

***REVEALING THE IMPACT OF THE INCLUSION  
OF DISABLED EMPLOYEES ON FIRM  
PERFORMANCE: THE MODERATING ROLE OF  
FIRM CHARACTERISTICS***

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## **ABSTRACT**

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In this study, the relationship between inclusion of disabled employees and financial firm performance is examined. By integrating prior research, a model is developed that theorizes the interaction between inclusion, financial firm performance and firm characteristics. This model is tested using a matched sample of 322 companies. The results indicate that organizations without disabled workers outperform firms that include disabled employees. Moreover, a negative effect on financial firm performance appeared when including employees with disabilities. This association appears to be dependent on firm characteristics, which are the age and the family character of a firm, implying that in small or nonfamily firms the relationship is less negative. For the other firm characteristic, the age of a firm, no significant interaction was found. In general, the results are remarkable, implying that it is not, directly or indirectly, attractive for firms to hire disabled employees. This study suggests that the incentives given by the Dutch government to firms that include disabled employees are not enough to compensate for the resulting loss of income.

## 1 INTRODUCTION

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The bankruptcy of the Netherlands' largest sheltered employment, Licom, triggered a new era of thinking about sheltered work. Sheltered employment is a setting in which people with disabilities receive services and training to develop work-related skills and behaviours. The bankruptcy had a major impact on Dutch society since thousands of disabled employees, living in eleven different municipalities, were laid off in the process. However, the bankruptcy of Licom was caused by a change in policy by the Dutch government; namely, the Participation Act<sup>1</sup>. This act aims to include as many people as possible in the labour market whereby municipalities need to arrange sheltered work for disabled people in mainstream organisations. Disabled people are thus encouraged to find work outside the sheltered workplace. This might be a noble idea, but this paradigm change was accompanied by public savings. Moreover, larger organizations have quotas for employing disabled people and face fines if the quota is not met. Many organizations have realized that the extent to which these demographic workforce changes are effectively and efficiently managed impacts their organizational functioning and performance (Von Bergen, Soper, & Foster, 2002). But while organizations recognize that managing workforces is crucial in an increasingly diverse society, little information is available about the financial consequences of organizations employing disabled people.

To facilitate the Participation Act, the Dutch government encourages organisations to employ disabled people. Disabled integration incentive programmes are offered to entrepreneurs to stimulate the integration of disabled people within mainstream organizations. These programmes include, for example, wage subsidies, a job coach and a no-risk policy. Nevertheless, entrepreneurs experience these measures as being insufficient (Weel, 2017). Despite the growing interest in inclusion, the fact that most people with disabilities are perfectly capable and willing to work (Stoutjesdijk & Berendsen, 2007) and the fact that entrepreneurs can benefit significantly from inclusion (see e.g., Hernandez et al., 2008; Noonan et al., 2004), the number of inclusive organizations is limited (Barry-Power, 2010). It seems that there is something that obstructs organizations from hiring disabled people.

Given the fact that profit-minded entrepreneurs are interested in financial performance metrics like profit and revenue, they might initiate and adopt new organizational practices

out of economic considerations (Baron, 2007). However, it is doubtful if the inclusion of disabled workers is of economic value to entrepreneurs. While the literature does not support the claim that inclusion naturally increases profitability, such claims are often made by the popular press. Harrison and Klein (2007) reviewed that empirical evidence for such claims are often weak, inconsistent or both.

Despite the increased concerns about the inclusion of disabled individuals in the workplace, little research has been conducted studying the economic consequences of such inclusion. Most existing research has been limited to qualitative factors; for example, how inclusiveness promotes creative thinking and improves competitiveness and how workers are more inclined to stay in an inclusive environment (e.g., Martin, 2014; Stenneke, 2009; Nijenstein, 2016; Strieker, 2014). While some organizations are intrinsically motivated to include people with disabilities, others respond to favourable subsidies or other support for integration. However, a considerable number of organizations do not respond at all. In order to reach more organizations with inclusive programs, it is important to understand what inclusion does to a firm's financial performance. This information will also benefit organizations that are encouraging the hiring of disabled employees, since they will be able to support making this decision on a financial basis. Moreover, expected shortages of employees due to rapidly changing and highly competitive environments make it urgent to investigate this underutilized labour pool (Choi, 2007).

To understand the effect of inclusiveness on firm performance, diversity theory is used. Diversity theory is about managing the interaction among people from diverse cultures, beliefs, and backgrounds (Carter, D'Souza, Simkens, & Simpson, 2010). In contrast to inclusiveness, there has been considerable research on diversity theory that examines the relationship between diversity and financial firm performance (e.g., Badal & Harter, 2014; Carter, D'Souza, Simkens, & Simpson, 2010; Richard, 2000). It can be used within this study because Roberson, Holmes, & Perry (2017) showed that inclusiveness is one of five recurrently acknowledged elements of diversity. In addition to the established relationship between diversity and firm performance, prior research shows a direct effect of firm size and age as well as having a family firm structure on a firm's financial performance (e.g. Williamson, 1979; Coad, Segarra, & Teruel, 2013; Singal & Gerde, 2015). In line with the research of Nihat & Demir (2016), this study also incorporates the potential effect of these

firm characteristics. Prior research indicates a moderating effect of these variables on the inclusion-performance relationship. This leads to the aim of this study, which is to answer the research question:

*How does the inclusion of disabled employees impact a firm's financial performance with regard to firm size, age and family firm structure?*

Given the increasing importance of disability issues in work-related settings and the absence of research on the topic, the primary purposes of this project are as follows. First, to deliver practical contributions for those actors that are willing to include people with disabilities, including whether the efforts of inclusion are rewarded in terms of financial performance. Second, aid policymakers by demonstrating the effectiveness of disabled integration incentive programmes. Third, generate increased interest in quantitative research into inclusion among organizational researchers. Fourth, to find evidence at a theoretical level for the reasoning that there is a linkage between inclusion and firm performance within firm characteristics. And last, bring clarity into prior qualitative research on the (financial) effects of inclusion.

In the next section, a theoretical framework of the role of the inclusion of disabled employees on a firm's financial performance will be introduced (Section 2). Then, the methodology (Section 3), results (Section 4), discussion (Section 5) and conclusions (Section 6) will be presented. The following appendix is attached to this research : References.

## 2 THEORY & HYPOTHESES DEVELOPMENT

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### 2.1 Inclusion of disabled employees

Consistent with the definition used by the Dutch government, disability is defined here as a physical or mental impairment that substantially limits one or more major life activities. The motives for integrating disabled workers can vary widely. Some believe that all people with disabilities belong in an inclusive environment and that all employees need to work with their peers in the same physical location (Stone & Colella, 1996). This is also the explanation presented by Barry-Power (2010), who states that inclusion is a matter of integrating people with disabilities into regular employment settings along with non-disabled peers. Others believe inclusion is policy driven by an unrealistic expectation that money will be saved (Block, 2000). As said before, in contrast to social entrepreneurs, for profit-minded entrepreneurs inclusion can be motivated by economic considerations.

