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The Influence of Social Capital on Financial Behaviour of Small Norwegian Firms

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Summary

Social capital has been shown to influence investments and cash flow sensitivity in other countries. Still, there are limited amount of research on this topic using Norwegian firms. Due to high level of trust in Norway, the thesis' implications might differ from other foreign studies. In this master thesis, we show that municipalities with higher levels of trust had significant effect on investment and cash flow sensitivity to investments (CFSI) on Norwegian non-listed firms located in that region. The accounting information is of high quality from a unique database which has accounting data for all Norwegian private firms. We argue that higher levels of trust increase the firms' investments and increase CFSI. We also provide evidence that where trust and sociability is higher, the effect on investment and CFSI is stronger. Additionally, we suggest that civic engagement increase the effect of trust on investments, while it has little economic robustness on the effect of trust on CFSI.

In this master thesis, we research how social capital influence Norwegian non-listed firm's investments and cash flow sensitivity to investments (hereafter denoted by CFSI). First, we test the economic significance of the tax reform in 2006 on our models. Thereafter we test our main hypotheses, as outlined in the first sentence above. Finally, we analysed how sociability and civic engagement influence the marginal effect of trust on capital expenditures and cash flow sensitivity to investments.

Firstly, trust had no statistically stronger marginal effect after 2005 for neither investments nor CFSI. Because there are no structural difference or implications before and after the tax reform in our models, we continued using a model without inclusion of interaction terms with the tax reform.

Secondly, trust had a significant effect on investments, independent of the tax reform. It has a positive influence on investments - in line with previous literature. Trust was statistically significant in the CFSI-model, consequently having a positive impact on CFSI. The result is rather surprising; however, some literature support our findings.

Finally, our last analysis assesses the marginal effects of trust on investments and CFSI with different levels of sociability and civic engagement. In areas with higher levels of sociability, the marginal effect of crime rate on investments and CFSI decreases and the marginal effect becomes stronger. However, the effect of sociability is only significant up to roughly the 90^{th}- 95^{th} percentile and 95th percentile for sociability for investments and CFSI, respectively. Accordingly, in areas with very high sociability, sociability is expected to have no effect on the marginal effect of crime. Civic engagement showed to have a significant effect on the marginal effect of crime on investments for any value during our whole sample period (according to a 90% confidence interval), and it decreased the marginal effect (marginal effect became more negative – hence stronger) of crime on investments - which was negative. Additionally, civic engagement proved in this thesis to slightly increase the marginal effect of crime on CFSI. Civic engagement had no significant effect when levels were very high. However, its economic significance is limited.

The results for the investment-models are pleasing and in line with expectations and previous research papers, while the CFSI-models gave us results that were different from our expectations, but somewhat in line with previous research.

Acknowledgements

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Introduction

According to Shefrin (2011) The traditional approach to corporate finance is based on three concepts:

- The Capital Asset Pricing Model (CAPM),
- The assumption of efficient markets,
- Rational behaviour

Behavioural finance challenge this traditional approach. Proponents argue that psychological aspects affect all three parts the traditional approach. The main arguments propose that psychological phenomena affect the decision maker in such a way that prevents optimal rational behaviour. Evidence also supports that security risk premiums are not fully determined by security betas, and that market prices is not corresponding with fundamental values.

In this study, we wish to understand how social capital as a psychosocial phenomenon influence the financial behaviour of small unlisted firms in different regions of Norway. The concept of social capital has been a hot topic the last decades and it has had increasingly influence on financial studies.

The purpose with this master thesis is to do a quantitative study of the relationship between social capital and the corporate financial behaviour of unlisted companies in different regions in Norway. We expect social capital to have a direct effect on financial behaviour of these firms.

Theoretical background

Social Capital

Social capital is an old term, but it's academic importance was acknowledged in the late 1990s and early 2000s. In the late 1990s several researchers studied the effect of social capital on the economy and the social environment in organizations.

Even though social capital has been used in the work of Lyda Hanifan (1916) and Jane Jacobs (1961), the actual term *social capital* entered the literature in the 1970s in the work of economist Glenn Loury. He interpreted social capital as the social context in which one finds oneself and how this affected one's academic and career achievements. Thus, how social capital influences human capital (Loury, 1977). Loury's work became an important bedrock for later studies.

The first who conceptualized *social capital* was Pierre Bourdieu in the 1980s and early 1990s. He argued that capital is categorized into three fundamental species: social, cultural and economic (Bourdieu & Wacquant, 1992). He defined social capital in this manner (Bourdieu 1986, p. 243):

"Social capital is the sum of the resources, actual or virtual, that accrue to an individual or a group by virtue of possessing a durable network of more or less institutionalized relationships of mutual acquaintance and recognition."

He used social capital to describe and discuss social inequalities in the population. Later, the networking-factor he previously described became increasingly popular in the social capital literature and is defined as one the three branches of social capital: trust, cooperation and network (Paldam, 2000). Yet, both cooperation and network had been used in research before (Coleman, 1988), but they had not been conceptualized as in Paldam's paper.
Coleman defined social capital as the ability of individuals to work voluntarily together. Paldam used Coleman's idea and linked the branches trust and cooperation to form the trust-cooperation complex. Hence, individuals cooperate better if the trust within the group is high. This group can now be defined as a network. The people you trust tends to be your friends and you probably trust

your friends, thus you have a high-trust network. Based on these assumptions, will we find suitable proxies for social capital. Such proxies could be cooperation and voluntary participation in organizations. Based on his study, trust and network are likely to be positively correlated and they should have the same effect on firms' financial behaviour.

Paldam continues with this assumption and links it to Putnam's Instrument (1993): Density of Voluntary organizations (VO's). If the population of VO's is big enough and the density of VO's is high, special trust is likely to transform into generalized trust. For simplicity, we will only assume such a transformation and not analyse the correlation between special trust and generalized trust.

As Bourdieu argued, the branch of capital in economic literature consists of three factors, namely social, human and economic. In our thesis, we are mainly concerned with the correlation between social and economic capital. Evidence shows that social capital can positively influence human capital (Coleman, 1988; Loury, 1977). Implicitly, high social capital can increase academic achievements, and the ability of social capital to contribute and enhance quality in our society. Additionally, education and human capital are likely to have a positive effect on capital investments and economic payoff on all levels (Nelson & Phelps, 1966). In the research paper by Nelson and Phelps, human capital increased capital investments in farming. Thus, there might be evidence that capital investments are indirectly influenced by social capital.

Evidence shows that civic engagement, voter participation and civic association can be used as proxies for social capital (Putnam, 1995). Putnam's research motivation was that America, a century-proclaimer of democracy, high voter turnout and civic engagement, yet in the last decades instrumentals of social capital had declined. He used variables such as civic engagement and trust as parameters of social capital to argue that the decline in political engagement, hence voter participation could be explained by decline in social capital. The two instruments trust and civic engagement as used by Putnam, are likely to be good proxies for social capital. Some of the theoretical motivation for Putnam's study was the findings of Alexis de Tocqueville's, *Democracy in America (1835-1840).* Alexis de Tocqueville found in 1830 that American were highly social and that

their propensity to civic association was a key factor to make democracy work. Moreover, Putnam's findings were consistent with Coleman's findings: social capital produce better schools, faster economic development and more effective government.

Tuti Alawiyah and Mary Lehman Held presented in 2015 research of how social capital is associated with adult health and well-being of Indonesian women. What's interesting regarding this paper is variables they used. They included three measures of social capital as independent variables: community participation, social trust, and social support. Community participation and trust, previously defined by de Tocqueville, Putnam and Paldam are considered to be good proxies for social capital. Community participation includes respondents' participation in both formal and informal organizations, such as religious groups and community meetings in neighbourhood groups.
Social trust was measured by six questions of how the respondents trust others and how their trust in the general community were. The social support variable was just if they received any kind of social support.
They also included a variety of demographic variables such as years of education, age, marital status, number of children and per capita expenditure.

The definition of social capital varies a lot in the research literature, yet there seem to be a congruence in the sense that trust, cooperation, civic engagement, sociability and network are good parameters. A more general definition of social capital can be divided into bridging (external) and bonding social capital (internal) (Gittel & Vidal, 1998; Putnam 2000; Oh, Kilduff, & Brass, 1999). Bridging social capital "can help explain the differential success of individuals and firms in their competitive rivalry" (Adler & Kwon, 2002). This is the sort of social capital that might explain the variance in firms' capital investments and cash flow sensitivity. Bridging social capital focuses on the external ties between the actors in the environment, rather than the internal version: "the ability of people to work together for common purposes in groups and organizations" (Fukuyama, 1995).

According to Knack and Zak (2001), there is a high level of trust in fair societies, i.e. where there exists wage discrimination based on non-economic factors.

Norway is perceived as a very fair society, so it is reasonable to assume that the overall trust is high.

Social Capital and Financial Effects

In our thesis, we wish to focus on social capital and the possible effect on financial behaviour of small firms. It was first in 1997, that Knack and Keefer studied the effect of social capital on economic payoff. They used indicators of trust and civic norms from the World Value Survey for a sample of 29 market economies. In their paper, two contradicting theories, namely the "Olson -effect" (association stifle growth through rent-seeking" - Olson, 1982) and "Putnam-effect" (associations increase growth through trust – Putnam, 1993) was assessed. Firstly, they found that trust and civic cooperation are associated with stronger economic performance. Secondly, associational activity is not correlated with economic performance or investments. If any positive influence of social activity (formal or informal), this is offset by the Olson-effect. Thirdly, they found that trust and norms of civic cooperation are stronger in countries with formal institutions that effectively protect property and contract rights and in countries that are less polarized along lines of class or ethnicity. Their study supports Putnam's findings of civic participation and cooperation, yet there seem to be no coherence with Putnam's factor - associational activity. Based on the findings on Knack and Keefer, voter participation is likely to have a significant effect, while social associations might not be a good predictor of economic performance nor investment in companies.

Financial development is also positively correlated with social capital (Guiso, Sapienza, & Zingales, 2004). Accordingly, higher levels of trust would lead to improved financial development, hence less investment in cash and more use of institutional credit and less informal credit. They also found that social capital plays a larger role and has a more prominent effect in areas with weaker enforcement and less education among the population. According to these findings, social capital is expected to play a minor role in Norway because formal institutions are strong and the population are likely to have education. Therefore, we are very interested in the trade-off between level of social heterogeneity vs level of education. Thus, capital investments and leverage are expected to be

higher, yet the corresponding amounts cannot be explicitly explained by social capital. The financial development in Norway is rather good, and overall level of social capital in Norway is high. This is consistent with Knack and Zak findings in their 2001 article.

Another study considering the effect of trust on stock market participation, found that due to risk aversion, less trusting individuals are less likely to buy stock and they are likely to buy less (Guiso, Sapienza, & Zingales, 2008). Since generalized trust correlates with stock ownership, countries with higher trust is like to have higher stock market participation. Just as in their previous study in 2004, education and knowledge about the market is more important when there is low trust because higher education and knowledge will have a larger effect on stock ownership when the generalized trust is low (people do not trust the market, but they have enough knowledge to buy stocks). Additionally, other variables influenced the stock market participation across countries, such as whether the country was invaded during World War Two. Low-trust countries that were invaded should have lower stock market participation, than invaded countries with higher trust. However, trust have no effect for countries that were not invaded. All in all, their research finds that Norway has a quite high level of participation, partly due to high level of trust. Based on this assumption, it is expected that small companies accumulate equity or leverage externally, implicitly assuming symmetrical market information (Modigliani & Miller, 1958).

A quite similar research found that trust and sociability play significant roles for stock market participation (Georgarakos & Pasini, 2011). Georgarakos and Pasini did a research on trust, sociability and stock market participation on a number of countries, mainly in Europe, which in many ways builds on to the work of Guiso et al. Their findings point to that both factors should be taken into account, since a reduction in the level of trust can be counterbalanced by increased sociability, and vice versa. Regarding trust, the corresponding data reflected how people perceive the level of interpersonal trust, sharing, and reciprocity. Sociability is mainly measured by density of social networks, or patterns of civic engagements.
By using data from WVS and Share, they have comparable international as well as regional data. Their findings show regional variations of trust prevailing trust can lead to more stock-ownership in countries with low stock-participation and

low average levels of trust; this is especially seen for wealthy households. On the contrary, countries where stock participation is high; in these regions sociability evokes stockholding. Typically, these countries have high median trust rates, and the effect of differences in regional trust is low.
Both the article of Georgarakos and Pasini and the one of Guiso, Sapienza and Zingales might have implication for our research. From our perspective, it is intuitive that in the regions where stock market participation is higher, it might be easier for companies to acquire financing from the local area, which points to higher investments and lower cash flow sensitivity

Investments

Early on, the investment literature was based on the assumption of a perfect capital market (Miller & Modigliani,1958) and other neoclassical theories (Jorgenson & Siebert, 1968). In a perfect capital market, neither capital structure, debt leverage, internal liquidity nor dividend payment has no implication of investment. Accordingly, an investment does not depend on a firm's financial structure - internal and external funding are perfect substitutes. However, most of these early studies were performed with a very limited sample which often consisted of large firms.

Yet, later, researchers Fazzari, Hubbard, and Petersen (1988) and other researchers began to understand that other factors influenced corporate investments -first and foremost financial factors, but also acknowledged that both average and marginal tax burdens influence investments. Fazzari et al. (1988) found that financial factors are important for all firms, independent of size. Such financial factors are, for instance availability of internal finance and access to new debt or equity finance (Cleary, 1999). In fact, internal financing generated from cash flow and retained earnings might have an opportunity cost advantage compared to the costs of new debt and equity due to information asymmetry (Greenwald, Stiglitz, & Weiss 1984; Myers & Majluf, 1984; Myers, 1984), transaction costs and agency problems (Jensen & Meckling, 1976; Grossman & Hart, 1982; Jensen, 1986; Bernanke & Gertler, 1989). For smaller firms, transaction costs and agency costs are expected to be higher. Due to less transparency for these non-listed firms, the cost of new debt increase as a function of increased interest rates, and transaction costs are believed to be higher as well

(López-Garcia & Sogorb-Mira, 2008). Consequently, the pecking order theory (Myers & Majluf ,1984), is presumably a theory that might explain the financial behaviour in a strong information asymmetric market, in which small firms are situated. Because of asymmetric information, firms prioritize internal funds first before issuing equity or debt. When issuing equity, the market assumes that the stock price is overpriced, and the stock price falls. Also, issuing equity dilutes the shares of the existing shareholders. That is, issuing equity is the last option of financing investments. Internal funding is therefore the first option, but if the internal funding is not enough, firm seeks borrowing. But, as mentioned, small firms face higher transaction and agency costs and they become more sensitive to cash flow.

While if firms face large costs disadvantages, consequently making them internal-dependent, investments will fluctuate accordingly. On the opposite, suppose equity or debt issuing are cheap, then external funding is only used to smooth investments when internal funding fluctuates (Fazzari et. Al, 1988; Cleary et al., 2007).

