me to include both the national culture of the country of the headquarter and the national culture of the country of the subsidiary. Further research could dig deeper in the role of national culture in this headquarters-subsidiary relationship.

VIII. Appendix

Table 8 The presence of teamwork across European countries

Country	% of teamwork	Country	% of teamwork	Country	% of teamwork
Austria	91.24	**Greece**	79.62	**Poland**	78.22
Belgium	77.69	**Hungary**	77.49	**Portugal**	87.92
Bulgaria	86.40	**Iceland**	64.08	**Romania**	84.23
Croatia	72.00	**Ireland**	81.93	**Slovakia**	70.30
Czechia	70.73	**Italy**	72.69	**Slovenia**	84.51
Denmark	81.14	**Latvia**	84.86	**Spain**	81.34
Estonia	79.44	**Lithuania**	80.45	**Sweden**	89.27
Finland	85.04	**Luxembourg**	87.55	**Turkey**	62.28
France	78.79	**Malta**	88.93	**UK**	75.64
Germany	79.56	**Netherlands**	76.29		
				Average	**79.64**

Table 9 Pearson correlation between the cultural dimensions

Pearson correlation	Individualism	Masculinity	Power distance
Individualism	1.000		
Masculinity	0.127***	1.00	
Power distance	-0.5041***	0.1737***	1.00

***** Correlation is significant at the 1% level (2-tailed)**

Table 10 VIF index variables of interest

Variable	VIF
Power index	1.45
Individualism	1.43
Masculinity	1.10
Female/male ratio	1.00
Mean VIF	**1.25**

Table 11 Establishment-level regressions of (national) culture on the presence of teamwork with control variables included

The presence of teamwork	Column 1	Column 2
Individualism vs Collectivism	-0.0063**	-0.0074**
	(0.0033)	(0.0033)
Masculinity vs Femininity	-0.0013	-0.0004
	(0.0018)	(0.0016)
Power distance index	-0.0096***	-0.0102***
	(0.0024)	(0.0021)
Female/male ratio	0.0635***	0.0347*
	(0.0210)	(0.0189)
Sector *Construction*		0.3491*
		(0.2017)
Sector *Commerce and hospitality*		0.1261
		(0.1236)
Sector *Transport and communication*		-0.2774**
		(0.1286)
Sector *Financial services and real estate*		0.1870
		(0.1344)
Sector *Other services*		0.3712***
		(0.1146)
Firm size *50-249 employees*		0.7084***
		(0.0498)
Firm size *250+ employees*		1.3605***
		(0.0827)
Number of observations	25216	25216

**p<0.1; **p<0.05; ***p<0.01.*

Table 12 Establishment-level regressions of (national) culture on the presence of teamwork sorted by establishment type with control variables included

The presence of teamwork	Independent establishments (1)	Independent establishments (2)	Non-indep headquarters (3)	Non-indep headquarters (4)	Non-indep subsidiaries (5)	Non-indep subsidiaries (6)
Individualism vs Collectivism	-0.0059	-0.0059	-0.0088**	-0.0121***	-0.0150***	-0.0194***
	(0.0037)	(0.0038)	(0.0035)	(0.0024)	(0.0040)	(0.0038)
Masculinity vs Femininity	-0.0019	-0.0015	0.0020	0.0024	0.0019	0.0045
	(0.0018)	(0.0017)	(0.0025)	(0.0023)	(0.0034)	(0.0032)
Power distance index	-0.0054**	-0.0069**	-0.0175***	-0.0171***	-0.0124***	-0.0138***
	(0.0026)	(0.0025)	(0.0030)	(0.0026)	(0.0045)	(0.0043)
Female/male ratio	0.0695***	0.0368*	0.0135	0.0238	-0.0940**	-0.0867*
	(0.0228)	(0.0214)	(0.0328)	(0.0338)	(0.0446)	(0.0490)
Sector *Construction*		0.4047*		0.1041		0.3940
		(0.2137)		(0.2432)		(0.3442)
Sector *Commerce and hospitality*		0.1429		-0.1470		0.0918
		(0.1386)		(0.1523)		(0.1621)
Sector *Transport and communication*		-0.3783***		-0.2680		0.0015
		(0.1326)		(0.1966)		(0.1897)
Sector *Financial services and real estate*		0.1084		0.0899		0.4048
		(0.1478)		(0.1965)		(0.4077)
Sector *Other services*		0.3794***		0.1550		0.4033**
		(0.1246)		(0.1584)		(0.1919)
Firm size *50-249 employees*		0.6920***		0.5732***		0.6470***
		(0.0559)		(0.0967)		(0.1446)
Firm size *250+ employees*		1.2961***		1.3121***		1.3144***
		(0.0880)		(0.0153)		(0.2434)
Number of observations	17336	17336	5234	5234	2605	2605

**p<0.1; **p<0.05; ***p<0.01.*

Table 13 Country-level regressions of (national) culture on the presence of teamwork with control variables included

The presence of teamwork	Column 1	Column 2
Individualism vs Collectivism	-0.0010 (0.0009)	-0.0029** (0.0012)
Masculinity vs Femininity	0.0001 (0.006)	0.0003 (0.0006)
Power distance index	-0.0013 (0.0008)	-0.0010 (0.0008)
Female/male ratio	0.1240* (0.0648)	0.0978 (0.0661)
Sector *Construction*		-0.3109 (0.5511)
Sector *Commerce and hospitality*		0.3313 (0.2296)
Sector *Transport and communication*		0.9032 (1.0065)
Sector *Financial services and real estate*		0.9450 (0.7026)
Sector *Other services*		0.4149 (0.2706)
Firm size *50-249 employees*		0.2973** (0.1231)
Firm size *250+ employees*		0.5718** (0.1664)
Number of observations	29	29

**p<0.1; **p<0.05; ***p<0.01.*

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