### 2.2 Inclusion & firm performance

There are four categories of reasons entrepreneurs employ people with disabilities. First, when diversity and inclusiveness in the workforce are discussed or reported, the common assumption is that they improve productivity, lead to more creative and diverse thinking in the workplace, and as a result benefit companies financially (e.g., Badal, 2014; Smedley, 2014; and Deleon, 2015). Second, inclusion can impact shareholder returns. The benefits of inclusion may outweigh the costs, increasing the firm's financial performance; however, the cost of inclusion can also outweigh the benefits and reduce firm performance. Harrison and Klein (2007) note that the empirical evidence concerning firm performance as it relates to inclusion is weak, inconsistent, or both. Third, in line with the literature on corporate social responsibility, an advantage of the inclusion of people with disabilities is better public relations. Inclusion may improve the public profile of a firm, which can indirectly the firm's performance (Hunt, Layton, & Prince, 2015). In addition, such firms may attract the best minority employees due to their publicly signalled commitment to inclusion, thus raising performance overall (Filbeck, Foster, Preece, & Zhao, 2017). Furthermore, settlement costs due to the Participation Act may be lower for firms that promote inclusiveness in the workforce. In the Netherlands, trade and industry are required to create one hundred

thousand jobs in the coming years. Every large organization receives a quota to integrate disabled employees. If this quota is not met, fines are imposed. However, literature from the US showed, in fact, that legally required diversity initiatives are more costly for firms than the actual cost of the fine (Selmi, 2003). The question is if this also holds true for the Netherlands, where companies have to pay a fine of 5,000 euros when they do not meet the quota.

The effects of inclusion on firm performance may differ depending upon the industry and environment in which a company operates. Firms that have previously had homogeneous workforces will have to make adjustments while adapting to a more diverse employee base. Interactions between workers may be different and managerial approaches must adjust. Despite there being studies about diversity that found direct positive and negative effects of diversity on financial performance (e.g., Hartenian & Gudmundson, 2000; Herring, 2009; Pitts, 2007), other studies revealed that the form of the diversity-performance relationship is based on the specific demographic composition of the workforce or the community in which a firm is located (e.g., Frink et al., 2003; Leonard, Levine, & Joshi, 2004; Richard, 2000; Roberson & Park, 2007). For example, Richard (2000), and Roberson & Park (2007) have shown that organizational factors, such as business strategy, span of control and lifecycle, impact the nature of the diversity-performance relationship regardless of the dimensions of diversity that were being studied. Based on the assumption that the benefits of diversity, like inclusion, may be enabled in certain internal environments, researchers have examined the extent to which shared employee beliefs and values (specifically, diversity-related climates) modify its impact on firm performance (Gonzalez & Denisi, 2009; Kunze, Boehm, & Bruch, 2011). The results of these studies show the effects of diversity to be stronger under supportive diversity climate conditions (Gonzalez & Denisi, 2009). In short, the literature indicates that the effects of diversity on firm performance, and thus the inclusion-firm performance relationship, are dependent upon features of the context in which it occurs.

The costs and benefits of inclusion initiatives discussed previously may cancel each other out. For example, the skill set of the disabled workers may be questionable compared to non-disabled workers in the same or similar position (Cook & Glass, 2009). Another problem, according to authors Jayne and Dipbo-ye (2004), is that the benefits or return-on-investment of diversity management policies may not be immediately tangible, much less measurable in

terms of a company's bottom line (Jayne & Dipbo-ye, 2004). This is because organizations need to invest in training for the disabled employees and other programs such as flexible work arrangements, efforts toward inclusion recruitment, and sponsored affinity groups. When the benefits of these investments are not readily realized, owners and investors may question the utility of such spending. Moreover, investing in diversity management (for example, inclusion of the disabled) may prove to be more costly than investing in current employees, which fosters greater loyalty and emotional bonds with the company and its owners (Williamson, 1979).

The discussion of the empirical evidence on inclusion of the disabled leads to the generation of four related or closely associated hypotheses pertaining to the question of whether hiring disabled employees has an influence on firm's financial performance. As has already been discussed, it is doubtful if inclusion is valuable to entrepreneurs in an economic sense for entrepreneurs, as is often claimed in the popular press. Inclusion for inclusion's sake may not be a strategic investment. Also, in the case of a positive relationship, it is questionable if this relationship holds for every company or only within a certain internal environment. Therefore, it is believed that the inclusion of disabled employees has a negative influence on firm performance. This leads to the following hypothesis:

**H1. The higher the number of disabled employees in firms, the lower the firms' financial performance.**

### **2.3 Firm size, inclusion & firm performance**

There is evidence that the relationship between inclusion and firm performance is moderated by firm characteristics. Earlier research on the diversity-performance relationship (e.g., Nihat & Demir, 2016) found that the firm characteristics firm size, firm age and being a family firm influence the relationship. In line with this research, these firm characteristics are also used in the present research. With regard to firm size, organization theorists have generally included size as a factor that moderates the relationship between organizational features and the financial performance of a firm (Lawrence & Lorsch, 1967). Inclusion is an organizational feature of firm performance, moderated by the size of a firm. This predicts that, while larger firms employ more disabled employees, it is more important for smaller companies to integrate them effectively to remain profitable. Therefore, firm size



should have a negative influence on the relationship between inclusion and firm performance.

In general, size is a predictor of performance. Larger firms show better profitability for the main reason that smaller firms cannot compete with larger firms in terms of the economics of scale (Choi, 2007). Furthermore, larger firms are more likely to obtain credits from financial institutions. They can obtain loans at lower interest rates, as they have better credit worthiness and lower chances of bankruptcy. Larger firms are also more diverse in their investments, which has a positive impact on performance as they are less risky than those less diversified (Williamson, 1979). Thus, the relationship between size and firm performance should be a positive one.

However, another story unfolds when examining size as a moderating variable. It is predicted that inclusion of disabled employees should be more effective in smaller firms for reasons such as greater firm flexibility and reduced inertia. Larger firms are more likely to have formalized routines, policies and structures in place that impede the integration of disabled employees. In fact, smaller firms have been found to be more flexible (Fiegenbaum & Karnani, 1991; Levy & Powell, 1998) and experience less inertia (Hannan & Freeman, 1984) than larger firms. Further supporting this notion, Choi (2007) found that organization size impeded organizational response capability regarding the early adoption of more diversity in their organization, with larger firms having fewer early diversity practices. Such findings translate to more effective integration of diversity practices in smaller firms, as well as a greater ability of smaller firms to adapt and change their demographic composition. In large organizations, it is expected that higher levels of inertia hinder the effectiveness of diversity practices (such as inclusion of the disabled) intended to change the composition of the workforce. Smaller firms may also be more resource dependent and experience higher pressure to integrate disabled employees. Given this greater resource need, the integration of disabled employees should be even more critical for small firms to achieve their profitability goals.