Sogorb-Mira (2005) finds similar results, but argues that the financial behaviour of smaller firms has little or no relationship with information asymmetry or cost disadvantage, but instead the results are biased because managers in SMEs are trying to not lose control over the firm.
Moreover, firms with low payout rates, are likely to invest more, and hence exhibit lower cash flows, according to Hovakimian (2009). Such firms are usually younger firms with higher growth opportunities. More mature companies are on the contrary believed to be high-dividend companies, leaving less money for investments.

Kaplan and Zingales (1997, p. 169) found that *"firms that appear less financially constrained exhibit significantly greater sensitivities than firms that appear more financially constrained".* Smaller firms are believed to be more financially constrained since they are more likely to use internal funds because of cost or availability of external funding, perhaps because of their size, and information asymmetry (Bhaird & Lucey, 2010; Chittenden, Hall, & Hutchinson, 1996), which in turn makes them more cash sensitive. These results further strengthen the

findings of previous research (Myers & Majluf, 1984) and the motivation of Fazzari et al. 1988 paper. Thus, small firms are likely to have more financial constraints and be more cash-sensitive.

Bustamante (2016) studied how real and financial frictions influence corporate investments. It combines neoclassical theories, the q-model for realized investments, and the likelihood of investments. The q-theory model represents the optimal investments policy, where firms are subject to fixed and both convex costs of investments and external financing. Bustamante's research is based on the framework of Abel and Eberly (1996) and Hennessy, Levy and Whited (2006). Through measurements of the marginal effects of firms' cash flows on the probability of investments, one can identify how higher financing costs may prevent firms from investing. The paper used a log-likelihood estimation to measure a non-linear function of an investment rule, which is previously stated as model with higher explanatory power (Caballero & Leahy, 1996; Abel & Eberly, 2002; Gourio & Kashyap, 2007; Bloom, 2009; Cooper, 2006; Belo Xue & Zhang, 2013; Gala & Gomes, 2012). Bustamante found that as firms increase their investment, they rely more on external financing, implicitly increasing costs of external financing. Additionally, firms in more capital-intensive industries have higher adjustment costs of investment, higher fixed costs of investment, and lower costs of external financing. This finding is consistent with previous empirical corporate finance literature: investment and capital structure decisions depend on the tangibility of assets and that leverage ratios are significant with regards to industry.

The effect of Social Capital on investments

A goal of this thesis is to analyse the influence of social capital on capital expenditures. As outlined above trust has been shown to increase economic development and growth. To the extent that this is true, trust also triggers greater investment and other economic activity, according to Knack and Keefer (1997)

Many empirical research methods include trust directly in the regression equation while simultaneously ignoring the impact of trust on other covariates (i.e. investment or human capital). Pure regressions excluding interaction terms may generate biased results (Pritchett, 2005). Including the interaction terms will

provide more robust results and a better understanding of reality. Hence, an interaction between human capital and social capital could better explain a variation in investments. Such interaction has been discussed in previous literature (Coleman, 1988).

In most contexts, investments are transactions that are distributed over a period. Two problems arise because of timing: 1) asymmetric information 2) the future cannot be precisely predicted. Contracts between agents mitigate asymmetric information and the transparency problem. However, more extensive contracts generate higher costs.

Dearmon and Grier (2009) found that trust had a positive and significant effect on investments. Additionally, higher income and education increased investment. Despite significant results, using cross-sectional regression trust have no significant result. Also, education has been shown to not be significant when moving from cross-sectional to panel regression (Islam, 1995). But using an interaction between trust and education, Dearmon and Grier found that education was robust and had a positive effect and gave a synergy when interacted with trust - which is in line with previous research (Bjornskov, 2006). If levels of trust were higher, education had a stronger effect. Thus, trust increases the effectiveness of human capital when measuring the degree of investments.
Other research has also found a strong and significant effect of trust on investment decision making. Bottazzi, Da Rin, and Hellmann (2012) found that trust had a strong effect on investment decisions. A marginal increase in trust increased the probability of investment by seven percentage points.

Knack and Zak (2001) argued that trust reduces the cost of transactions. Thus, high trust societies produce more output than low trust societies. Their research measured the distance between two agents, investor and broker respectively as a principal-agent scenario. Compared to Knack and Keefer ‘s (1997) paper which focused merely on the transaction distance, Knack and Zak’s research included other socioeconomic factors such as social heterogeneity and power of informal/formal institutions and governments. Knack and Zak examined the aggregated impact of trust on physical capital using a cross section of 41 countries and find that trust increases investment. The results from the study revealed that

when social heterogeneity was high (low trust), formal and informal institution were weaker, the amount invested would decrease and that this adversely impacted income growth. In other words, in areas where trust is higher, investments and growth are expected to be higher. If higher investors invested more, the firms should have more capital to foster growth through capital investments. Therefore, we expect to find a positive relationship between trust and investments.

Although most of the literature has focused on the effect of trust on stock investments, there is one study that we believe is more specific and on target with our thesis. Grier and Dearmon (2011) studied the effect of trust on accumulation of both human and physical capital. As far as our interest goes, they found that trust is positively correlated with investments. Increasing trust in a low -trust country results in higher amounts in investments compared to increasing trust in a high-trust country. This implies that we expect trust to have a smaller influence on investments in Norway, and especially municipalities with higher levels of trust. There were mainly two explanations for their findings: first, given that the amount of information and corresponding quality increases under trust, consequently firms would have a larger variety of investment opportunities, but based on the level of quality they could more easily increase their probability of success. Secondly, because of improved transparency and information availability, extensive contracts, meeting and transaction costs would be reduced.

Investment Cash Flow Sensitivity

The starting point of research on *Investment Cash Flow Sensitivity* is the work of Fazzari, Hubbard, and Petersen (1988), who found that firms that retained nearly all their income had a much greater sensitivity of investments to cash flow. The conclusion from Fazzari et. al (1988) is that firms with significant variation between the costs of internal and external will face liquidity constraints. This may be because of *information asymmetries*, also known as the *Pecking Order Theory,* as discussed by both Myers and Majluf (1984) and Greenwald, Stiglitz, and Weiss (1984), and *agency costs* as proposed by Jensen and Meckling (1976) and further discussed by Grossman and Hart (1982), and Jensen (1986). The liquidity constraints are causing corporate investments to be more sensitive to cash flows, and the effect is larger for firms with low dividend payout. It was these findings

that triggered more researchers to explore the underlying factors of this phenomenon. Later research supported and expanded these findings: Devereux and Schiantarelli (1990); Oliner and Rudebusch (1992); Kadapakkam, Kumar, and Riddick (1998); and Shin and Kim (2002) all found supporting results, and also found that young or small companies showed higher investment-cash flow sensitivity; Calomiris et al (1996) observed the same for firms with low or absent credit rating; and the same for firms not part of industrial groups, e.g. independent firms (Hoshi et al., 1991; Shin & Park, 1999). A large part of the literature of the cash flow sensitivity of investment and the financing constraints faced for the company are based on regressions of investment on cash flow and Tobin's Q, both Schiantarelli (1996) and Hubbard (1998) have compiled extensive review articles on the subject.

There have also been studies with challenging views, that has shown that investment cash flow sensitivity can be observed also in frictionless markets due to other reasons than financial constraints. More specific, this might be because of difficulties concerning measurement of marginal investment opportunities (Tobin's Q), the cash flow might bring information about the opportunities of investments which is not easy to interpret from the estimated Q. So, if the correct underlying information is not reflected, the observed cross-sectional differences can simply originate from variations in the measurement errors of Q. Erickson and Whitted (2000) found the significance of cash flow to disappear when applying measurement-error-consistent GMM estimators, while Gilchrist and Himmelberg (1995) at least in some cases, found that it is the association with investments opportunities that makes the cash flow significant. Another proposed explanation is that the cross-sectional differences in cash flow sensitivity of investments can be noticed if cash flow is a better proxy for the growth opportunities for different kinds of firms. Alti (2003) found a stronger link between investment and cash flow for high growth firms due to managers who adjust their current investments in response to the realisation of cash flow, thus adjusted for their current growth opportunities.

There is also been argued that cash flow sensitivity of investment occurs because managers might overinvest when internal funds are accessible. Several researchers have come to this conclusion: Jensen (1986) states that managers is hesitant to pay out free cash flow as dividends and rather invest in negative NPV

projects; Pawlina and Renneboog (2005) found support for their hypothesis that investment cash flow sensitivity primarily is driven by high discrete managers who overinvest; furthermore did Morgado and Pindado (2003) find evidence for both under- and overinvestment in their analysis of a possible relationship between investment and firm value.

Later, the paper of Hovakimian and Hovakimian (2009) has been introduced as a benchmark for Cash Flow Sensitivity of Investment research. Their approach is different to prior studies since they make no assumptions of what causes investment cash flow sensitivity, instead they apply a two-step procedure to investigate if investment cash flow sensitivity is related to economically significant distortions regarding level and timing of investment expenditures. The first part applied is an empirical identification of firms with low and high investment cash flow sensitivity. The next step is to look for dissimilarities in the underlying dynamic in both methods of financing and type of investment across these periods of low and high cash flows, for the respective firms. Their main findings are that investment cash flow sensitivity is associated with overinvestment and underinvestment when cash flows are high and low, respectively. There are two underlying reasons for this. Compared to otherwise comparable firms, cash flow sensitive firms invest less in years of low cash flow and more in high cash flow years. The other reason is that managers would prefer to invest more than their financing sources sanctions in low cash flow years.

The Effect of Social Capital on Investment cash flow-sensitivity

It is expected that small firms are more influenced by social capital, and social capital should decrease financial constraints due to networking, altruism, trust and/or lower transaction costs. Thus, consistently with our hypotheses, social capital decrease information asymmetry, consequently lowering cash-flow sensitivity.

Research has found that firms belonging to business groups are better suited to exploit the benefits of internal capital markets and enjoy easier access to financial resources, compared to stand-alone firms (George, Kabir, & Qian, 2011; Deloof, 1998; Lensink, Molen, & Gangopadhyay, 2003). This makes us believe that social

capital influence firms' cash flow sensitivity of investments, where firms located in regions with high sociability will be less cash flow sensitive.

Hoshi, Kashyap and Scharfstein (1991) found that companies that belonged to a Keiretsu, which is a Japanese corporate group ,is less sensitive to cash flow to investment than by independent firms. The reason being is that networks reduce underinvestment problems caused by capital market imperfections. Consistently, Kato, Loewenstein and Tsay (2002) found that Keiretsu-companies were less sensitive to liquidity constraints regarding investment spending. Implicitly, bridging social capital may have an influence on the cash flow-sensitivity.

Yet, research also finds no significant relationship between cash flow sensitivity of investment and business groups (George et al., 2011; Shin & Park, 1999). These mixed findings might be due to unique characteristics of the business groups in Japan and Korea (George et al., 2011).

Research Design

Research Question and Hypotheses

- ➢ *Does the financial behaviour of small firms in different regions in Norway vary according to the level of social capital in the region?*

Hypotheses

Research, e.g. by Messner, Rosenfeld and Baumer (2004), has shown that crime has a direct effect on trust, and that areas with low crime rate tends to have a high level of trust, and vice versa. Guiso et al. (2004) found that in areas in Italy with high levels of trust a bigger proportion of financial wealth is invested in shares. Dearmon and Grier (2009) found that trust had a positive and significant effect on investments. Other research has also found a strong and significant effect of trust on investment decision making. Bottazzi, Da Rin, and Hellmann (2012) found that trust had a strong effect on investment decisions.

H1: Areas in Norway with lower levels of trust (higher crime), firms' investments tend to be lower.

We believe that social capital will decrease investment-cash flow sensitivity through symmetrical information and trust as discussed by Hoshi, Kashyap and Scharfstein (1991). Business group networks are expected decrease the asymmetric market information that yields for small firms and moreover reduce agency and transaction costs to ease companies with external finance issues. Consequently, lowering investment-cash flow sensitivity. Since network, trust and cooperation correlate (Paldam, 2000), and thus negatively correlated with crime, we believe that crime will increase cash flow sensitivity.

H2: Firms located in municipalities with higher crime rates, show more cash flow sensitivity to investments

Before the tax reform, companies had incentives to pay out dividends. (Thoresen & Alstadsæther, 2010; Thoresen, 2009), while after 2005 companies had a stronger incentive to invest rather than pay out dividends because the incentives regarding payouts had diminished. Before 2005 non-social capital factors played a larger role in investment decision-making than after. Due to a smaller difference between the marginal tax on capital and wages, small firms no longer have a taxation arbitrage incentive after 2005. Therefore, such non-social capital factors that affected investment decision-making before 2005 (organizational changes, size of personal income and labour-intensive industry) are expected to diminish or just have a smaller effect after 2005 (Thoresen, 2009). Since those variables have no or little impact after 2005 it is expected that social capital (among other variables) are given a stronger economic significance.

H3: The marginal effect of Crime on investments increases after 2005

Based on the same assumption that trust will have a larger effect after 2005, we expect that trust will have a stronger influence on cash flow sensitivity to investments after 2005.

H4: The marginal effect of Crime on CFSI increases after 2005

Since previous research has defined social capital as an umbrella term consisting of trust, sociability and civic engagement (among other factors), we argue that

trust and sociability are positively correlated. However, research has not been fully consistent whether sociability has an economic influence. Knack and Keefer (1997) found no clear evidence that associational activity has an impact on economic performance. Thus, we can expect no significant effect of crime on Investments with different levels of sociability. On the other side, Alawiyah and Held (2015) found that community participation (sociability) had an influence on wealth. Even though previous investment literature has evidently found no evidence of the effect of sociability on investments, we argue from a theoretical perspective that such connection and influence is expected to exist. We argue that trust and sociability are positively correlated (crime vice versa). Therefore, we expect that marginal effect of trust on investments increases with levels of sociability. Hence:

H5: The marginal effect of Crime on Investment decreases with levels of sociability

Knack and Keefer (1997) found that civic engagement could have an influence on economic performance. Based on this assumption and the theoretical framework and research of Putnam (1995), we argue that civic engagement and trust are positively correlated and that the marginal effect of trust on investments increase with levels of civic engagement. Since we believe that the effect is opposite regarding crime, we expect:

H6: The marginal effect of Crime on Investment decreases with levels of civic engagement

Although, Knack and Keefer (1997) found no relationship between sociability and economic performance we believe that trust and sociability is positively correlated and simultaneously decrease the level of CFSI due to more transparency, improved local network and information between the external funding market and the firms (Paldam, 2000). Therefore, the marginal effect of trust on CFSI should be negative and further decrease with higher levels of sociability. Since crime rate and sociability is believed to be negatively correlated, our hypothesis is stated as:

H7: The marginal effect of Crime on Cash flow sensitivity to investments is positive and increases with sociability

The same follows for the marginal effects of *Crime* on *CFSI* for different levels of civic engagement. Trust and civic engagement are expected to be positively correlated and effect *CFSI*. Knack and Keefer has previously proved that civic engagement has an economic influence (2007). Additionally, since both are determinants of social capital we believe that marginal effect of trust on *CFSI* is negative and decreases with the level of civic engagement.