In turn, the number of disabled employees within small firms should prove to be more valuable in comparison to the same number of integrated employees in larger firms. As a result, it is predicted that size is a negative moderator for the effect of inclusion on firm

performance. Therefore, the following hypothesis about the moderating role of firm size is presented:

**H2. The size of a firm will negatively moderate the relationship between inclusion of the disabled and financial performance.**

## **2.4 Firm age, inclusion & firm performance**

It is also predicted that firm age is a moderating variable in this research. Firm age is one of the firm characteristics that influences the relationship of inclusion to firm performance. The influence of age on firm performance has been well established by many researchers (see, e.g., Coad, Segarra & Turuel, 2013). In general, it is predicted that older firms perform better than younger firms, but the results of earlier research are not consistent. As a mediating variable, firm age may have a positive influence on the inclusion-performance relationship because older firms have a more developed internal labour market and inclusion can be more effectively be accomplished than in younger firms (Meulenare, Boone, & Buyl, 2016).

Authors like Coad et al. (2013) state that the performance of firms improves with age. Older firms show rising levels of productivity, profits, lower debt ratios and higher equity ratios. But older firms can also be more inert, with declining sales, profits and productivity. Coad et al. (2013) explained the relationship between age and firm performance in terms of selection effects, learning-by-doing effects and inertia effects.

*Selection effects* arise when selection pressures progressively eliminate weaker firms and result in an increase in the average productivity level of the surviving firms, even if the productivity levels of individual firms do not change with age. This situation relates to the model in Jovanovic B. (1982) whereby firms begin with fixed productivity levels and learn to optimize their productivity levels as time passes. In Jovanovic's model, low-productivity firms are recognized to disappear, while high-productivity firms remain in business. As a result, the average productivity of a group of firms boosts as the firms age, even if the productivity levels of individual firms remain constant over time. *Learning by doing* effects occur when firms increase their productivity as they learn about more production techniques and integrate these improvements into their production routines. Furthermore, older firms may benefit from their greater business experience, well-established contacts with customers, and easier access to resources. In contrast to these positive influences of age on

firm performance, negative *inertia effects* may also occur. As firms get older, they may become less productive if they become progressively inert and inflexible. Barron et al. (1994) argue that old firms are sensitive to endure from a 'liability of obsolescence' (because they do not fit in well to the changing business environment) and also a 'liability of senescence', according to which they become rigid by expanded rules, routines and organizational structures. These negative effects may be specifically important for very old firms.

These three effects (i.e., selection, learning-by-doing and inertia) can be operating together on a company. In general, it is held that these effects together have a positive influence on the productivity, profitability and equity ratio of a firm (Coad, Segarra, & Teruel, 2013) and, thus, on firm performance, because the performance measure ROA consists of a combination of equity and profitability.

Looking at age as a moderating variable between inclusion and performance, it is hypothesised that the integration of disabled employees can be more effective in older firms than in younger firms. Meulenare, Boone, and Buyl (2016) state, in their article about workforce diversity, that older firms, which have a more developed internal labour market, diversity can more effectively be accomplished than in younger firms. As older firms are better able to optimize the match between employees and jobs, Meulenare, Boone, and Buyl (2016) expect that the positive effect of diversity on firm performance will be stronger in older firms. As a result, it is expected that older firms that include people with disabilities perform relatively better financially than comparable younger firms, leading to the next hypothesis:

**H3. The age of a firm will negatively moderate the relationship between inclusion of disabled people and performance.**

## **2.5 Family firms, inclusion & firm performance**

The association between inclusion and firm performance is may moderated by whether a firm is a family firm. A family firm is defined, based on the meta-analysis study of Singal & Gerde (2015), as a firm that is more than 50% owned by members of one family. This firm characteristic has been thoroughly studied. In this section, the influence of the family nature of a firm on firm performance is discussed, together with an elaboration of the moderating influence of being a family firm in the inclusion-performance relationship. This eventually

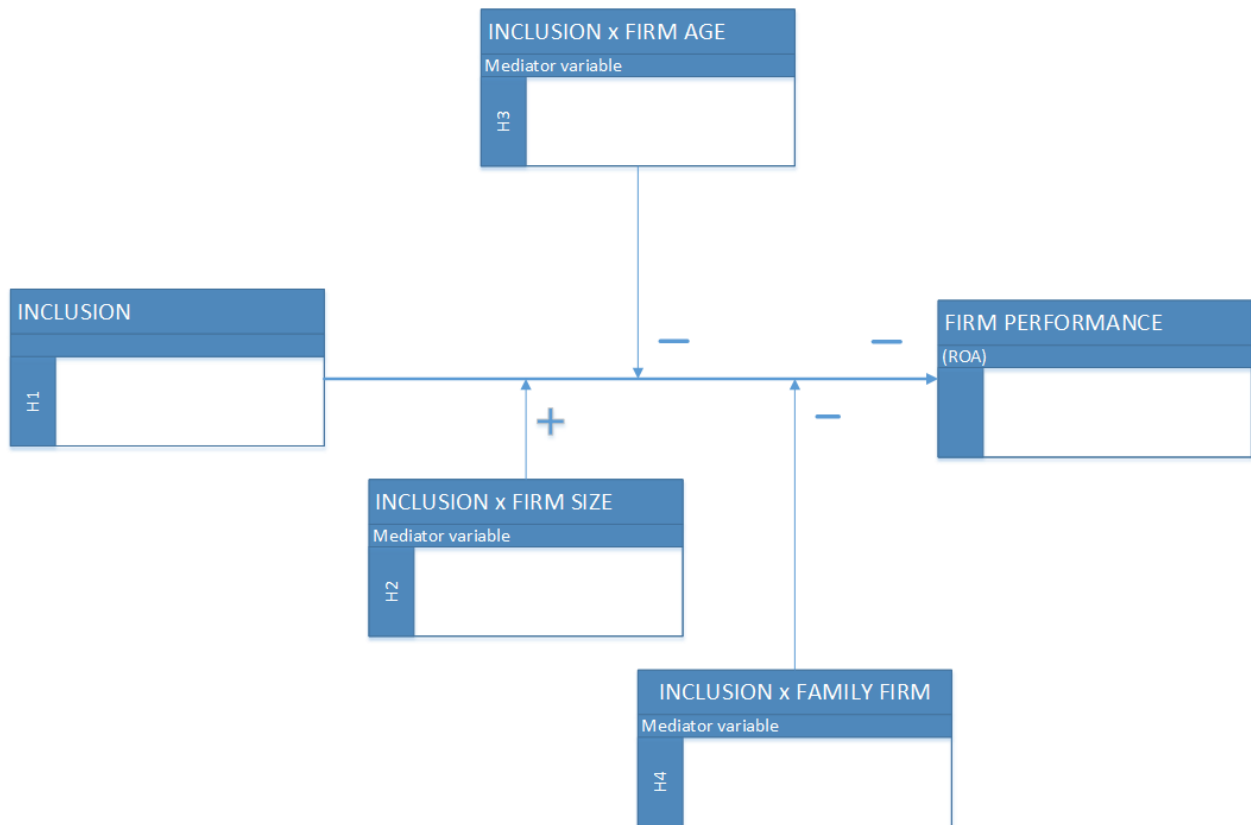
leads to the prediction that, while family firms include fewer people with disabilities, the firms that do perform worse than comparable nonfamily firms.

Several studies have demonstrated that family firms financially outperform their nonfamily counterparts (Villalonga & Amit, 2014; Chrisman, Chua, & Litz, 2004) because family firms have unique governance structures, values and culture compared to nonfamily firms. However, the mechanisms through which this superior performance is achieved are not clear. Scholars have variously attributed performance advantages to leveraging social capital (Villalonga & Amit, 2014), lower agency costs (Chrisman, Chua, & Litz, 2004), stewardship behaviour (Villalonga & Amit, 2014), and the family effect (Chrisman, Chua, & Litz, 2004). In their meta-analysis, Singal & Gerde (2015) found that, consistent with the research of scholars mentioned earlier, family firms indeed exhibit better financial performance than nonfamily firms.

However, studying the moderating influence of being a family firm, it is less clear if it has a positive influence. Singal & Gerde (2015) found in their analysis that family firms on the whole implemented fewer diversity management policies than nonfamily firms. The major reason is that family firms are afraid that diversity may erode some of the internal social kinship and ties that enhance trust, collective circumstances, coordination and knowledge sharing. Moreover, a finding by Singal & Gerde (2015) is that family firms in their sample did not suffer financially from this lower diversity. In fact, family firms with low diversity perform better than diverse family firms, implying that the inclinations toward stability of family firms may actually provide a financial advantage by making them less responsive to social initiatives that do not resonate strongly with their prevailing culture. This is in contrast with nonfamily firms, which perform better when more diverse. Especially in the case of family firms, maintaining long-standing relationships with employees and suppliers is both comfortably reliable and fiscally prudent, since it is less expensive for them to hire from a familiar pool of applicants and contractors than to invest in recruiting from non-traditional sources. For the same reason, it is doubtful whether family firms are taking advantage of inclusion of disabled employees. When the same arguments for diversity in family-owned companies hold true for inclusion, a family-owned company that hires employees with a disability will perform worse than a comparable nonfamily-owned company. Therefore, the following hypothesis about the role of family owned companies is constructed:

**H4. Being a family firm will negatively moderate the relationship between inclusion of disabled people and performance.**

An overview of the conceptual model predicting whether and to what extent inclusion of disabled employees influences a firm's financial performance, together with the influence of the firm characteristics firm size, firm age and being a family firm, is illustrated in Figure 1.



*Figure 1. Conceptual model regarding the impact of the inclusion of disabled employees on firm performance with regard to the firm characteristics firm age, firm size and being a family firm.*

## 3 METHODOLOGY

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### 3.1 Data

To assess the impact of the inclusion of disabled employees on firm performance, a dataset was created comprising 322 firms in the Netherlands. The strategy was to include as many companies as possible. Due to data availability, the dataset began with 161 firms that, in 2016, employed people with disabilities. The remaining part of the sample is made up of firms that are matched with these firms based on firm characteristics but do not employ people with disabilities. Specifically, firms for which appropriate financial data were not available were excluded from the dataset. Outliers were also excluded from the dataset. Outliers are data points that do not match the general character of the dataset. The regression model will be less accurate if outliers are included (Leys, Klein, Dominicy, & Ley, 2018). To cope with this potential problem, Mahalanobis distance was used to remove such outliers. Detecting outliers in a multiple regression is generally done in this way, because the Mahalanobis distance accounts for the variance of each variable and the covariance between variables. This way of computing outliers is considered more reliable than others (Leys, Klein, Dominicy, & Ley, 2018).

Data and firms included in this study were obtained from the *Werkgevers Enquête Arbeid* (National Survey for Employers, hereafter, WEA) study of the *Nederlandse Organisatie voor toegepast-natuurwetenschappelijk onderzoek* (TNO). The WEA is a biennial study on the employment policies of Dutch companies and institutions. The main objective of the WEA is monitoring trends and developments in employment policy. Companies are surveyed on several quantitative and qualitative dimensions, including the rate at which disabled employees are hired, the overall number of employees and date of incorporation. The sample represents firms in 11 industries.

In the Netherlands, small companies are not required to disclose a profit and loss statement. As a result, it was not possible to compute financial parameters such as ROA (Return On Assets) for these firms. Moreover, mainly medium-sized and large firms were included in the sample. To illustrate the difference in distribution between the sample and the population, a comparison is made in Table 1. For the companies included in the sample, financial data was

obtained from the Reach database, by matching the Chamber of Commerce number, which was available for both databases.

**Table 1: Company classification within sample and population (the Netherlands) in 2016**

			Sample	Total
				1,517,53
Micro	Firms	Number	18	5
		% of total	5.59%	95.94%
Small	Firms	Number	49	50.180
		% of total	15.22%	3.17%
Medium	Firms	Number	118	11.055
		% of total	36.65%	0.70%
Large	Firms	Number	137	2.970
		% of total	42.55%	0.19%
<b>Total companies</b>			<b>322</b>	<b>0</b>
<b>Number of firms (x1)</b>				

*Source: Statistics Netherlands (CBS)*

The research was conducted by means of a cross-sectional study. This is a quasi-experimental research design that involves data collected from a population (or a representative subset) at a specific point in time. Cross-sectional studies typically involve the use of regression analysis, in order to sort out the existence of causal effects of one or more independent variables upon a dependent variable at a given point in time. Cross-sectional studies are observational, in the sense that they observe the state of the world without manipulating it. To avoid bias caused by the nature of the study, in this thesis independent variables that can have an influence on the causal relationship have been inserted. Moreover, to make the test more powerful, companies which include people with disabilities in the dataset are matched with comparable companies which do not. The goal of matching is to find, for every treated unit, one (or more) non-treated unit (s) with similar observable characteristics against which the effect of the treatment (inclusion) can be estimated. This enables a comparison of outcomes among treated and non-treated units to estimate the effect of the treatment, reducing bias due to confounding (Rubin, 1973).