H8: The marginal effect of Crime on Cash flow sensitivity to investments is positive and increases with civic engagement.

Data

We have obtained data from two databases for our thesis; the CCGR database and the NSD database.

The financial parameters, company size and ownership structure are from the Centre for Corporate Governance Research (CCGR). This database contains information from accounting reports of all firms obliged to have undergone public auditing. All Norwegian companies, except for small privately held companies with revenue less than five million NOK, are obliged by Norwegian law to undergo annual public audit. That result in high-quality and standardized data, which is both easy and relevant to compare and analyse using statistical software. We are also using *Kommunedatabasen* in our research, that database is compiled and owned by *Norsk senter for forskningsdata* (NSD). From this database, we obtained parameters for measuring social capital such as participation in social arrangements, elections, and crime rate. The data from these two sources has been merged together for the final dataset. Both data from CCGR and from NSD spans from 2000 to 2015. We are however, excluding year 2000 due to a temporary tax on capital gains and dividends (Alstadsæter & Fjærli, 2009). This temporary tax was abolished the next year and was the starting point for the tax reform introduced in 2006.

Data Filtering

The starting point is all Norwegian private firms, which goes through a series of filters before the final sample is reached. First, we exclude daughter firms, since

their capital structure is dependent on their parent firms. We exclude financial firms due to their accounting rules and special capital requirements, as in Frank and Goyal (2009) and Hovakimian and Hovakimian (2009). We also exclude utilities and publics administration firms as in Biddle and Hilary (2006) and de Olalla López (2014). We would also want to remove non-independent firms since subsidiaries might pay dividends to other companies in the business group to manage risk and cash issues and this would influence both capital structure and the level of investment (Michaely & Roberts, 2012). To avoid noise in the data due to closures and start-ups we use balanced data, meaning we only included firms with data from the entire period (2001-2015) like Alstadsæter and Fjærli (2009)

Firms that changed municipality during the period are excluded, since it will be deceptive to measure the effect of social capital of these. We also remove inactive firms with zero assets, zero revenue or zero employees. Firms with inconsistent accounting data, i.e. negative fixed assets, negative current assets, negative current liabilities, negative long-term liabilities, negative dividends, negative accounts payable, negative accounts receivable or positive depreciation, are also omitted - similar to de Olalla López.

We also exclude non-closely held companies, i.e. companies with more than five personal owners. This is because the shareholder income tax of 2006 only applies to dividend payments to individuals and should therefore have a greater impact on non-listed companies. Baker et al. (2006) also finds that taxes does not seem to be a decisive factor in dividend decisions of Norwegian listed firms. The second factor is that in small companies with no clear separation between owners and management, tax-favoured dividends was used as a substitute for salary and also favourable to equity (Alstadsæter & Fjærli, 2009). Many of these companies also used equity to pay dividends before the tax reform. Our analysis will therefore be twofold; before and after the tax reform, 2001-2004 and 2005-2015, respectively. Although the reform took place in 2006, it has an effect on the fiscal year 2005, because the dividends paid in 2006 was proposed in the accounts of 2005. Table 1 displays the movement in the population throughout the filtering process, for every year as well as the total sample period.

Year	Population	Firms	Independent	Active	Consistent	1 Residence	Closely-held	Balanced Data
2001	123,198	121,711	92,294	60,691	60,061	50,267	48,464	9,106
2002	116,963	115,564	89,272	58,320	57,661	47,829	46,299	9,106
2003	146,668	144,012	109,244	73,082	72,217	59,863	57,885	9,106
2004	141,756	139,073	105,346	71,731	70,960	58,503	56,618	9,106
2005	159,998	156,486	114,634	75,636	74,685	61,846	60,150	9,106
2006	181,879	161,367	112,475	72,760	71,754	59,312	57,279	9,106
2007	211,131	189,020	128,569	82,922	81,622	67,969	65,842	9,106
2008	223,741	199,539	134,897	86,247	84,658	70,731	68,569	9,106
2009	227,997	202,800	137,535	88,448	86,799	72,686	70,382	9,106
2010	232,773	207,092	139,577	90,179	88,407	74,107	71,787	9,106
2011	236,571	210,561	141,149	91,634	89,601	75,520	73,201	9,106
2012	239,376	221,883	146,185	96,312	93,658	79,808	76,218	9,106
2013	249,070	233,064	152,512	101,582	98,455	84,976	81,292	9,106
2014	259,008	242,933	160,953	108,171	104,651	91,188	87,534	9,106
2015	274,140	258,178	172,355	113,436	109,428	96,684	96,684	9,106
Total	3,024,269	2,803,283	1,936,997	1,271,151	1,244,617	1,051,289	1,018,204	136,590

Table 1

Firm Data

The dependent variables are: investments and cash flow sensitivity of investments (CFSI).

Investment is usually defined either as capital expenditures to assets or capital expenditures to net capital in the literature, e.g. Asker, Farre-Mensa and Ljungqvist (2014), Hovakimian and Hovakimian (2009), Biddle and Hillary (2006) and de Olalla López (2014):

$Investments = \frac{Capital\ expenditures}{Total\ assets}$,

is our dependent variable for measuring the effect of s*ocial capital* on *investments.*

The other dependent variable *CFSI* is measured as "*the difference between the cash flow weighted time-series average investment of a firm and its simple arithmetic time-series average investment*" by Hovakimian and Hovakimian (2009, p. 51):

$$CFSI_{0,i,t} = CFWAI_{0,i,t} - AI_{i,t}$$

$$= \sum_{t=1}^{n} \left[\left(\frac{CF_{i,s}}{\sum_{t=1}^{n} CF_{i,t}} \right) * I_{i,t} \right] - \frac{1}{n} \sum_{t=1}^{n} I_{i,t}$$

where CF is a firm's cash flow from operations scaled by total assets and I is the firm's investments, as defined above. The reasoning behind CFSI is that for firms

whose investments are not affected by their available cash flows, there should not exist systematic differences between the weighted and unweighted average investments. Likewise, should the CFSI be high for firms that invest more in years with relatively high cash flows and less in those years where the cash flows are relatively low. In accordance with Hovakimian and Hovakimian (2009) and Biddle and Hillary (2006) all negative cash flows are set to zero, this is to avoid negative and extreme weighted values. We applied a two-year rolling average in the calculation of cash flow sensitivity of investment.

We also include several accounting variables that in prior research have been argued to be related to investments and cash flow sensitivity of investments. Similar to Asker, Farre-Mensa and Ljungqvist (2014), Hovakimian and Hovakimian (2009), and Biddle and Hillary (2006) have we included *profitability, tangibility, size, risk, Payout ratio, σCFO, Cash flow to assets, change in assets* as control variables, since these should explain most of the variations of the dependent variables. Further explanation of these variables is found in the appendix.

Furthermore, we included *MedianIndustryLeverage*, calculated as the median level of leverage for every 2-digit level industry code in our sample, to capture the industry specific variations. According to Frank and Goyal (2009) it is also supposed to capture any omitted industry specific variable. We also include *CompanyAge*, measuring the age of each firm, as it is expected that young firms invest more than mature firms, while mature firms pay more dividends than young firms (Fama & French 2001). Furthermore, is higher investment-cash flow sensitivity found for younger firms (Devereux & Schiantarelli, 1990; Oliner & Rudebusch, 1992; Shin & Kim, 2002).

In 2006 Norway changed their tax system from the dual income tax system to the split model, which resulted in increased top marginal tax rates on individual dividend income from zero to 28% (Alstadsæter & Fjærli 2009). It is intuitive to think that after the tax reform investments has increased, since the incentive for dividends has been lessened. We therefore include a dummy variable *TaxRef* that has the value 1 for all years as of 2005, and 0 otherwise. Even though the tax reform was not implemented before 2006, it affected the fiscal year of 2005 (de Olalla López, 2014).

Regional Data

The explanatory variables of interest are the one measuring social capital in the different municipalities. As discussed earlier trust is a vital part of the term of Social Capital; in our analysis, we will use *crime rate* (number of crimes reported in a municipality divided by municipality population) as an indicator of trust. Messner et al. (2004) finds that trust has a direct effect on crime rate in the community; their findings show that U.S. areas with high crime rates also tend to have a low level of trust.

We also include *civic engagement* as discussed by Putnam (1995) and *sociability,* as used by Hong et al (2004) and de Olalla López (2014). However, social associations are expected to have zero or little effect on investments, according to Knack and Keefer (1997). We measure sociability as with the variable *church attendance*, which is the number of attendees at church services in a municipality divided by the municipality population. For measuring civic engagement, we use the variable *TvAksjonen*. Tv-aksjonen is a fundraising program in Norway which is aired on television by NRK – the Norwegian Broadcasting Corporation, on a Sunday in October every year. In short, NRK selects a charity organization and the organization's objective, i.e Save The Children or Red Cross which then becomes responsible for collecting donations/money from each household and/or private firms across Norway and to assign the collected money to the fundraising's objective. Each year, the purpose is different from the other years. Common purposes are for instance cancer, HIV/AIDS, poverty or to improve education opportunities for children in developing countries. TV-aksjonen is the world's largest fundraising program.

We also include a control variable for the fraction of the population with a university-level degree *(University*), as done in similar research e.g. Georgarakos and Pasini (2011). Research has shown repeatedly that education and human capital has a positive influence on financial performance (Nelson & Phelps 1966). Guiso et al. (2004) has shown that education is positively correlated with social capital. Education must therefore also be included due to the possibility of omitted variable bias.

Descriptive

Table 2 shows the descriptive statistics of the total period for our main variables. For our two main regressors the median is fairly close to a neutral level, while the

average is significantly higher. For the total sample period, the cash flow sensitivity of investments is very close to zero, suggesting that on average the investments of Norwegian private firms do not seem to be neither very cash flow sensitive nor insensitive.

Norway is considered a high-trust country, see for example Knack and Zak (2001), and this is also the case with our data. From the table of descriptive statistics, we see that the explanatory variable *Crime* has a value of 0.096. Hence, 1% of the people living in a municipality will report some sort of offence in a year. Furthermore, can we see that the average donation to *TvAksjonen* is almost 44 kroner and that the average Norwegian attends almost one and a half Christian services every year.

Figure 2.1 show the yearly average level of *investments* and *CFSI*, as well as the average for the whole sample period. Investments has decreased throughout the sample period, while CFSI has increased throughout the sample period. Especially around 2008 does it increase quite a lot, where the financial crisis might be a natural explanation. It is also interesting that in the start of the period the average CFSI is negative, pointing to less sensitivity, while it becomes positive later.

	Mean	**Median**	**Standard Deviation**	**Minimum**	**Maximum**
Investments	0.038	0.003	0.078	- 0.058	0.2682927
CFSI	0.003	0.004	0.125	-0,301	.0284
Capital Structure	0.684	0.706	0.257	0.208	1.209
Size	14.445	14.445	1.102	12.425	16.492
Profitability	0.168	0.149	0.175	-0.153	0.543
Risk	0.324	0.209	0.332	0.067	1.419
Tangibility	0.188	0.090	0.222	0	0.723
Payout Ratio	0.229	0	0.431	0	1.357
sdCFO	0.197	0.159	0.126	0.062	0.556
CF to Assets	0.119	0.110	0.184	-0.235	0.499
Company age	16.892	15	10.365	0	156
Median Ind. Lev	0.727	0.753	0.075	0.532	0.816
Change Assets	0.003	0.002	0.016	-0.030	0.038
Crime	0.096	0.088	0.047	0.011	0.208
University	0.190	0.179	0.080	0.003	0.343
TvAksjonen	43.722	38	46.968	12.425	2143
Church attendance	1.412	1.281	0.553	0.512	7.555
No. of observations	136,590				
No. of firms	9,106				

Table 2

Method

Investments

Equation 1.1 is the regression model with investments as the dependent variable, including TaxRef as an interaction term.

(1.1) $Inv = \beta 0 + \beta 1 Crime + \beta 2\ Controls + \beta 3\ TaxRef + \beta 4\ Crime \bullet TaxRef + \beta 5\ Controls \bullet TaxRef + \eta + \varepsilon$

Where:

- Inv = investments, defined as Capital Expenditures over total assets
- Crime, is our variable for measuring trust, and is defined as the number of reported offences in a year divided by the population in the municipality
- Controls is a vector of different control variables, specifically: *Size, Profitability, Risk, Tangibility, Dividends, σCFO, CF to Assets, Company Age,* and *University*
- TaxRef is a dummy variable for the Norwegian Tax Reform of 2006, taking the value of zero from 2001 to 2004 and one from 2005-2015.
- Crime •TaxRef is the interaction term between crime and the Norwegian tax reform of 2006.
- Controls • TaxRef are the interaction term between all the control variables and the Norwegian tax reform of 2006
- η is individual random effects
- ε is the error term

Cash Flow Sensitivity of Investments

Equation 1.2 is the regression model with CFSI as the dependent variable, including TaxRef as an interaction term.

(1.2) $CFSI = \beta 0 + \beta 1 Crime + \beta 2\ Controls + \beta 3\ TaxRef + \beta 4\ Trust \bullet TaxRef + \beta 5\ Controls \bullet TaxRef + \eta + \varepsilon$

where:

- CFSI is cash flow sensitivity of investments as defined earlier.
- The other variables identical to the model for *investments*.

Main Models

We found no structural differences before and after the tax reform, we therefore went forward with the two models outlined in equation 4.1 and 4.2. Here are the interaction terms with the tax reform excluded, but the tax reform dummy is still included as a control variable.

(4.1) $Inv = \beta 0 + \beta 1 Crime + \beta 2\ Controls + \eta + \varepsilon$
(4.2) $CFSI = \beta 0 + \beta 1 Crime + \beta 2\ Controls + \eta + \varepsilon$

The two models above represent our main models in this thesis. The other variables are defined as for the previous models.

Estimation methods

In the estimation process have we conducted panel-data regression in Stata with regular pooled OLS, random effects, and fixed effects. The Hausman test was assessed, and in accordance with those results fixed effects should be the most suitable measure. However, since we have quasi time-invariant covariates in our sample, fixed effects is unsuitable. We thereafter compared OLS with random effects and random effects was chosen based on theory, intuition and statistical significance of the results.
Furthermore, have we conducted the estimations using cluster-robust standard errors. Autocorrelation was solved by lagging the financial variables by one period.

Interaction between trust, sociability, and civic engagement

The other large main part of the thesis is to test whether the estimated effect of trust changes with the level of sociability and civic engagement in the area where the company is located. We test this for three periods: pre-taxation reform (2001-2004), past-taxation reform (2005-2015) and for the whole sample period (2001-2015).
To test whether such interactions exists we estimate the following models for both investments and cash flow sensitivity of investments:

Sociability

Equation 2.1 and 2.2 is the regressions with investments and CFSI as the dependent variables for testing the interaction between trust and sociability.