Because limited research has been conducted on the relationship between inclusion and firm performance, there is no regression specification to fall back on. As explained earlier, the construct of diversity has relevant similarities to inclusion. For this reason, the following

regression specification was used, in line with prior studies that examine the relationship between diversity and firm performance (e.g., Filbeck, Foster, Preece, & Zhao, 2017; Cook & Glass, 2009; Weigand, 2007).

$$ROA_{it} = \alpha_0 + \alpha_1 INCLUSION_{it} + \alpha_2 FIRM\ SIZE_{it} + \alpha_3 FIRM\ AGE_{it} + \alpha_4 FAMILY\ FIRM_{it} + \lambda_j + \delta_t + \epsilon_{it}$$

### **Dependent variable**

The specification uses financial performance as measured by ROA as the dependent variable. In line with similar studies of this nature, ROA is defined as the operating earnings before interest, depreciation, and taxes over the book value of total assets. This measure of performance is effectively independent of financial leverage. In addition to ROA as a measure of firm performance, Tobin's Q ratio is also often used. The Q ratio is defined as the sum of the market value of equity and book value of debt divided by the book value of assets. ROA offers several advantages over Tobin's Q as a measure of firm performance. Most important is that a necessary factor to analyse companies with Tobin's Q is that they must be traded on the stock market. The use of Tobin's Q would necessitate the exclusion of a large number of non-listed companies. As a result, ROA was chosen as the performance measure.

### **Independent variables**

To test the hypotheses in this study, several independent variables were included. The first independent variable measured the number of disabled employees within a company, denoted as INCLUSION. It is calculated as the percentage of FTE (fulltime-equivalent) taken up by people with disabilities in proportion to the total amount of FTE within a company.

The analysis was further extended by including other independent variables that might be related to the dependent variable ROA. Neglecting these independent variables would result in omitted variable bias, which the research design aimed to avoid. Also, including them makes it possible to study if any of these variables moderate the influence of inclusion on firm performance. In this study, independent variables were included that relate to organizations characteristics. The three added independent variables that were used are the size of a firm (hereafter denoted as FIRM SIZE), the age of a firm (hereafter denoted as FIRM AGE) and the family character of a firm (hereafter denoted as FAMILY FIRM). FIRM SIZE is a proxy for the size of a firm. The size of a firm can have a significant influence on firm



performance and a proxy for FIRM SIZE is used in almost all studies explaining firm performance. It is, in line with other studies, operationalized as the annual turnover in millions of euros. The age of a firm is also considered to be an important determinant of firm performance. FIRM AGE is operationalized as the number of years since the date of incorporation of the company.

Also, the variable FAMILY FIRM was included as an independent variable. A firm is considered as a family firm if more than 50% of the company is owned by family members. If a firm is a family firm or not is denoted as FAMILY FIRM and operationalized as a dummy variable. Zero (0) is considered as a nonfamily firm, one (1) as a family firm.

**Table 2: Variable definitions.**

<i>Performance variable</i>	
<b>ROA</b>	(Earnings before interest, taxes and depreciation)/(Book value of total assets)
<i>Independent variables</i>	
<b>INCLUSION</b>	Percentage of FTE (full-time equivalent) within a company taken up by people with disabilities
<b>FIRM SIZE</b>	Logarithm to the base 10 of annual sales turnover in millions of Euros
<b>FIRM AGE</b>	Number of years since the date of incorporation of the company
<b>FAMILY FIRM</b>	Dummy variable showing if the company is a family firm (0 = nonfamily firm, 1 = family firm)

### 3.2 Analyses

To assess the effect of the independent variables on the financial performance of a company, multiple linear regression was used. As a predictive analysis, multiple linear regression is used to explain the relationship between one continuous dependent variable and two or more independent variables. The independent variables can be continuous or categorical (dummy coded as appropriate). Several robustness checks were undertaken to estimate the

sensitivity of results. The regression specification mentioned earlier assumes a contemporaneous relationship between inclusion of disabled people and firm performance. In this research, standard robust errors are used because the results show heteroscedasticity. This is a concern in the application of regression analysis, because it can invalidate statistical tests of significance that assume that the residuals are uncorrelated and uniform (Fox, 1991). Since there is no systematic evidence of a contradictory result from the robustness checks, the full set of regression results is not presented.

Five models were used to test the hypotheses, along with an additional model to test the robustness of the findings. Model 1 tests Hypothesis 1, predicting the influence of inclusion of disabled people on firm performance. The model includes other independent variables: FIRM SIZE, FIRM AGE and FAMILY FIRM (dummy variable). In order to test Hypothesis 2, predicting an interactive effect of the number of included disabled employees and sales, the interaction term INCLUSION x log FIRM SIZE is included in Model 2 in addition to the main effects of Model 1. To test Hypothesis 3, predicting an interactive effect of the number of included disabled employees and the age of the company, the interaction term INCLUSION x FIRM AGE is included in Model 3. Model 4 was used to test Hypothesis 4, predicting an interactive effect of the amount of included disabled employees and the family character of a firm. In addition to the main effects, the interaction term INCLUSION x FAMILY FIRM was included. Finally, Model 5 was included to test the robustness of the findings. It is presented as a full model with all the variables mentioned earlier.

The models were checked for potential multicollinearity problems. Multicollinearity refers to a situation in which two or more explanatory variables in a multiple regression model are highly linearly related (Fox, 1991). Multicollinearity is measured by the variance inflation factor (VIF), which is the ratio of variance in a model with multiple terms, divided by the variance of a model with one term alone. With VIF values ranging from 1.087 to 2.381, the models are not likely to suffer from highly correlated predictors. Hence, the maximum VIF value of 2.381 does not exceed the threshold of four (Fox, 1991).

## 4 RESULTS

### 4.1 Correlation between inclusion of disabled people and firm characteristics

Table 3 provides descriptive statistics of the sample and a correlation matrix of the inclusion index (INCLUSION), performance measure (ROA) and firm characteristics (FIRM SIZE, FIRM AGE and FAMILY FIRM), showing that, on average, 0.79% of the total FTE within all companies was taken up by people with disabilities, while the remaining FTE was taken up by non-disabled employees. The mean FIRM SIZE was €25 million in turnover among the sample firms (when converted from a log to the base 10 of 5.39). The sample firms were, on average, 43 years old. As a general rule, a company will be considered to perform inadequately with an ROA below 5. The higher the profit per dollar of assets, the less asset-intensive a business is. All other things being equal, the more asset-intensive a business, the more money must be reinvested to continue generating earnings (Filbeck, Foster, Preece, & Zhao, 2017). Thus, a mean ROA of 8.17 implies that firms in the sample were relatively asset light. Finally, the sample shows that 12% of the firms were family firms. The interaction variables have means of -0.323 (INCLUSION x FIRM SIZE), -0.148 (INCLUSION x FIRM AGE) and 0.04 (INCLUSION x FAMILY FIRM). These raw numbers are not meaningful in themselves, but their correlations are discussed later on. While not tabulated, 50% of the firms in the sample included employees with disabilities.

**Table 3 Means, Standard Deviations, and Correlation Matrix of Independent Variables**

Variable	Mean	SD	1.	2.	3.	4.	5.	6.	7.	8.
1. ROA	8.17	11.2519	1,00	-0.39*	0.578*	0.307*	0.171*	0.199*	0.154*	-0.206*
2. INCLUSION	.79	1.12	-0.39*	1,00	-0.324*	-0.166*	0.122*	-0.645*	-0.457*	0.424*
3. log FIRM SIZE	5.39	.50	0.578*	-0.324*	1,00	0.383*	-0.007	0.271*	0.182*	-0.159*
4. FIRM AGE	42.77	31.89	0.307*	-0.166*	0.383*	1,00	-0.102*	0.181*	0.098*	-0.086
5. FAMILY FIRM or not	0.12	n.a.	0.171*	0.122*	-0.007	-0.102*	1,00	-0.059	-0.027	0.253*
6. INCLUSION x FIRM SIZE	-0.323	1.35	0.199*	-0.645*	0.271*	0.181*	-0.059	1,00	0.649*	-0.31*
7. INCLUSION x FIRM AGE	-0.148	1.03	0.154*	-0.457*	0.182*	0.098*	-0.027	0.649*	1,00	-0.32*
8. INCLUSION x Family firm or not	0.04	.42	-0.206*	0.424*	-0.159*	-0.086	0.253*	-0.31*	-0.32*	1,00

\* $p < .05$ ; two-tailed tests.

The correlations reported suggest that companies which include people with disabilities are smaller in size, younger, and are more often family firms than companies with only fully skilled workers. The interaction variable INCLUSION x FIRM SIZE is significantly negatively correlated with firms that include people with disabilities, indicating that FIRM SIZE has a

lower positive influence on firm performance within companies that include disabled people. The variable that measures the interaction effect INCLUSION X FIRM AGE is negatively correlated with inclusion, which means that FIRM AGE has a less positive effect on firm performance within companies that hire employees with disabilities. Finally, within the companies in the sample, family firms that did not include people with disabilities performed relatively better than family firms within companies that did.

## **4.2 Regression**

Table 4 presents the results of the multiple regression models in which the dependent variable is ROA. For Hypothesis 1, predicting that the inclusion of disabled employees has a negative influence on firm performance, Model 1 was run. The results indicate that companies that include people with disability perform significantly worse than companies without disabled workers. As a result, Hypothesis 1 is supported by the model.

Additionally, Model 1 examines whether larger companies perform better than smaller companies, by adding the FIRM SIZE variable in analysis. A significant positive relationship is found between the size and ROA of a company, which was also expected. To extend this relationship, Model 2 provides tests of Hypothesis 2, which predicts that the relation between inclusion and financial performance will be stronger for larger firms than smaller firms. Adding this interaction effect in Model 2 results in an enhancement of model fit, suggesting its explanatory power on firm performance. In Figure 2, it is graphically demonstrated how the interaction variable affects firm performance. In contrast to the earlier found positive influence of FIRM SIZE on firm performance, the model illustrates a negative and significant interaction effect of INCLUSION x FIRM SIZE. This is in line with earlier research, which states that in large organizations it is expected that higher levels of inertia will hinder the effectiveness of diversity practices (such as inclusion of disabled people) intended to change the composition of the workforce (Choi, 2007). This finding supports accepting Hypothesis 3, examining if the age of a firm negatively moderates the relationship between inclusion of disabled people and performance.. To assist the interpretation of this interaction effect, the change in firm performance is shown from the interaction between INCLUSION and FIRM SIZE in Figure 2. The figure illustrates that large companies perform better than smaller

companies, but this effect is less strong for companies that include people with a disability. In a relative sense, performance tends to drop less for smaller firms that hire employees with disabilities compared to similar larger firms.

**Table 4**  
**Regression results predicting firm performance (ROA)**

Variable	Model 1	Model 2	Model 3	Model 4	Model 5
Constant	-9.215*** (5.20)	-9.492*** (5.37)	-9.253*** (5.20)	-9.243*** (5.26)	-9,524*** (5.45)
INCLUSION	-.250*** (0.38)	-.351*** (0.55)	-.278*** (0.46)	-.214*** (0.36)	-.315*** (0.52)
FIRM SIZE	.455*** (1.08)	.462*** (1.41)	.457*** (1.08)	.455*** (1.09)	.459*** (1.10)
FIRM AGE	.113** (1.44)	.123** (1.09)	.114** (1.45)	.114** (1.44)	.125** (1.40)
FAMILY FIRM	.217*** (2.00)	.220*** (1.94)	.218*** (1.98)	.236*** (2.30)	.242*** (2.24)
INCLUSION x FIRM SIZE		-.161** (0.45)			-.165** (0.54)
INCLUSION x FIRM AGE			-.062 (0.52)		-.06 -0.55
INCLUSION x FAMILY FIRM				-.094* (1.50)	-.103* (1.51)
Adj. R2	0.425	0.438	0.426	0.430	0.455
F-statistic	60.320	51.122	48.696	49.469	37.502
Observations	322	322	322	322	322

•  $p < .1$ ; ••  $p < .05$ ; •••  $p < .001$ ; two-tailed tests.

\* Robust standard errors are in parentheses

The table presents the regression results where the estimation method is multiple regression. The dependent variable is the firm's performance, measured by ROA. FIRM SIZE and FIRM AGE are measured by annual sales turnover in millions of euros and number of years since the date of incorporation of the company, respectively. The robust standard errors are reported in parentheses. The symbols \*\*\*, \*\*, and \* indicate significance at the 1%, 5% and 10% level, respectively.

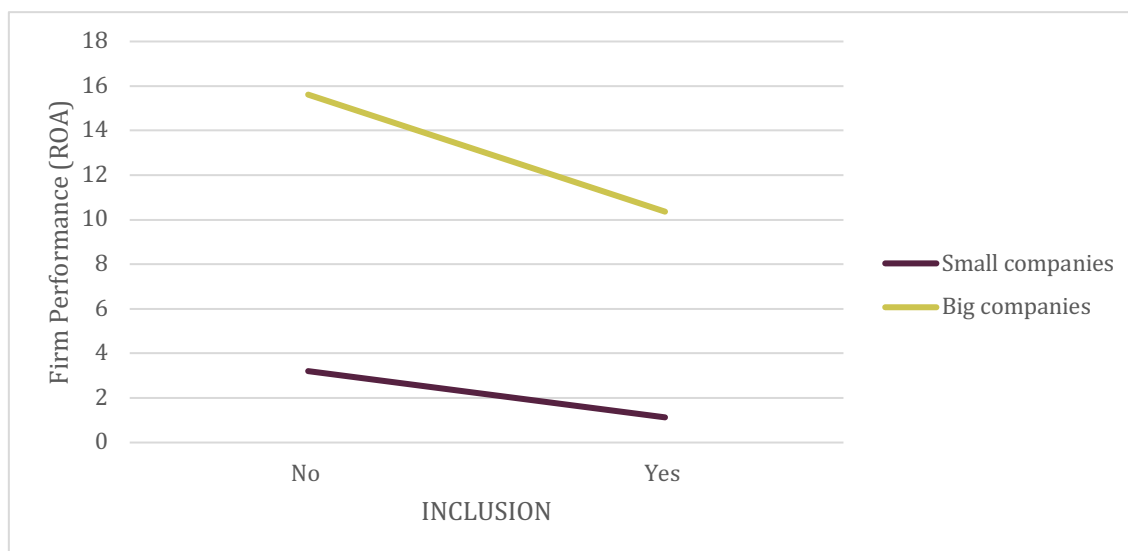


Figure 2. Interaction effect of INCLUSION and FIRM SIZE on Firm Performance (Hypothesis 2).