(2.1) $Inv = \beta 0 + \beta 1 Crime + \beta 2\ Social + \beta 3\ Crime \bullet Social + \beta 4\ Controls + \eta + \varepsilon$
(2.2) $CFSI = \beta 0 + \beta 1 Crime + \beta 2\ Social + \beta 3\ Crime \bullet Social + \beta 4\ Controls + \eta + \varepsilon$
where:

- Inv = investments, defined as Capital Expenditures over total assets
- CFSI is cash flow sensitivity of investments as defined earlier.
- Social is the number of people that has attended church service in a year, divided by the population in the municipality, where firm *i* is located at time *t* (Variable Church Attendance)
- Crime • Social is the interaction term between our indicator for trust, *crime*, and our indicator for sociability, *church attendance*.
- The other variables as defined for the main model

Civic engagement

Equation 3.1 and 3.2 is the regressions with investments and CFSI as the dependent variables for testing the interaction between trust and civic engagement.

(3.1) $Inv = \beta 0 + \beta 1 Crime + \beta 2\ Civic + \beta 3\ Crime \bullet Civic + \beta 4\ Controls + \eta + \varepsilon$
(3.2) $CFSI = \beta 0 + \beta 1 Crime + \beta 2\ Civic + \beta 3\ Crime \bullet Civic + \beta 4\ Controls + \eta + \varepsilon$
where:

- Civic is the average amount raised per person in a municipality during Tv-aksjonen where firm *i* is located at time *t* (Variable TvAksjon)
- Crime • Civic is the interaction term between our indicator for trust, *crime*, and our indicator for civic engagement, *TvAksjonen*.
- The other variables as defined for the main model and sociability.

Trust is measured by crime rate, sociability is measured by church attendance, and civic engagement is measured by *TvAksjonen*. All variables are measured at municipality level.

When we have a regression of the form Y = β0 + β1X +β2Y + β3XZ, the marginal effect with regards to X, in this particular case *Church* and *TvAksjon*, is:

$$\frac{\partial y}{\partial x} = \beta_1 + \beta_3 Z.$$

The standard error associated with the calculated marginal effect is then calculated as:

$$\hat{\sigma}\ \frac{\partial y}{\partial x} = \sqrt{Var\left(\hat{\beta}_1\right) + Z^2 * Var(\hat{\beta}_3)} + 2Z * Cov(\hat{\beta}_1, \hat{\beta}_3),$$

as explained in Gill (2001). We thereafter used the standard error to estimate 95% and 90% confidence interval, similar to de Olalla López (2014).

Results

We propose four different models, whereof two are our main models, while the other two are our secondary models used to check if the tax reform in 2006 had any implications on our research. In all models, *Investments* and *CFSI* are our dependent variables. The tax reform-models are reported first to show that there is no significant difference between the two models and that the tax reform did not have any structural influence on our research. This brings us to the main models. The two models have been assessed with random effects.

Investments

First model - interaction with the tax reform

The results are illustrated in table 2.6 in the appendix. In the model, *Crime* is used as our explanatory variable, while Investments are dependent. *Crime* is statistical significant at the 1 percent level. Moreover, the coefficient is negative which implies that higher crime rates results in less investments. Hence, trust have a positive influence on investments - just as we expected and hence with can keep our first hypothesis. The interpretation of the coefficient is not straightforward as both the dependent variable and the independent variable is scaled by total assets and population respectively. But, a marginal increase in *Crime* will decrease Investments by 0.0381 prior the tax reform.

Considering the effect of the tax reform, the interaction term *Crime* × *Tax* is insignificant. The effect of trust is the same independent of the tax reform. We can reject the third hypothesis.

Regarding the remaining control variables, we will highlight *Tax Reform, Size, Profitability, Payout Ratio, Company Age* and *σ(CFO)*. The tax reform dummy with a negative coefficient is significant at the 1 percent level. As a result of the tax reform in 2006, investments in firms decreased. We find this odd, considering that the tax reform should in fact increase the willingness to invest due to less incentives to pay out dividends. Yet, this finding might be explained by the financial crisis which occurred right after the tax reform was implemented. Nevertheless, we find that *Payout ratio*, which is statistically different from zero, decrease *Investments* - just as expected. Firms that pay more dividends, invest less. From table 2.6, it is shown that *Company Age* is statistically significant at the 1 percent level, where the coefficient is negative, which further proves our findings. More mature firms pay out more of their earnings in dividends, hence invest less. The results are however supported by the fact that larger firms invest less (*Size* significant at 1 percent), yet the effect of firm size is expected to be less after the tax reform (Interaction term *Size*× *Tax* significant at 1 percent with positive sign). Additionally, firms with higher profitability are likely to invest more due to higher willingness to grow and more cash to invest. On the opposite, more mature and larger firms are likely to have economies of scale and accordingly more profitable, but such firms are likely to have higher payout ratios as well (*Profitability* significant at a 1 percent level). The risk related to the CFO, (*σ(CFO)*) is statistically significant at the one percent level. More fluctuations (higher CFO risk) reduce the amount invested. Because of loss and risk aversion, firms may invest less when there are higher risks related to their cash flow from operations.

We propose three possible explanation for our results. In municipalities with higher generalized trust, social heterogeneity is low and formal institutions is strong. This is expected to be mutually dependent (Uslaner, 2002; Rahn, Brehm & Carlson, 1997). In such areas, the trust is reflected in the confidence of the people managing money. Secondly, we expect that in municipalities with higher generalized trust, the possibility of overinvestment is higher. This will drive the corporate investments and willingness to invest. Thirdly, lending institutions are expected to trust the companies even more because of higher transparency of

information, implicitly issuing more debt to firms which use the debt to finance capital expenditures.
Additionally, higher trust is expected to simplify contracts and reduced transaction costs (Dearmon & Grier, 2011; Knack & Zak, 2001), As measured by the overall R^2, the included variables is just explaining 0.0441 of the variance in investments. However, we acknowledge that several other variables that measure investments in addition to the included variables results in omitted variable bias in our regression. However, our purpose with the study is only to find a relationship (or no relationship) between social capital and investments and not every variable that explain the dependent variable.

Cash Flow Sensitivity of Investments

First model – interaction with the tax reform

The CFSI model including the tax interaction gives the following results (for details see table 2.6 in the appendix):

Crime as a proxy for trust are significant at the 5 percent level. Further, *Crime* has a negative effect on *CFSI*. This means that in areas with higher crime rate firms' *CFSI* are less. Therefore, higher levels of trust increase *CFSI*, this is the opposite of what we expected. Since we expected the opposite effect of *Crime*, hypothesis two and four can be rejected. Most prior research argue that more trust makes it easier to gain external financing - thus making the firms in high trust areas less dependent on cash flow. One possible explanation is that managers overinvest when cash flows are high, and underinvest when cash flows are low, as discussed by Hovakimian and Hovakimian (2009). According to our findings higher cash flow decreases *CFSI*, which also support the reasoning behind overinvestment/underinvestment explanation.

Moreover, the model shows no significant affect before or after the tax reform, but the tax reform dummy has a negative coefficient and it is significant at the 5 percent level. This means that after the tax reform, firms' *CFSI* decreased. As a consequence of the tax reform, firms had less incentive to pay out dividends, which made them retain more of their earnings - making them have more cash flow. *Profitability* is significant at the 1 percent level. Hence, more profitable firms have higher *CFSI*. We also see that larger companies have higher *CFSI*, the

control variable *Size* is significant at the 1 percent level. This result is consistent with previous research that found that larger firms were more cash flow-investment sensitive due to managerial agency considerations and the greater flexibility of investment timing (Kadapakkam et al., 1997). This gives us the following interpretation: Larger firms and more profitable firms retain less of their earnings, and hence become more cash flow sensitive. Profitable firms are also likely to be financially unconstrained, and therefore exhibit higher *CFSI*, just as Kaplan and Zingales found in their research paper (1997). Yet, this cannot be supported by *Payout Ratio* which is statistically non-different from zero. Also, from the first model which measured Investments, profitable firms invested more (retained more).
The effect of *University* is statistically significant at 1 percent before and after 2005. However, after 2005 the marginal effect of *University* (or level of education) is expected to increase *CFSI*, compared to the negative marginal effect pre-taxation reform.

CFO to Assets is significant at the one percent level. As shown in table 2.6, higher levels of CFO decrease firms' *CFSI*, which is natural. Higher levels of *CFSI* makes firms less sensitive to fluctuations in cash flow, and hence their investments will fluctuate less.

Additionally, we find that the risk related to cash flow from operations is significant at the one percent level. Higher cash flow risk (more fluctuations in cash flow) increase firm's *CFSI*. This makes sense. Consistently, overall firm risk (*Risk*) is significant the 5 percent level and increase *CFSI*.

Compared to the other model, it seems that the included variables were not able to measure as much of the variation in *CFSI* as with *Investments* (overall R^2 of 0.0173). The low R^2 indicate that one or several key variables are not included in our model. Our choice of control variables for cash flow sensitivity of investments are based on previous literature, e.g. Hovakimian and Hovakimian (2009), and Biddle and Hilary (2006). Most earlier research has based their data on listed companies, and used variables that includes market data. We have in most cases tried to recreate these variables with the use of book values, while others simply had to be left out due to insufficient alternatives.

Since there are no structural differences between the models presented, and that the tax reform has no structural implications between the two model, we present two other models which serves as our main models.

Main results

All tables and figures referred to in this section is found in the appendix.

Investments - main results with random effects

The regression is done using equation (4.1). In our model with Investments as a dependent variable, we have included all the other variables used in the two previous models, however excluded the interaction terms with *Tax Reform*, but kept the *Tax Reform* dummy as it revealed that the tax reform affected firms' investments. Output is shown in table 2.5.

We found that *Crime* is statistically different from zero at 1 percent significance level and that in municipalities with higher crime rate, firms are likely to invest less. The marginal effect of crime on Investments are -0.041157. Higher trust is therefore expected to increase firms' investments. This finding is consistent with the previous model. Additionally, we find the same results for the other control variables in this model, and they have the same interpretation. Hypothesis one can be kept.

The tax reform seems to have no impact on firms' investments (effect is statistically equal to zero).

The overall R^2 is 0.0435 which is slightly less than the previous model. Even though this might imply that the first model has a better fit and explain more, the first model includes almost the double amounts of variables which increases the R^2. Thus, it seems that our main model is just as good, or even better.

CFSI - main results using random effects

The main model (equation 4.2) with *CFSI* as dependent variable has the same structure and independent variables as the investments-model. Details are shown in table 2.5

Our results are consistent with the previous *CFSI*-model. *Crime* is significant at the one percent level and has a marginal effect of -0.0975. Hypothesis two can be rejected. As discussed previously, this contrasts with our expectations. As proposed earlier this might be in accordance with the findings of Hovakimian and Hovakimian (2009), who are pointing to that managers seek to overinvest in high cash flow years and underinvest in low cash flow years.

Regarding the control variables, there are no structural difference between the two models. But we find that the tax reform dummy has no significant effect on *CFSI* in our main model. Overall R^2 is 0.0165. The same interpretation yields for this model as for the model including the interaction terms.

The interaction between trust and sociability, and trust and civic engagement

We propose 4 different models*: Investments* and *CFSI*, where we evaluate the marginal effect of *Crime* for different levels of sociability and civic engagement, measured by *ChurchAttendance* and *TvAksjon*, respectively. All tables and figures referred to in this section can be found in the appendix.

Due to the taxation reform in 2006, have we conducted each model with three different time periods: one between 2001 and 2004, one for 2005 to 2015 and one for the whole period.

The significance and values of the coefficients in the interactions terms and the corresponding individual components are not informative, as discussed by Gill (2001) and Brambor and Golder (2005). In accordance with De Olalla López (2014), we have calculated marginal effects and corresponding confidence intervals of crime on Investments and cash flow sensitivity of investments for different levels of sociability and civic engagement.

Investments - Sociability

Table 2.7 reports the results of equation (2.1) for the three time periods. Figure 2.3.3 shows the marginal effect of *Crime* on *Investments* with different levels of sociability, measured as *church attendance*, for the whole sample period. The interpretation is that for higher levels of sociability the marginal effect of trust on investment decreases in the sense that the marginal effect shifts downwards and gets more negative for higher levels of sociability. The effect is statistically significant up to a level that corresponds to somewhere around the 90th-95th

percentile of sociability, but the effect is very small and of small economic significance. An almost identical pattern can be seen for the period from 2005 to 2015 (figure 2.3.2). The effect is stronger for the pre-taxation reform period, as seen in figure 2.3.1. Higher levels of sociability lead to a stronger marginal effect of trust on investments before 2005, though the effect is only statistically significant in a range between the 5th percentile and around the 90th percentile of sociability, according to a 90% confidence interval. The results we got was in line with our expectations, hence hypothesis five can be kept.

Cash flow sensitivity of investments -sociability

Table 2.7 reports the results of equation (2.2) for the three time periods. Figure 2.5.3 shows the marginal effect of crime rate on *CFSI* for the whole observation period, figure 2.5.1 shows the marginal effect of crime rate on CFSI before 2005 and figure 2.5.2 shows the marginal effect of crime rate after 2005. Using random effects, the marginal effect of *Crime* on *CFSI* is negative and slightly decreasing with the level of sociability for the whole period, as well as before and after 2005, except for very small levels of sociability, then the marginal effect of *Crime* on *CFSI* is positive before 2005. However, as shown in figure 2.5.1, the effect of sociability is stronger before 2005. In other words, in areas with higher levels of sociability, the marginal effect of trust on CFSI increases. After 2005, the marginal effect of crime rate on *CFSI* is still negative, but decreases slightly (almost constant) with the levels of sociability. This explains why the overall effect of sociability during the observation period is slightly decreasing. Figure 2.5.3 reveal that for rather high levels, roughly (90th percentile of church attendance), the marginal effect of crime rate becomes insignificant. Yet, pre-tax reform the marginal effect of crime rate is significant for sociability values higher than roughly the 80th percentile (95% confidence interval). Regarding the post-tax reform period, for levels of church attendance below the 80th percentile, the marginal effect of *Crime* is significant.

The results are rather interesting since we did expect another outcome. Based on prior literature, one are inclined to believe that trust and sociability are positively correlated and that both reduce *CFSI*, hence that the marginal effect of trust is negative and decreases with the level of sociability. Hypothesis 7 can be rejected.