Model 1 also provide tests of Hypothesis 3, which predicts that the relation between inclusion of disabled people and financial firm performance will be weaker for older firms than for younger firms. The model illustrates a positive and significant effect of firm age on firm performance. In the extension of this relationship, the interactive effect INCLUSION x FIRM AGE is tested. Adding the interaction effect in Model 3 results in an enhancement of model fit, suggesting its explanatory power concerning firm performance. It was predicted that older firms, for reasons such as a more developed internal labour market, can more effectively accomplish diversity than younger firms (Meulenare, Boone, & Buyl, 2016). In contrast, the opposite effect is found, although this effect is not statistically significant. Thus, no support is found for Hypothesis 3.

Finally, the effect of the family-controlled nature of a firm on firm performance was tested. First, Model 1 shows that family firms indeed perform better than nonfamily firms as was expected in Hypothesis 4. Furthermore, the interaction between inclusion and the family-controlled nature of a firm and the resulting outcome in terms of financial performance is tested in Model 4. Hypothesis 4 predicted that family firms that include fewer people with a disability would perform better than comparable, more diverse family firms. In accordance with Hypothesis 4, support is found that the negative relation between inclusion and financial performance is stronger for family firms than for nonfamily firms. The findings suggest that the governance structures, values and culture of family firms obstruct effective inclusion policies. These findings are presented graphically in Figure 3, expressed as the expected

change in firm performance. The figure illustrates that the more family firms include disabled employees, the worse they perform in a financial sense compared to nonfamily firms. In contrast, when the firm including disabled employees is a nonfamily firm, firm performance tends to improve.

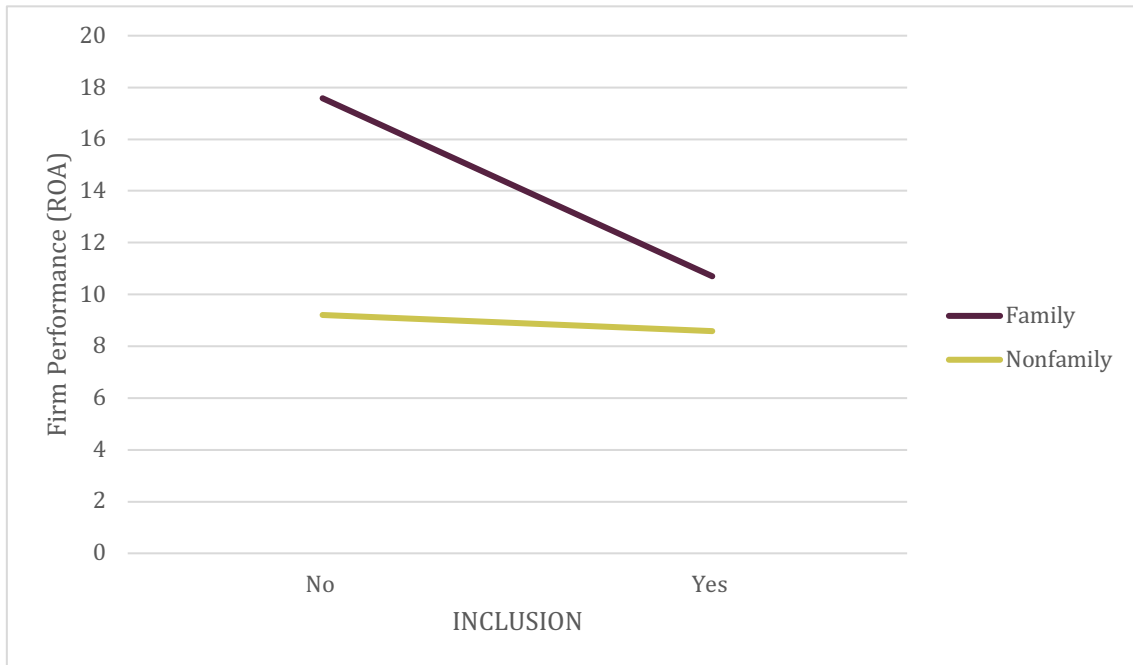


Figure 3. Interaction effect of INCLUSION and FAMILY FIRM on Firm Performance (Hypothesis 4).

## 5 DISCUSSION

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Using a unique dataset comprising data for 322 Dutch companies, this study found that inclusion of disabled employees, together with the firm characteristics firm size and firm age, significantly explains financial firm performance. The results showed that organizations without disabled workers outperformed firms that include disabled employees when measured by ROA. This is a remarkable result, implying that it is not attractive in a direct or indirect financial sense to hire employees with a disability. At the same time, this is not a surprise, given the cutbacks that have been implemented by the government. It is also in line with prior studies on diversity. Only a few studies link diversity management to enhanced business performance (Richard, 2000; Singal & Gerde, 2015), while most have shown that diversity have a negative effect (Filbeck, Foster, Preece, & Zhao, 2017; Jayne & Dipbo-ye, 2004; Harrison & Klein, 2007; Hartenian & Gudmundson, 2000).

The empirical model also suggests that the firm characteristics firm size and being a family firm influence the inclusion-firm performance relationship. First, the negative effect of hiring employees with a disability is stronger for larger firms, implying that it is financially more beneficial to integrate disabled employees in smaller organizations. This empirical result is confirmed by prior research, which found that inclusion of disabled people is more effective in smaller firms. This can be explained by the fact that larger firms are more likely to have formalized routines, policies and structures in place that impede integration of disabled employees (Choi, 2007). Also, smaller firms may be more resource-dependent and experience higher pressure to integrate disabled employees. Second, family firms perform worse than nonfamily firms when including employees with a disability. The negative effect of inclusion on firm performance is stronger for these firms. This suggests that it is financially more beneficial to hire disabled employees in nonfamily firms. In the research of Singal & Gerde (2015), which was mentioned earlier, it was argued that family firms are afraid that diversity may erode some of the internal social kinship and ties that enhance trust, collective circumstances, coordination and knowledge sharing. Third, it was hypothesized that the age of a firm has an influence on the inclusion-firm performance relationship. This is, however, not confirmed by this study's empirical model. In other words, the age of a firm relates to



firm performance but does not interact with the inclusion of disabled employees. This finding contrasts with the work of (Meulenare, Boone, and Buyl, 2016).

The results indicate that the inclusion of people with a disability negatively impacts the financial performance of a firm. There are three potential explanations for this finding. First, as already suggested by Cook & Glass (2009), the skill set of the disabled worker may be questionable compared to comparable non-disabled workers. Non-disabled employees are more productive and, as a result, deliver more financial value. Apparently, the financial incentives provided are not enough to compensate for this difference. Second, it could be that the benefits of hiring people with disabilities are not immediately visible in a company's bottom line (Jayne & Dipbo-ye, 2004). The Participation Act was only recently introduced in the Netherlands. Companies need to invest resources in training and other programs, such as flexible work arrangements, efforts for inclusion recruitment and sponsored affinity groups. It might be that companies that invest in these resources need more time to see the results of these actions and transform them to be visible in terms of the ROA. Third, related to the previous argument, according to the results of the empirical model, investing in diversity management may prove to be more costly than investing in current employees (Williamson, 1979).

As a result, there is no proof that inclusion of disabled people has an added value for profit-minded entrepreneurs. This seems to be one of the rational justifications for why entrepreneurs experience the incentives to integrate disabled as being insufficient, which is in line with the work of Weel (2017). The negative economic consequences might be the explanation for the reluctance of organizations to participate in the integration of disabled people. Nevertheless, organizations can be intrinsically motivated to include people with disabilities for reasons such as social responsibility. However, in contrast to these motives, it seems that in an economic sense firms are not benefitting. In this way, this study contrasts with earlier work, which advocates for inclusion of disabled people by arguing that it leads to more creative and diverse thinking in the workplace, which results in superior financial performance (Badal, 2014; Smedley, 2014; and Deleon, 2015). It might be that inclusion leads to more creativity and diverse thinking, but that this does not lead to an enhanced firm performance. It could also be that inclusion has indirect effects (for example, improved public relations), but there is no evidence that this leads to an increase in firm performance either.

This study focuses on a different part of the diversity-firm performance relationship than earlier research. Earlier research was conducted to investigate the link of firm performance with gender and ethnic diversity (Carte et al, 2010; Herring, 2009; Richard, 2000), cultural diversity (Hartenian et al, 2000; Palich et al, 1999), age diversity (Kunze et al, 2011; Meulenare et al, 2016) and organizational diversity (Weigand, 2007). There have also been qualitative studies on the effects of inclusion (Stone & Colella, 1996; Barry-Power, 2010). This is, as best as can be determined, the first quantitative research to investigate the economic effects of hiring disabled employees. This research is, therefore, a contribution to the literature, because it provides new insights into the inclusion-firm performance relationship. This research changes the direction of future research by establishing a study which examines firm-level inclusion effects. There is also a methodological contribution, since this research adopts a cross-sectional approach in combination with multiple regression. This is a methodological contribution because, to the best of our knowledge, this approach has rarely been applied in diversity related studies (e.g., Boxenbaum & Daudigeos, 2007; Rothenberg, 2007).

## **5.1 Theoretical and practical implications**

At a theoretical level, this study found evidence for the reasoning that there is a relationship between inclusion and financial firm performance. This research also found support for the influence of firm characteristics on this relationship, although it did not find such evidence concerning the influence of the size of a firm. This study found limitations to the positive influence of diversity, as stated in prior research (Richard, 2000; Singal & Gerde, 2015). Moreover, this study found answers to the question of whether inclusion of disabled employees has financial consequences for organizations, finding that there are negative effects. The quantitative results bring clarity to prior qualitative research on the financial effects of inclusion (Filbeck, Foster, Preece, & Zhao, 2017; Cook & Glass, 2009; Jayne & Dipboye, 2004; Stone & Colella, 1996).

At an empirical level, this study presents pioneering evidence of firm characteristics as determinants. Prior research created the base for this study, while this study's validation delivers new insights into the functioning of size, age and family character in the inclusion-firm performance relationship. Moreover, this study validated the framework

proposed by Nihat & Demir (2016) and found evidence to acknowledge the validity of the use of these firm characteristics as intervening variables. This study also demonstrated that the academic field of inclusion relationships lacks measurement frameworks applicable to quantitative research. Finally, this study showed the inter-relations between the elements of inclusion and financial performance, increasing our understanding of the reinforcing nature of inclusion and financial objectives.

At a practical level, this study provides entrepreneurs with reasons to include people with a disability. In a financial sense it is not attractive to hire disabled employees. However, as stated earlier, research showed that inclusion is more effective in small and nonfamily firms. Moreover, policymakers can profit from the information that the incentives given by the Dutch government are not enough to compensate for financial income lost because of the inclusion of disabled employees.

## **5.2 Limitations and future research**

As expected, this study comes with limitations. One limitation of this study is that the companies included in the sample are not distributed in the same way as the population (see Table 1). Moreover, mainly medium and large companies were included in the sample because of the availability of the financial parameters necessary to compute the ROA. This might have an effect on the external validity or generalisability of the findings. A second limitation concerns the nature of the research, because the cross-sectional research focuses solely on 2016. It could be that another time-frame (for example, 2014), would provide different results. It was not possible to conduct a study including more years, because 2016 is the first year in which the TNO included questions about the inclusion of disabled people in their WEA survey. An interesting question for further research will be if the findings of this research also hold for multiple time-frames in the future.

In addition to this last suggestion, it might be interesting to extend this explorative research. It would be possible to investigate if there are returns on the resources invested in terms of financial firm performance. There might be a longer pay-back period because the Participation Act was only recently introduced in the Netherlands. As a result, extension of this research will result in a higher level of validity. Another suggestion is to subdivide the companies into sectors. The sample used in this research represents firms in 11 sectors. But

it is an interesting question to see whether there are significant differences in performance within various sectors. For example, it is known that most of the disabled workers are found in agriculture and industries with light manufacturing work (Barry-Power, 2010). This is also confirmed in this research, with 75 companies (40 agricultural and 35 industrial) out of a total of 161 operating in these sectors. Conducting more in-depth research has the added-value of addressing conclusions which can be drawn from such results. For example, under-performing sectors can learn from the best practices in better-performing sectors. It also might be that it is more effective to integrate employees with disabilities in one sector than in others. Scholars are encouraged to further explore the relationship between inclusion and firm performance with multiple methods and case studies to further assess its applicability.

## 6 CONCLUSIONS

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This research places pressure on policymakers since this study shows that, apparently, the incentives to integrate employees with a disability are not enough. The aim of the Participation Act is to integrate as many people as possible in society, while the number of organizations that include employees with disabilities is limited (Barry-Power, 2010). In the upcoming years, trade and industry are required to create one hundred thousand jobs. Larger organizations need to include disabled employees. This is enforced by a quota. If these numbers are not met, fines are imposed. Despite the business world being on schedule, even though the contracts are often temporary, there is still a great deal of work to do in order to reach the goal of 125,000 integrated disabled employees. The Dutch government may realize that, to attract profit-minded entrepreneurs, fitting incentives are crucial. Not only financial incentives, but also assisting organizations, for example, in their attempts at making work suitable for disabled people, in recruiting fitting candidates and with training for hired employees. This will make it possible to successfully stimulate the integration of disabled employees within organizations.

## 7 APPENDIX

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