Investments – civic engagement

Table 2.8 reports the results of equation (3.1) for the three time periods. The findings for the marginal effect of crime on investments at different levels of civic engagement is shown in figure 2.4.1, 2.4.2 and 2.4.3 for 2001-2004, 2005-2015, and for the whole period, respectively. Except for very low levels of civic engagement, the marginal effect is significant for the earliest period. The interpretation here is that the higher the level of civic engagement, the lower the marginal effect is of *Crime* on *Investments*. The pattern is similar for the post-taxation reform period, except that the effect becomes significant at a slightly higher level of civic engagement. This level corresponds to somewhere just below the 10^{th} percentile of civic engagement. The effect is also stronger compared to the prior period, which can easily be seen by a steeper marginal effect curve. Again, for the whole period, the marginal effect is the same; the higher the level of civic engagement, the marginal effect of crime rate decreases - becomes negative, yet stronger. In contrast to the other two periods, when measuring over the whole period the effect might be significant for every level of civic engagement of our population. Our finding is consistent with our beliefs. In municipalities with higher levels of civic engagement, the marginal effect of trust is expected to be stronger. Hypothesis six can be kept.

Cash flow sensitivity of investments – civic engagement

Table 2.8 reports the results of equation (3.2) for the three time periods Figure 2.6.1 2.6.2 and 2.6.3 depicts the marginal effect of *Crime* on *CFSI* with different levels of civic engagement with a time window corresponding to the period 2001-2004, 2005-2015 and the whole sample period, respectively. When looking at the whole sample period civic engagement has a slightly positive effect on the marginal effect of *Crime* on *CFSI*. Applying a 90% confidence interval, this result is of statistical significance, but the economic significance is rather limited, since the marginal effect changes very little with the different levels of civic engagement. A 95% confidence interval shows that the marginal effect becomes insignificant for very high levels of civic engagement. For the period 2001-2004 the effect is never significant, at least in our range of civic engagement. After the tax reform, civic engagement has a negative effect on the marginal effect of crime rate on *CFSI*; the effect is significant at almost all levels of civic engagement,

starting at the level corresponding to around the 5th percentile of the civic engagement in each municipality. In more practical terms this means that in those areas that contributes with the most civic engagement, the marginal effect of *Crime* on *CFSI* is larger (larger negative impact); meaning that in the upper quartile areas of civic engagement, trust is influencing investments heavier than in other areas. Regarding our first notion (hypothesis eight), the results were inconsistent. Though, during our analyses we understood that we would get opposite results for the CFSI-models. Therefore, the latter finding is not surprising, yet we did expect a result more in line with our hypothesis.

Conclusion

In this thesis, we have tested the influence of social capital on investments and cash flow sensitivity to investments. In addition, we researched if the marginal effect of crime rate depends on different levels of sociability (church attendance) and civic engagement (TvAksjonen). To do this, we have made 8 different models, whereof two represent are main models. The first two models include interaction terms which represent dummies for the tax reform in 2006. Based on previous research in corporate finance in Norway, we had strong beliefs that the tax reform had implications for our research. The tax reform should reduce firms' incentive to pay dividends (because of taxation arbitrage). Thus, we expect that firms retain more and furthermore invest the retained earnings. Also, higher levels of cash flow should make the firms less cash flow sensitive. The marginal effect of trust is expected to increase after 2005 because prior the tax reform, other variables had a stronger effect on the variation in *Investments* and *CFSI*. The next two models represent our main model (without any interaction terms). The goal of these two models is to determine the influence of trust on *Investments* and *CFSI*. The last four models test the significance of marginal effect of crime rate on *Investment* and *CFSI* by different values of sociability and civic engagement.

For the two first models, we found no significant change in the marginal effect of *Crime* post-tax reform.

Our main models show that *Crime* is significant for both models. Based on our findings, *Crime* is expected to have a negative influence on both *CFSI* (trust increase CFSI) and on *Investments* (trust increases Investments). Regarding the latter result, this yields as intended, however we had strong beliefs that trust reduced cash flow sensitivity to investments.

In the last four models can be divided into two: The interaction between trust and sociability and the interaction between trust and civic engagement. Firstly, we found evidence that the marginal effect of crime on investments decreases with higher levels of sociability. Secondly, higher levels of civic engagement decrease the marginal effect of crime on investments. Third, the marginal effect of *Crime* on *CFSI* decreases for higher values of sociability. Finally, civic engagement is reported to increase the marginal effect of *Crime* on *CFSI*.

A big issue that are highly possible in our research are omitted variable bias and endogeneity. First, endogeneity is a common issue in corporate finance (Parsons & Titman, 2008; Roberts & Whited, 2012). Even though *Crime* is believed to be exogenous, but the coefficients might be biased because the accounting variables could be endogenous. It is likely that capital expenditure and cash flow sensitivity to investments could explain the variance in for example profitability and change in assets. And secondly, as mentioned in the "Results"- section, there should be variables that explain more of the variations in *Investments* and *CFSI*. Naturally, this structural issue makes the coefficients biased. We believe that there are other important control variables that are expected to affect investments. Variables that measure macroeconomic activity such as GDP and cultural factors (religious and ethnic diversity and social heterogeneity) as used by Dearmon and Grier (2008), Guiso, Sapienza and Zingales (2004), Uslaner (2002), Rahn, Brehm and Carlson (1997) and Knack and Zak (2001).

Literature on Cash flow sensitivity of investment are often including various control variables considering market data. KZ index, put together by Lamont, Polk, and Saa-Requejo (2001), is often included as a control variable for Cash Flow Sensitivity of Investment. This is a variable to measure distinction between periods of relaxed and tight financial constraints. The KZ index consists of several firm characteristics based on market data. Since our sample is contains only private firms, we won't be able to use this.

We acknowledge that there are omitted variables and of course including these could change our results and the interpretation of crime (trust).

Due to the time span of our data, did we estimate cash flow sensitivity of investment using a two-year rolling window. While Biddle and Hilary (2006) use a ten-year rolling window. This might limit the results, since an average based on two years will fluctuate much more than an average of 10 years.

Our thesis can be a starting point for more profound research of the relationship between social capital and financial decision of firms in different regions in Norway. It would be interesting, and onerous, to see if there are differences between the regions, and possibly identifying clusters. There could also be a possibility to distinguish between different variations of investments, and its relationship to social capital. In addition, it could be wise to do more research on areas with lower levels of trust to get more robust results. Without any doubt, much more extensive research must be done on this research field. The consensus in previous literature is not strong enough, specially for the influence of social capital on cash flow sensitivity.

There is not much research on the relationship between social capital and both investments cash flow sensitivity of investments. On this subject, there are certainly possibilities for both descriptive and explanatory research.

Appendix

Definition of variables

The financial and firm data are obtained from the Center for Governance Research (CCGR). Our sample covers the period from 2000-2015. The variables for measuring social capital is obtained from *Kommunedatabasen*, which is compiled by *Norsk senter for forskningsdata* (NSD). These regional data are collected for every sample year. However, if it does not exist an observation for a given year, we have constructed a stepwise variable according to the available information. Total debt to assets, long-term debt to assets, profitability, CAPEX to assets, change in log assets, tangibility, risk of sales, median industry leverage log assets, average collection period, accounts receivable to assets, and accounts payable to total debt have been winsorized at 2.5% level.

Tv-Aksjonen (Civic engagement): is the average amount raised per person in a municipality during Tv-aksjonen. Tv-Aksjonen is an annual national charity fund raising event. It is run by NRK television and contributions are collected via telephone, wired transfers or by thousands of volunteers who are collecting by going from door to door. Obtained from NSD Norway

Crime rate (Trust) is the number of reported offences in a year divided by the population in the municipality. Obtained from NSD Norway.

Church attendance (Sociability) is the number of people that has attended church service in a year, divided by the population in the municipality. This corresponds to the average number of religious (christian) services attended in a year per person. Obtained from NSD Norway.

Investments, is defined as CAPEX divided by total assets.

Cash Flow Sensitivity of Investments (CFSI) as proposed by Hovakimian and Hovakimian (1985). As defined in the paper.

Company Age is the number of years since the firms was founded

Total debt to assets is the ratio of total debt to total assets.

Profitability is the ratio of operating income before depreciation to total assets.

Change in log assets (*Change in assets*) is the annual change in the log of total assets in percent.

Tangibility is the ratio of total tangible fixed assets to total assets.

Risk of sales (*Risk*) is the standard deviation of growth in sales.

Median industry leverage is the median of the debt to assets ratio per industry.

σ (CFO) is the standard deviation of the cash flow from operations, divided by total assets

Cash Flow to Assets (CFO to Assets) is cash flow from operations divided by total assets

log of assets (Size) is log of the total assets of the firm.

University is the fraction of the population in the municipality with a university-level degree.

Tax Reform (TaxRef) is a dummy variable taking the value 0 before 2005 and the value 1 after 2005.

Descriptive statistics

Table 2.1: Descriptive statistics for firm data and regional data 2001-2006.

	2001		2002		2003		2004		2005		2006	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Investments	0,0501642	.0126826	0,0436981	.0070032	0,0401388	.0052033	0,0394571	.004065	0,0435034	.0050318	0,0415049	.0048038
CFSI	0,0073158	0,0016882	0,0061764	0	0,0003608	0,0025453	0,0024177	0,0032066	0,0005449	0,0025222	-0,000894	0,0022234
Size	14.16655	14.15768	14.19149	14.18189	14.20943	14.18845	14.25727	14.22994	14.30325	14.28676	14.40548	14.40079
Profitability	.1876526	.1729185	.1955501	.1797634	.1898845	.1734258	.2052479	.1856989	.1908853	.167449	.1851274	.1687704
Risk	.3237966	.2085089	.3237966	.2085089	.3237966	.2085089	.3237966	.2085089	.3237966	.2085089	.3237966	.2085089
Tangibility	.2219084	.1334413	.2179226	.1252093	.2119488	.1173447	.2020607	.1055766	.1981995	.1019938	.1893251	.0927531
Payout Ratio	.3988287	0	.5020121	0	.5066721	.1257184	.62176	.8296378	.0340895	0	.1509413	0
sdCFO	.1967872	.1588165	.1967872	.1588165	.1967872	.1588165	.1967872	.1588165	.1967872	.1588165	.1967872	.1588165
CF to Assets	.1180296	.1123859	.1325535	.1268879	.1315029	.12454	.1241384	.1162171	.1424813	.1312563	.1267888	.1167846
Company age	9.878744	8	10.87874	9	11.88436	10	12.8837	11	13.88436	12	14.88711	13
Median Ind. Lev	.7510374	.7857143	.7510374	.7857143	.7510366	.775495	.7510533	.775495	.7508322	.775495	.7508105	.775495
Change Assets	.0045933	.0031589	.0018994	.00104	.0015327	.0004177	.00341	.0023702	.0031276	.0022536	.0067898	.0056474
Crime	.1028163	.0934887	.1021952	.0927402	.1014196	.0918155	.1007229	.0911114	.0998367	.0905071	.0988697	.0898533
University	.1787242	.1611586	.1842531	.1656502	.1869916	.16914	.1901192	.17269	.1930303	.1769258	.0315963	.0257482
TvAksjonen	70.65752	28	70.8585	28	33.96616	32	32.76723	31	29.85718	29	41.37001	41
Church attendance	1.455756	1.348975	1.463527	1.33973	1.45756	1.373375	1.464667	1.356878	1.457214	1.344569	1.44911	1.337496

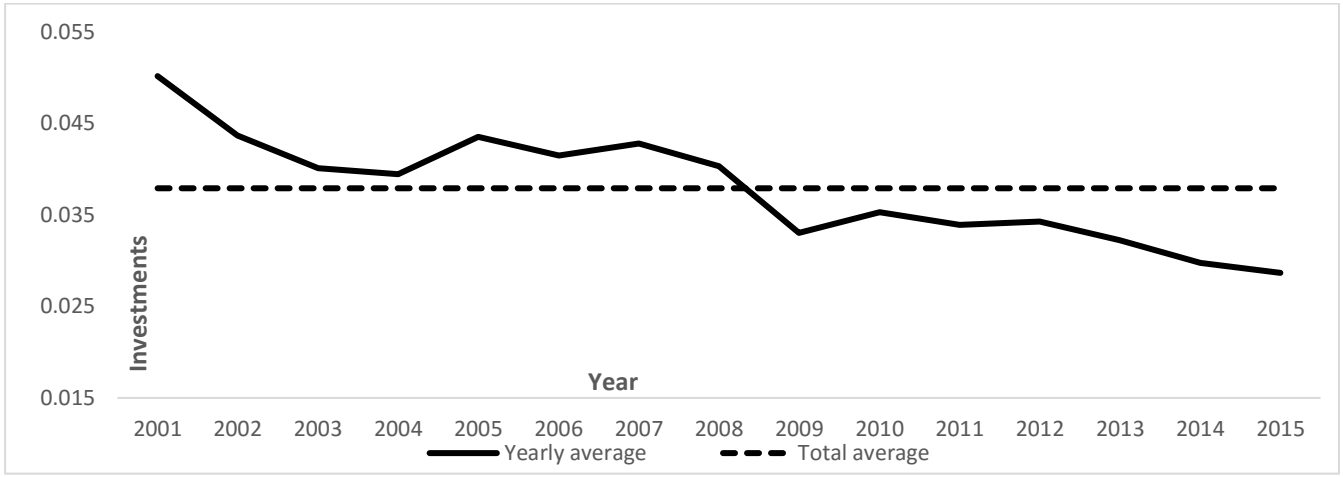
Table 2.2 : Descriptive statistics for firm data and regional data 2007-2011.

	2007		2008		2009		2010		2011	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Investments	0,0428297	.0056609	0,0403098	.0038606	0,0330052	.0020442	0,0352943	.0035303	0,033923	.0025551
CFSI	-0,001106	0,0020739	0,0007997	0,0019317	0,0051231	0,0050702	0,0075927	0,0061537	0,0069509	0,0060596
Size	14.49425	14.50012	14.52431	14.53115	14.53359	14.55124	14.55413	14.58098	14.59063	14.62777
Profitability	.1937886	.1789003	.1723924	.1571949	.1493214	.1357461	.140057	.1261585	.1481772	.1329523
Risk	.3237966	.2085089	.3237966	.2085089	.3237966	.2085089	.3237966	.2085089	.3237966	.2085089
Tangibility	.1857566	.0888765	.1866723	.089535	.1838806	.087205	.1808023	.0828203	.1748375	.0762332
Payout Ratio	.0601925	0	.1107456	0	.126322	0	.123157	0	.1297328	0
sdCFO	.1967872	.1588165	.1967872	.1588165	.1967872	.1588165	.1967872	.1588165	.1967872	.1588165
CF to Assets	.1341859	.1276236	.1216277	.1136194	.1196541	.1131341	.0992359	.0931881	.101889	.0945137
Company age	15.89337	14	16.89337	15	17.89337	16	18.89337	17	19.89271	18
Median Ind. Lev	.7507726	.775495	.7505405	.7713785	.700354	.685828	.7002715	.685828	.7002766	.685828
Change Assets	.0060587	.0052365	.0024418	.0017818	.0009224	.0006029	.0015477	.0014162	.0026159	.0021157
Crime	.097735	.0892373	.0963529	.088359	.0948297	.0882877	.0935401	.087687	.0922162	.0865927
University	.203874	.1879617	.2103369	.1921434	.2127395	.1942426	.2159037	.1980795	.2129223	.1944847
TvAksjonen	46.50334	45	39.85961	37	39.88037	39	41.27207	40	42.46267	41
Church attendance	1.439547	1.322449	1.425505	1.300446	1.409983	1.288446	1.395341	1.268056	1.379888	1.252894

Table 2.3: Descriptive statistics for firm data and regional data 2012-2015, and mean/median for the entire sample period.

	2012		2013		2014		2015		All	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Investments	0,0342894	.002133	0,0322686	.0012087	0,0297681	.000754	0,028666	0	0,0379097	.0034762
CFSI	0,0074594	0,0063401	0,0083675	0,0070881	0,0108581	0,0082018	0,0134569	0,0095411	0,0030845	0,0042664
Size	14.6061	14.64144	14.61659	14.65362	14.62141	14.66438	14.60405	14.66481	14.44524	14.44519
Profitability	.1485725	.130412	.1377463	.1195986	.1362601	.1174424	.1347638	.1163122	.1676951	.1493793
Risk	.3237966	.2085089	.3237966	.2085089	.3237966	.2085089	.3237966	.2085089	.3237966	.2085089
Tangibility	.1721713	.0729229	.1701766	.0682074	.1644449	.0637696	.161991	.0581566	.1881399	.0901223
Payout Ratio	.1272616	0	.1938017	0	.1855059	0	.1666694	0	.2290993	0
sdCFO	.1967872	.1588165	.1967872	.1588165	.1967872	.1588165	.1967872	.1588165	.1967872	.1588165
CF to Assets	.1133174	.104589	.1062298	.0955605	.1074121	.0972202	.1092997	.0962738	.1192242	.1101051
Company age	20.89271	19	21.89271	20	22.89271	21	23.90729	22	16.89228	15
Median Ind. Lev	.7003149	.685828	.700318	.685828	.7003311	.685828	.700371	.685828	.7272905	.7533273
Change Assets	.0012847	.0011077	.0009889	.0008916	.0007696	.0007677	-.0003216	.0000927	.0025087	.0017921
Crime	.0908469	.085494	.0896273	.0839848	.0885643	.0825395	.0874701	.0814632	.0958028	.0881559
University	.2098498	.1915973	.2070057	.188435	.2045581	.18654	.2020765	.1845048	.1895987	.1786558
TvAksjonen	39.63129	37	43.53644	42	46.29707	45	36.31481	36	43.72243	38
Church attendance	1.364624	1.236077	1.349543	1.218818	1.337518	1.202089	1.325832	1.188269	1.411694	1.281413

Figure 2.1 Descriptive figures of investments and CFSI.
These two figures shows the yearly average level of investments and CFSI for all firms, as well as the average for the total period.



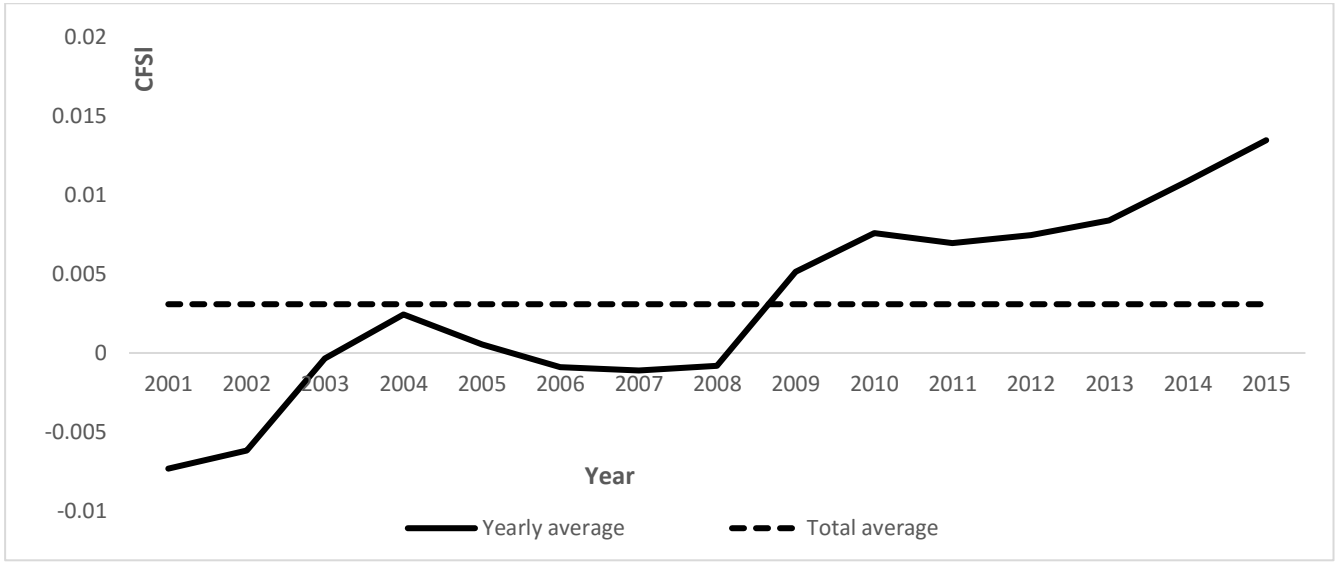


Table 2.4 Correlations

This table shows the pairwise Pearson correlation coefficients for the variables used in the empirical analysis.

	Investments	Cash flow sensitivity of investment	Size	Profitability	Risk	Tangibility	Payout ratio	σ (CFO)	Cash flow to assets	Company age	Median industry leverage	Change in assets	Crime	University	TvAksjonen	Church attendance
Investments	1.000															
CFSI	-0.288	1.000														
Size	0.090	-0.013	1.000													
Profitability	0.036	0.016	0.026	1.000												
Risk	0.018	-0.003	-0.149	-0.063	1.000											
Tangibility	0.388	-0.104	0.161	0.027	0.0345	1.000										
Payout ratio	-0.020	0.001	0.082	0.305	-0.092	-0.057	1.000									
σ (CFO)	-0.034	-0.013	-0.401	-0.015	0.372	-0.165	-0.165	1.000								
CF to assets	0.093	0.002	-0.003	0.610	-0.032	0.037	0.188	0.011	1.000							
Company age	-0.0724	0.003	0.177	-0.142	-0.066	-0.043	-0.089	-0.094	-0.072	1.000						
Median Industry Leverage	0.017	-0.009	0.057	-0.106	-0.107	0.037	0.028	-0.112	-0.116	-0.073	1.000					
Change in Assets	0.270	-0.116	0.138	0.282	0.007	-0.032	0.041	-0.030	0.062	-0.060	0.013	1.000				
Crime	-0.054	-0.021	-0.019	0.021	0.070	-0.167	0.057	0.121	0.023	0.036	-0.068	-0.005	1.000			
University	-0.067	-0.004	0.004	-0.011	0.081	-0.176	0.018	0.115	0.014	0.138	-0.180	-0.049	0.562	1.000		
TvAksjonen	0.020	0.006	-0.006	-0.012	-0.011	0.094	-0.013	-0.039	-0.016	-0.054	0.051	-0.002	-0.120	-0.174	1.000	
Church attendance	0.045	0.008	0.002	-0.016	-0.058	0.153	-0.030	-0.103	-0.024	-0.084	0.124	0.014	-0.540	-0.439	0.250	1.000

Table 2.5 Regression Main Models

This table shows the two main models with random effects on the left side and fixed effects on the right side. (*=0.1, **=0.05, ***=0.01)

	CFSI			**Investments**			**CFSI**			**Investments**		
	Coefficent	Std. Error	p	Coefficent	Std. Error	p	Coefficient	Std.Error	p	Coefficient	Std.Error	p
Crime	-.0975132	.0273233	***	-.0411576	.0058733	***	.0214727	.0351337		.0878041	.0348454	**
University	.0044308	.0053325		-.023236	.0032756	***	.0009476	.0053695		.0022329	.0034686	
Tax Reform	-.0002501	.001113		-.0016157	.0011853		-.0019951	.00113	*	.003542	.0013116	***
Size	.0137796	.0012501	***	-.0005644	.000332	*	.0158668	.0015096	***	-.0113984	.0008254	***
Profitability	.0539216	.0043642	***	.0453971	.0029296	***	.0540446	.004399	***	.0320511	.0021397	***
Risk	.0088726	.0052839	*	.0074066	.0013876	***	0	(omitted)		0	(omitted)	
Tangibility	-.0668613	.0026575	***	.0298549	.0025372	***	-.0736028	.0028888	***	-.0929845	.0025001	***
Payout Ratio	.0006914	.0006745		-.0050306	.0005563	***	.001041	.0006718		-.0023114	.0006142	***
σ(CFO)	.0077964	.0119464		-.0210966	.0029259	***	0	(omitted)		0	(omitted)	
Change Assets	-1.302414	.0864739	***	.1145887	.01936	***	-1.319967	.0887529	***	.1246073	.0213769	***
Company age	.0001004	.0000788		-.0003436	.0000702	***	.0004093	.0001179	**	-.0011135	.0001257	***
Median Industry leverage	-.0076663	.0071249		.014297	.0039219	***	.0011916	.0083558		-.0101356	.0072631	
CFO to Assets	-.0334552	.0026742	***	.0030938	.0015474	**	-.0335566	.0026521	***	.0011414	.0015064	
Constant	-.1760484	.0197035	***	.0392525	.0079172	***	-.2217171	.0241831	***	.2292575	.0139632	***
Random effects	Yes			Yes			No			No		
Fixed effects	No			No			Yes			Yes		
R-sq:												
within	0.0878			0.0008			0.0881			0.0372		
between	0.0000			0.3122			0.0000			0.1687		
overall	0.0165			0.0435			0.0132			0.0070		
Number of observations		124,815			124,815			124,815			124,815	
Number of groups		8,960			8,960			8,960			8,960	

Table 2.6 Main models with interaction terms tax
This table shows the two main models with every independent variable interacted with a dummy for the tax reform. Where the dummy variable takes the value of 1 after 2005 and 0 before. (*=0.1, **=0.05, ***=0.01)

	CFSI			**Investments**		
	Coefficient	Std. Error	p	Coefficient	Std. Error	p
Crime	-.0681656	.0302817	**	-.0381693	.0130678	**
University	-.0453139	.0110576	***	.0016619	.0106866	
Tax Reform	-.0324878	.0134564	**	-.0267471	.0095072	***
Size	.0129218	.0010799	***	-.0022362	.0006171	***
Profitability	.0541503	.0050459	***	.0449579	.0048605	***
Risk	.0111258	.0053515	**	.0063631	.0018412	***
Tangibility	-.0913339	.0036555	***	.0372194	.0037809	***
Payout Ratio	-.0006343	.0012196		-.0049751	.0011115	***
σ(CFO)	.0045478	.0116894	***	-.0265557	.0045719	***
Change Assets	-1.354928	.0826592	***	.1287512	.0308904	***
Company age	.0001159	.0000858		-.0002919	.0000628	***
Median Industry leverage	-.0122563	.0117504		.0128748	.0081527	
CFO to Assets	-.034818	.0035152	***	.0061896	.0029982	**
Crime × Tax	-.0139134	.0140266		-.0097971	.013106	
University × Tax	.0502842	.0110512	***	-.0273282	.0101591	***
Size × Tax	.0010689	.0007669		.0021417	.0005395	***
Profitability × Tax	-.0004172	.0047417		.0005883	.004251	
Risk × Tax	-.0032475	.0021853		.0011643	.0016698	
Tangibility × Tax	.0342114	.0033245	***	-.0081727	.0026603	***
Payout Ratio × Tax	.00179	.0012679		-.0000364	.0012232	
σ(CFO) × Tax	.0054438	.0057655		.0076701	.0048692	
Change Assets × Tax	.070316	.0369594	*	-.0167514	.0320971	
Company age × Tax	7.86e-06	.0000513		-.0000596	.0000515	
Median Industry leverage × Tax	.0007586	.0099895		.0023745	.0076005	
CFO to Assets × Tax	.0018815	.003197		-.0040851	.0032788	
Constant	-.1481437	.0181467	***	.0579022	.010026	***
R-sq:						
within	0.0898			0.0009		
between	0.0000			0.3177		
overall	0.0173			0.0441		
Number of observations		124,815			124,815	
Number of groups		8,960			8,960	

Table 2.7 Regressions for marginal effects

This table shows the results of regressing investments and CFSI on crime, church attendance and the interaction term between crime and church.

	Investments									Cash flow Sensitivity of Investments								
	2001-2004			2005-2015			2001-2015			2001-2004			2005-2015			2001-2015		
	Coeff	Std. Error	p	Coeff	Std. Error	p	Coeff	Std. Error	p	Coeff	Std. Error	p	Coeff	Std. Error	p	Coeff	Std. Error	p
Crime	-.0266299	.0273546		-.0309666	.0157405	**	-.0260541	.0153208	*	.0377212	.0546557		-.0848372	.0579713		-.0842403	.0464172	*
Church Attendance	-.0008911	.0019425		.0018196	.0012306		.0016108	.0012323		.00677	.0033306	**	.0006544	.0038719		.000247	.0033357	
CrimexChurch	-.0099661	.0229794		-.0077887	.0160161		-.0064853	.0159533		-.0713541	.0405758	**	.001105	.046204		-.0123647	.0375522	
University	-.0037688	.0112025		-.023652	.0034709	***	-.0223358	.0034928	***	-.0396418	.0323472		.004523	.0053114		.0044874	.0062227	
Size	-.0023001	.0005837	***	.0003079	.0003467		-.0006409	.0003579	*	.0083145	.0011719	***	.0150289	.0012694	***	.0137663	.0011986	***
Profitability	.0502446	.0051836	***	.0460124	.002888	***	.045325	.0029843	***	.0450906	.0060207	***	.0558107	.0051389	***	.0538798	.0042838	***
Risk	.0060383	.0018049	***	.0072722	.0014196	***	.0073964	.0013867	***	.0068189	.005237		.0079275	.0052325		.0088188	.0052471	*
Tangibility	.045117	.004036	***	.0320965	.0023137	***	.030165	.0024123	***	-.0431139	.0064362	***	-.0582585	.0027613	***	-.0667563	.0026125	***
Payout Ratio	-.0061948	.0011156	***	-.0050739	.0006088	***	-.0045991	.0005364	***	.0011325	.0011726		.001051	.000698		.0007374	.0006023	
σ(CFO)	-.0254505	.0046713	***	-.0162393	.0031227	***	-.0210638	.0029021	***	.0079111	.0117575		.0131233	.0123396		.0073926	.0118082	
Change Assets	.0863165	.029703	***	.1025307	.0212494	***	.1147857	.0193547	***	-1.015232	.0626111	***	-1.261577	.0861088	***	-1.302251	.0865872	
Company age	-.0002518	.0000602	***	-.0003567	.0000779	***	-.0003633	.0000613	***	-.0001309	.0001068		.000087	.000083		.0000782	.0000767	
Median Industry leverage	.0138847	.0076043	*	.015276	.0037955	***	.0151308	.0043112	***	.0088873	.0169754		-.0167717	.0080351	**	-.0074401	.0070589	
CFO to Assets	.0053053	.0030362	*	.0018753	.0017013		.0029948	.0015513	*	-.0223905	.0033723	***	-.0319894	.0026984	***	-.0334381	.0026763	
Constant	.0580107	.0106494	***	.020782	.005298	***	.035581	.0053875	***	-.1192322	.0207741	***	-.1927968	.0203777	***	-.1758959	.0191384	
Cov(b1,b3)	-.00054747			-.0002277			-.00022002			-.00160646			-.00225871			-.00145315		
R-sq:																		
within	0.0119			0.0001			0.0008			0.0604			0.0814			0.0878		
between	0.1616			0.3064			0.3084			0.0196			0.0001			0.0000		
overall	0.0408			0.0456			0.0434			0.0274			0.0144			0.0165		
Number of observations		26 590			98,187			124,777			26,590			98,187			124,777	
Number of groups		8 960			8,958			8,960			8,959			8,958			8,960	

(*=0.1, **=0.05, ***=0.01)

Table 2.8 Regressions for marginal effects

This table shows the results of regressing CFSI and Investments on crime, civic engagement and the interaction term between crime and civic. (*=0.1, **=0.05, ***=0.01)

	Cash flow Sensitivity of Investments									Investments								
	2001-2004			2005-2015			2001-2015			2001-2004			2005-2015			2001-2015		
	Coeff	Std. Error	p	Coeff	Std. Error	p	Coeff.	Std.Error	p	Coeff	Std. Error	p	Coeff	Std. Error	p	Coeff.	Std.Error	p
Crime	-.0223778	.0371885		-.060955	.036783	*	-.0843235	.0290155	***	-.0245631	.0149832		-.0016663	.0217962		-.023734	.0123212	*
Civic Engagement	-1.10e-06	.0000152		.0000835	.0000629		1.71e-07	.000018		1.46e-06	.0000129		.0000857	.0000463	*	.0000131	.0000167	
CrimexCivic	-.0000584	.0002659		-.0006137	.0006293		.0001447	.0002571		-.0002241	.0001977		-.0011337	.0005526	**	-.0004832	.0002681	*
University	-.024287	.0319766		.0039527	.0053334		.0130549	.0064607	**	-.0065901	.0105638		-.0253265	.0032101	***	-.0241811	.0031882	***
Size	-.0199941	.0029654	***	.0149709	.0012738	***	-.0173939	.0013954	***	-.0022076	.0005967	***	.0003365	.0003523		-.0005911	.0003569	*
Profitability	.0449699	.0060254	***	.0559188	.0051742	***	.0546258	.0042596	***	.0507739	.0052755	***	.0459796	.0028886	***	.0453207	.0029685	***
Risk	.0030728	.0053809		.0078141	.0052227		.0084282	.0056725		.0061827	.0018414	***	.0073485	.0014334	***	.0074549	.0014027	***
Tangibility	-.0286907	.0046212	***	-.058141	.0027682	***	-.0507883	.0026791	***	.044147	.0040953	***	.0321264	.0022823	***	.0303352	.002441	***
Payout Ratio	.002699	.0011962	**	.0012206	.0006995	*	-.0000118	.000662		-.0062924	.0011185	***	-.0052387	.0005962	***	-.0048106	.0005175	***
σ(CFO)	-.071093	.0136208	***	.0129473	.0123284		-.0902379	.0131697	***	-.0250578	.0047114	***	-.0163526	.0031268	***	-.020992	.0028898	***
Change Assets	-.9202975	.0570137	***	-1.26219	.0865931	***	-1.110223	.0702472	***	.074102	.0298649	**	.1029522	.0211707	***	.1134741	.0194171	***
Company age	.0003449	.0001342	***	.0000762	.0000794		.0011616	.0001408	***	-.0002478	.0000601	***	-.0003572	.0000763	***	-.0003599	.0000624	***
Median Industry leverage	.0421127	.0169367	**	-.0164773	.0079573	**	-.0128058	.0068735	*	.0143746	.0077414	*	.0158648	.0038773	***	.0156453	.0043131	***
CFO to Assets	-.0225413	.0033583	***	-.031975	.0026996	***	-.0326807	.0027763	***	.0052623	.0031085	*	.0018492	.0017105		.0029978	.001563	*
Constant	.2690114	.0443889	***	-.1941804	.0198148	***	.2719354	.0194503	***	.0547212	.0103639	***	.0198831	.0055523	***	.0372437	.0051723	***
Cov(b1,b3)	1.683e-06			-.00001395			2.286e-06			-1.626e-06			-.00001196			-2.850e-06		
Random effects																		
Fixed effects																		
R-sq:																		
within	0.0616			0.0815			0.0945			0.0107			0.0001			0.0008		
between	0.0178			0.0001			0.0008			0.1532			0.3075			0.3103		
overall	0.0259			0.0144			0.0097			0.0406			0.0457			0.0436		
Number of observations		26,249			97,844			124,093			26,249			97,844			124,093	
Number of groups		8,958			8,959			8,960			8,958			8,959			8,960	

The marginal effect of crime on investments/CFSI at different levels of sociability/civic engagement

Figure 2.3 The marginal effect of crime on investments evaluated at different levels of sociability.

Figure 2.3.1. The marginal effect of crime on investments at different levels of church attendance. Period 2001-2004.

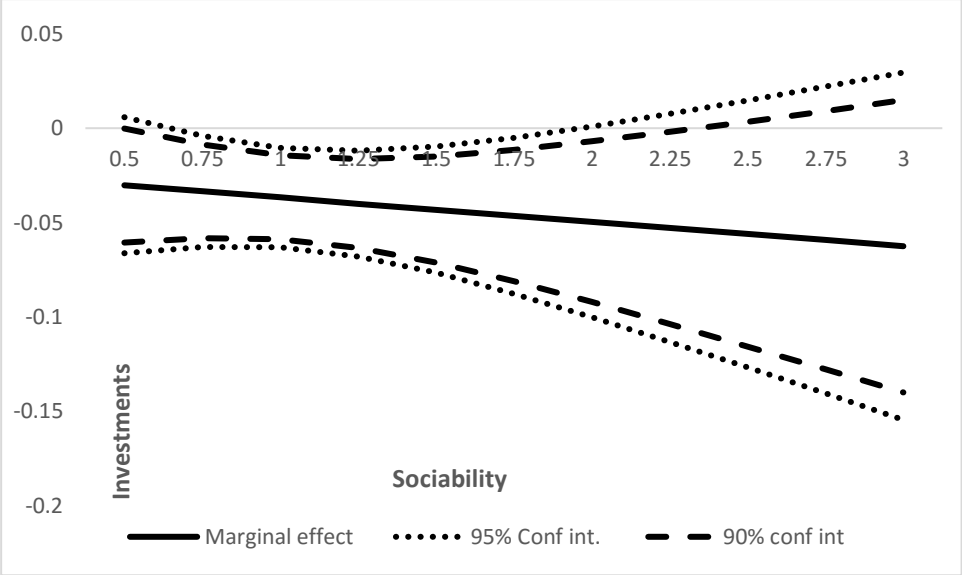


Figure 2.3.2. The marginal effect of crime on investments at different levels of church attendance. Period 2005-2015.

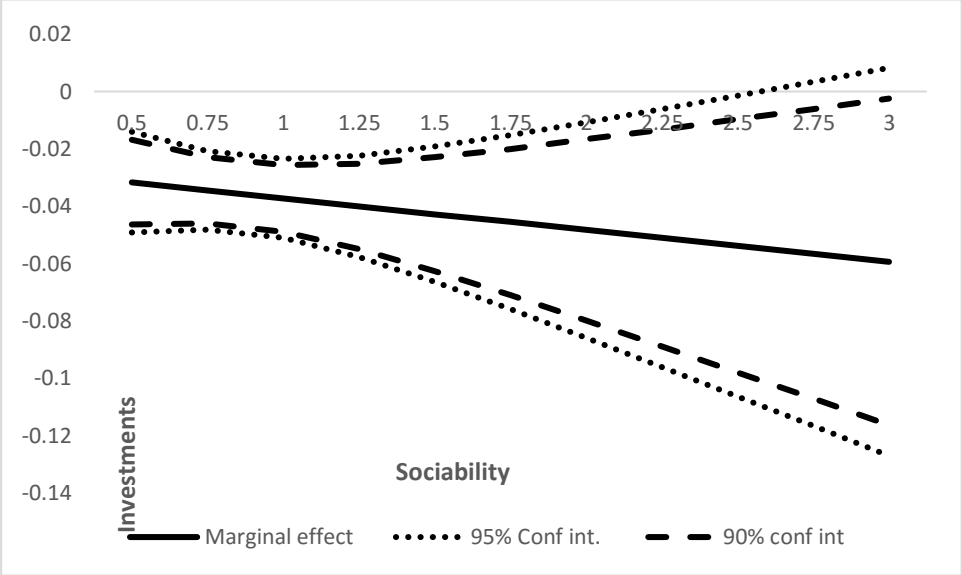
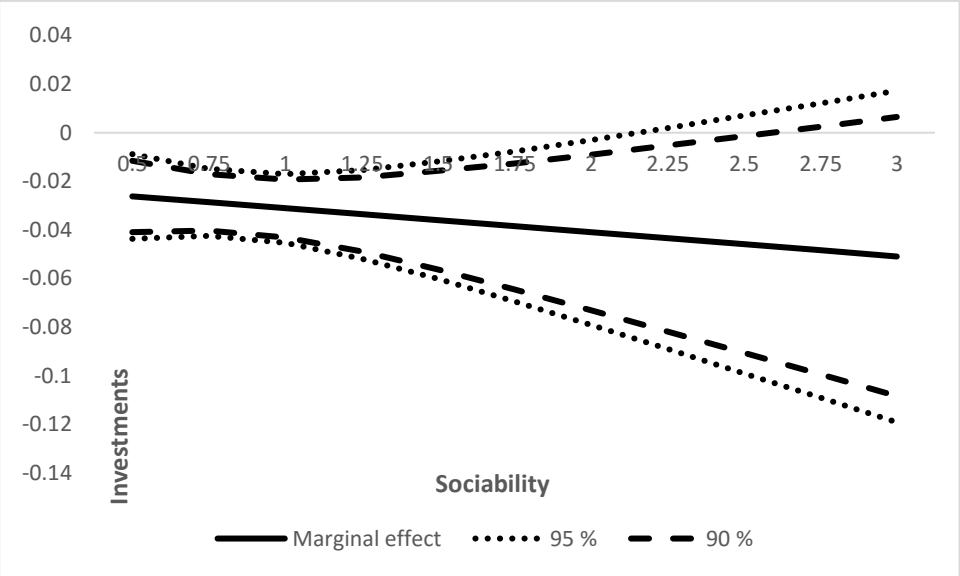


Figure 2.3.3. The marginal effect of crime on investments at different levels of church attendance. Period 2001-2015



The figures 2.3.1, 2.3.2, and 2.3.3 are graphical illustration of the marginal effect of crime rate on investments at different levels of church attendance, our proxy for sociability. 95% confidence intervals and 90% confidence intervals around the marginal effect is included with dotted lines and dashed lines, respectively. Coefficients, standard errors and covariance used in the calculation of the respective periods can be found in columns (1), (2), and (3) of table 2.7.

Figure 2.4 The marginal effect of crime evaluated on investments at different levels of civic engagement.

Figure 2.4.1. The marginal effect of crime on investments at different amounts donated to TvAksjonen. Period 2001-2004.

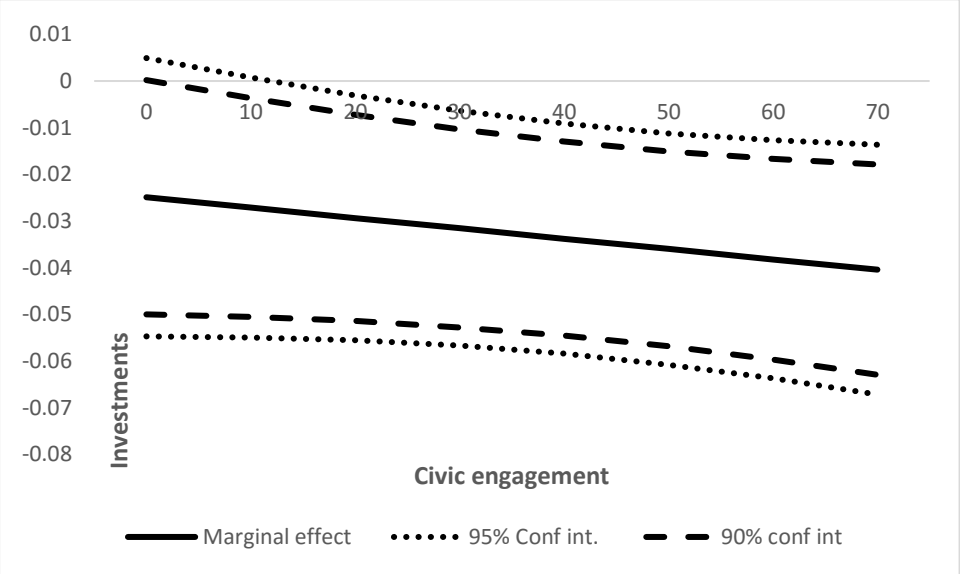


Figure 2.4.2. The marginal effect of crime on investments at different amounts donated to TvAksjonen. Period 2005-2015

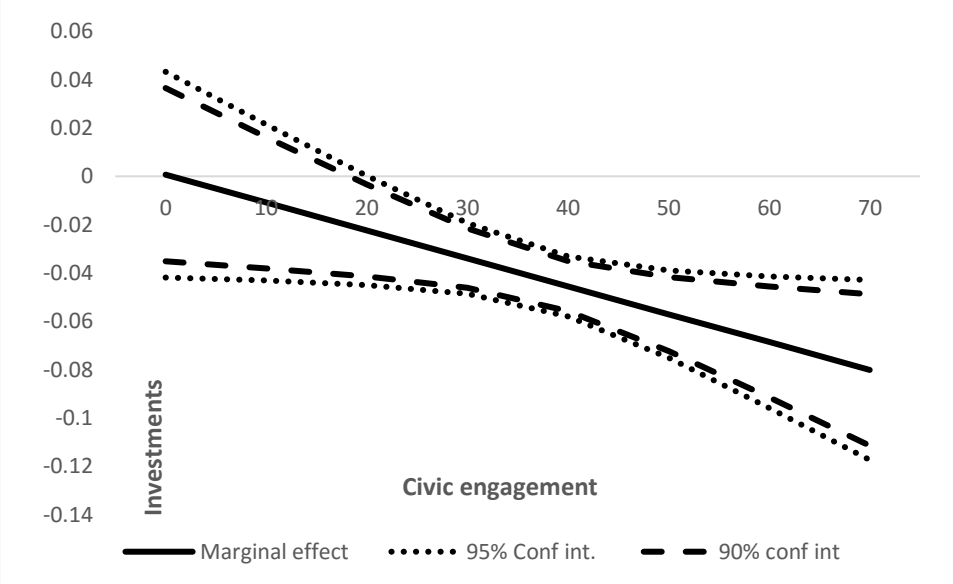
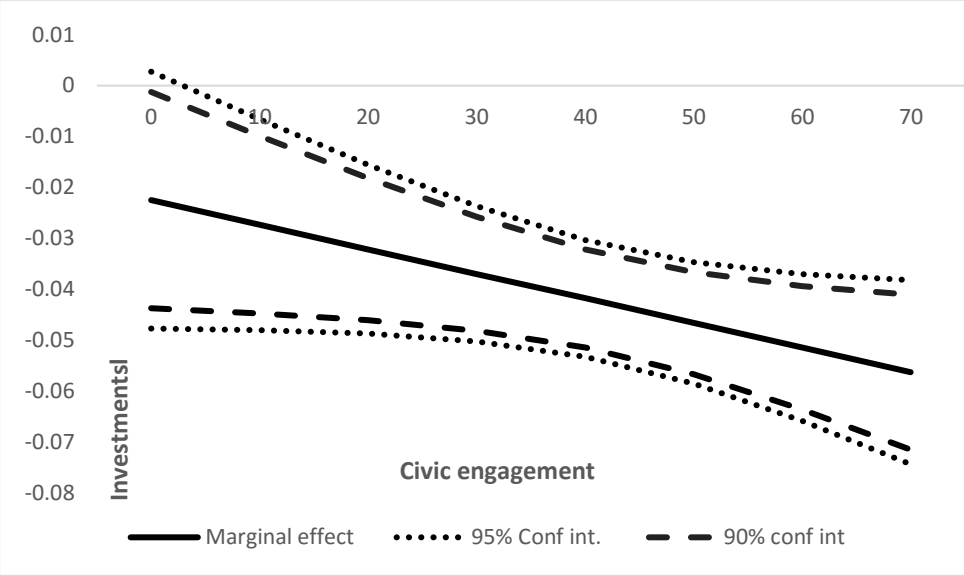


Figure 2.4.3. The marginal effect of crime on investments at different amounts donated to TvAksjonen. Period 2001-2015.



The figures 2.4.1, 2.4.2, and 2.4.3 are graphical illustration of the marginal effect of crime rate on investments at different amounts donated to TvAksjonen, our proxy for civic engagement. 95% confidence intervals and 90% confidence intervals around the marginal effect is included with dotted lines and dashed lines, respectively.

Coefficients, standard errors and covariance used in the calculation of the respective periods can be found in columns (4), (5), and (6) of table 2.8.

Figure 2.5 The marginal effect of crime on cash flow sensitivity of investments evaluated at different levels of sociability.

Figure 2.5.1. The marginal effect of crime on CFSI at different levels of church attendance. Period 2001-2004.

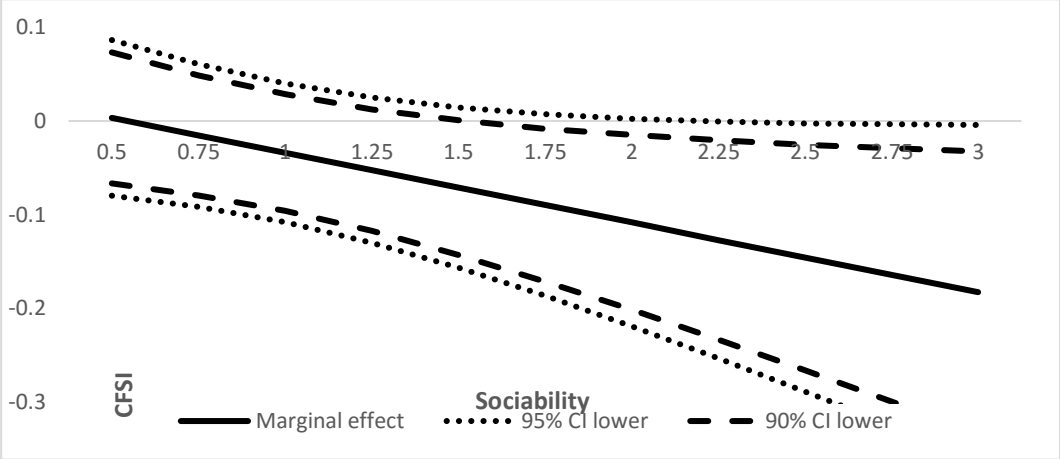


Figure 2.5.2. The marginal effect of crime on CFSI at different levels of church attendance. Period 2005-2015.

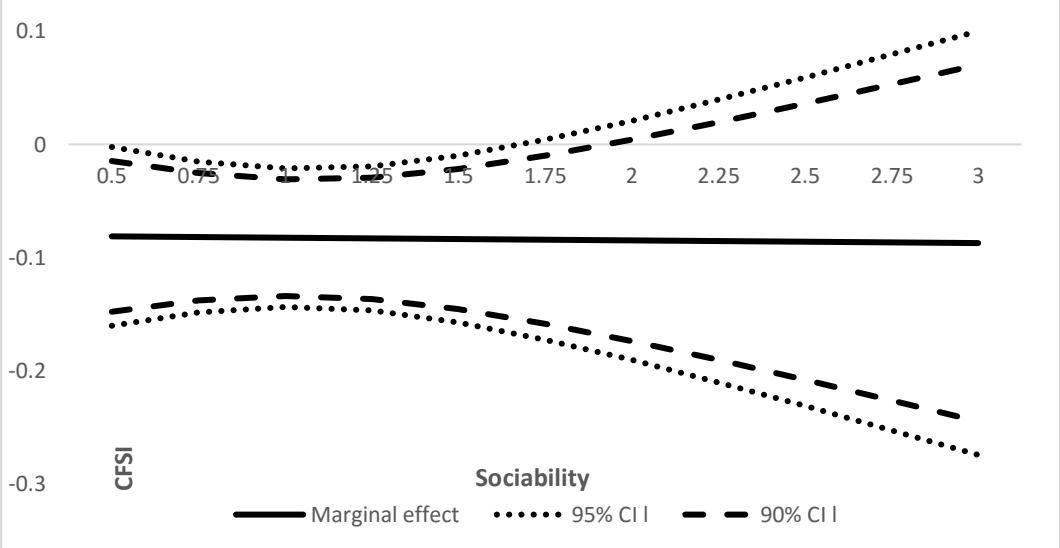
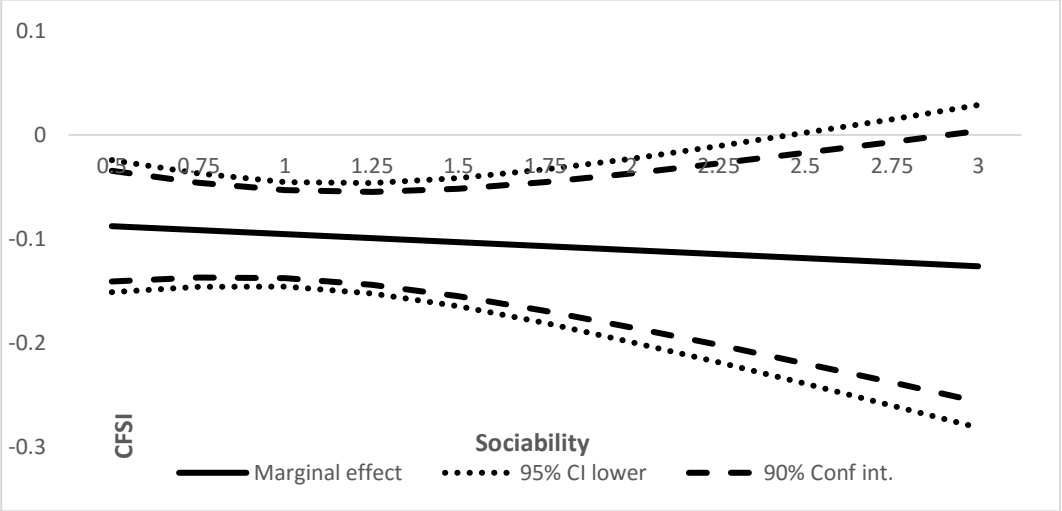


Figure 2.5.3. The marginal effect of crime on CFSI at different levels of church attendance. Period 2001-2015



The figures 2.5.1, 2.5.2, and 2.5.3 are graphical illustration of the marginal effect of crime rate on CFSI at different levels of church attendance, our proxy for sociability. 95% confidence intervals and 90% confidence intervals around the marginal effect is included with dotted lines and dashed lines, respectively. Coefficients, standard errors and covariance used in the calculation of the respective periods can be found in columns (4), (5), and (6) of table 2.7.

Figure 2.6 The marginal effect of crime on cash flow sensitivity of investments evaluated at different levels of civic engagement.

Figure 2.6.1. The marginal effect of crime on CFSI at different amounts donated to TvAksjonen. Period 2001-2004.

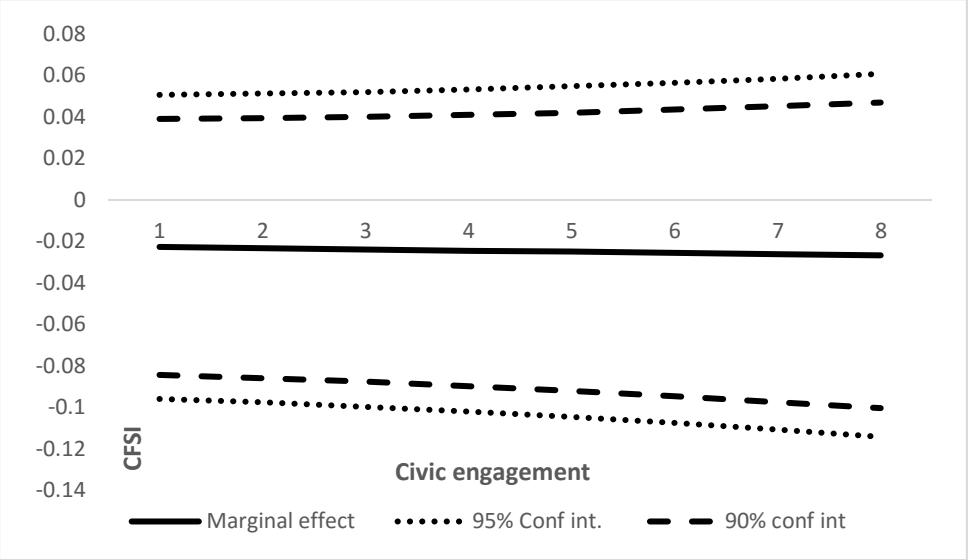


Figure 2.6.2. The marginal effect of crime on CFSI at different amounts donated to TvAksjonen. Period 2005-2015.

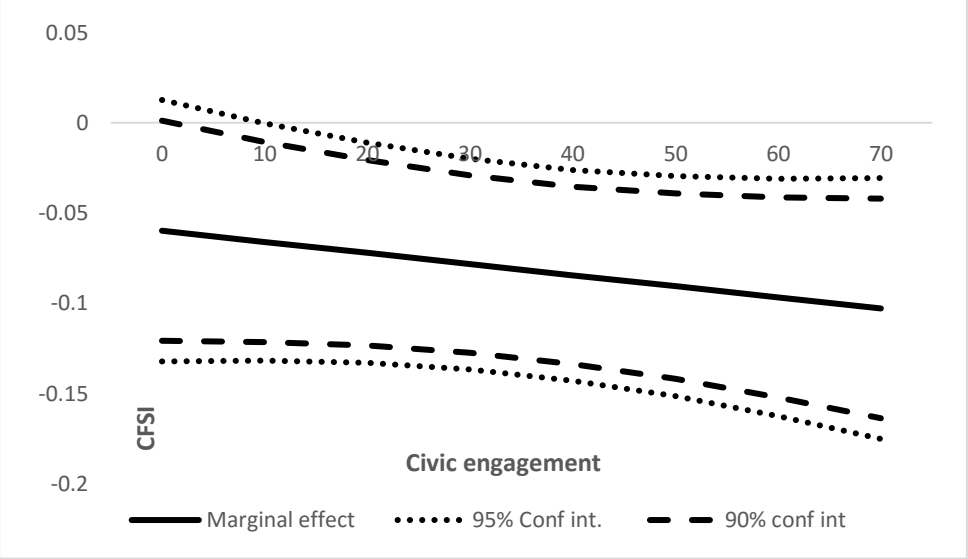
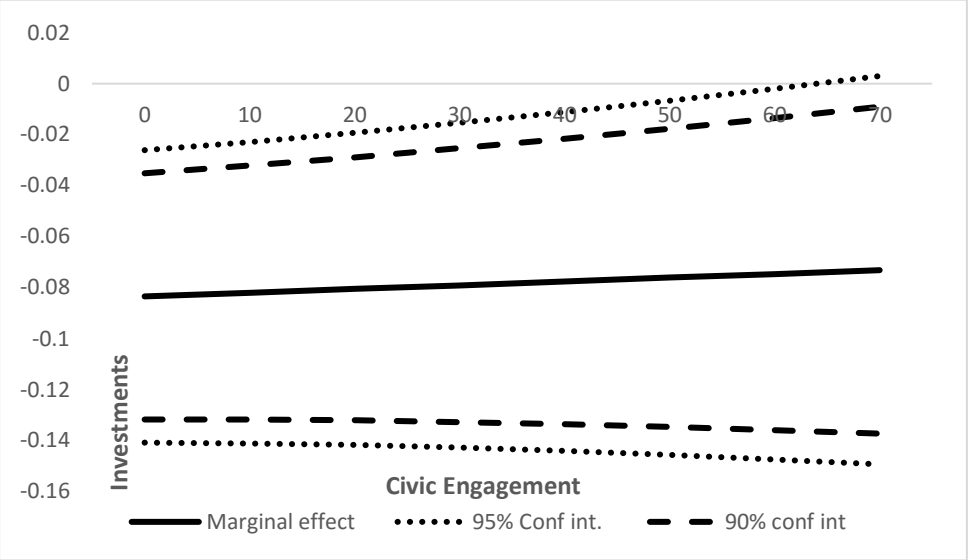


Figure 2.6.3. The marginal effect of crime on CFSI at different amounts donated to TvAksjonen. Period 2001-2015.



The figures 2.6.1, 2.6.2, and 2.6.3 are graphical illustration of the marginal effect of crime rate on CFSI at different levels of church attendance, our proxy for sociability. 95% confidence intervals and 90% confidence intervals around the marginal effect is included with dotted lines and dashed lines, respectively. Coefficients, standard errors and covariance used in the calculation of the respective periods can be found in columns (1), (2), and (4) of table 2.8.

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