



Mergers and Acquisitions in Sin Industries

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Abstract

Mergers and acquisitions (M&A) have the potential to generate value for firms and their shareholders by gaining synergy from targets. However, the empirical evidence suggests M&A destroy firms' value and shareholders' wealth instead. The reason is that the acquirers are overwhelmingly motivated by value-decreasing motives (e.g., market-timing, empire building).

The sin industries (e.g., tobacco, alcohol, and casino) are different from other industries due to their harmfulness and devastating consequences to society. Because of this characteristic, sin industries are stigmatized and neglected by society and investors. This negative attitude towards sin industries poses a significant negative impact on sin businesses (e.g., elevating the cost of capital, see Hong and Kacperczyk, 2009). Accordingly, it is essential for sin firms to improve their images. Shedding light on this behaviour, this thesis examines performance and motives of sin M&As in the G20 countries from 1993 to 2017. We show that sin firms try to improve their images by making value-increasing acquisitions. In relative terms, the sin acquirer market returns are more favourable than non-sin acquirer returns. Moreover, prior literature shows evidence that societal attitudes towards sin industries differ across countries. Classifying the G20 sample into high and low social norm countries, we extended prior literature by examining how social norms impact sin and non-sin firm M&As.

We explore three angles of sin mergers and acquisitions: short-term market reaction to M&A announcements, long-term performance after acquisitions, and the motives behind M&A decisions. In the first empirical chapter, we find that the sin acquirer cumulative abnormal returns (CAR) at M&A announcements are more favourable than non-sin acquirer CARs. The difference in CARs across sin and non-sin acquirers is further elevated in high relative to low-social-norm countries, where people are less concerned about the negative consequences of sin industries than other countries.

In the second empirical chapter, we find that the long-term operating performance of sin acquirers are not improved. However, the sin acquirer's shareholders gain significantly positive returns in the long-term after acquisitions. Moreover, the sin acquirer returns are more favourable than non-sin acquirer returns. Interestingly, the difference in returns across sin and non-sin acquirers is further elevated in high relative to low-social-norm countries.

In the last empirical chapter, we find that sin acquirers are inspired by market-timing and synergy motives. However, sin acquirers are less motivated by market-timing than non-sin acquirers. The difference in market-timing motive between sin acquirers and non-sin acquirers

is greater in high-social-norm countries, where people are more concerned about the negative effect of the sin industries

In conclusion, we find evidence that the sin firms improve their image by involving in better M&A deals than non-sin acquirers. As a result, the market reactions to M&A announcements of sin acquirers are more favourable than for non-sin acquirers. As there is no differential impact on operating performance, the more favourable return of sin acquirers likely derives from their better motives (i.e., less market-timing). Interestingly, the difference in market performance and motives across sin and non-sin acquirers is further elevated in high relative to low-social-norm countries.

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List of Abbreviations

BHAR	Buy-and-hold abnormal returns
CAR	Cumulative abnormal returns
EBITDA	Earnings before interest, taxes, depreciation, and amortization
EPS	Earnings per share
KLD	Kinder, Lydenberg, and Domini
MAV	Merger activity variable
M&As	Mergers and acquisitions
M/B	Market-to-book ratio
PSM	Propensity score matching
SEC	US Securities and Exchange Commission
SIC	Standard Industrial Classification
WC	Working capital
WVS	World Values Survey

1. Introduction

1.1. Background

While M&As may generate value to acquirers by enhancing operating performance or producing positive short- and long-term market returns, empirical studies spanning the last five decades suggest there is no clear short- or long-term evidence of improvement in operating performance or wealth gains for shareholders after M&A announcements (e.g. Jensen and Ruback, 1983; Martynova and Renneboog, 2008; Netter et al., 2011; Renneboog and Vansteenkiste, 2019). The reason is that the acquirers are overwhelmingly motivated by value-decreasing motives (e.g. market-timing (Meng and Vjih, 2021); empire building (Yang et al., 2019)). As sin firms and their operations are stigmatized by society, the motivations of sin acquirers may differ from non-sin acquirers. Therefore, we look at sin industries (tobacco, alcohol, and gambling) to test whether they may be involved in value-increasing acquisitions. Moreover, prior literature shows evidence that societal attitudes towards sin industries differ across countries. Classifying our G20 sample into high- and low-social-norm countries, we examine how sin and non-sin M&As differ across countries.¹

1.2. Motivations

Sin firms are severely condemned and stigmatized by society because their main operations depart from commonly recognized organizational behaviour norms and are extremely destructive (Leventis et al., 2013). Sin firms exhibit neglected stock characteristics such as being undervalued and having a high cost of capital (for further information on ignored stock characteristics, see Merton (1987)). According to legitimacy theory, in order to continue to exist, sin firms must operate in accordance with societal values and norms (Dowling and Pfeffer, 1975). To repair their reputations ruined by social norms and corporate stigmatization, sin firms may endeavour to enhance their image in order to minimize their cost of capital and reduce the disadvantages associated with the sin sector. Kim and Venkatachalam (2011) contend that sin firms produce higher quality financial reporting than non-sin firms, suggesting that they are motivated to improve their image. Until now, no research has been conducted to investigate sin firms' motive to change their image through value-adding mergers and

¹ In countries with high social norm levels, people are more concerned about and critical of misbehaviour and its negative consequences. For further discussion and how we classify countries into high social norm and low social norm, see 2.1.3 and 3.3.2.2.

acquisitions that will benefit their shareholders. Therefore, the first aim of this study (Chapters 3 and 4) is to investigate market reaction and accounting performance in sin M&As.

Moreover, because the acquirer's value-increasing and decreasing behaviours are the primary reason why an M&A decision can yield value for shareholders, sin industries (tobacco, alcohol, and casinos) should be an ideal setting to examine the influence of acquirer motive on M&A performance. While both value-enhancing and value-destructive motives are prevalent in M&As (e.g. Seth et al., 2002; Alexandridis et al., 2017), acquirers' motives may differ owing to the aforementioned societal norms and stigmatizations. M&As may be conducted by sin firms in order to enhance their image and reputation, thereby lowering their capital costs. According to Boone and Uysal (2020), acquisition announcement returns are sensitive to variations in the acquirer's and target's environmental reputation. Furthermore, one of the most important drivers of sin firms is societal norms (e.g. Hong and Kacperczyk, 2009; Fauver and McDonald, 2014; Liu et al., 2014). Thus far, there has been little direct investigation into the motives for M&As. Therefore, another purpose of this research (Chapter 5) is to look at the major motives that drive sin acquirers' decisions to engage in M&As.

1.3. Objectives

In this thesis, we compare performance and motives between sin and non-sin acquirers to highlight the characteristics of sin M&As. Moreover, as societal attitudes towards sin industries differ across countries, we expect that the sin characteristics are elevated in high-social-norm countries. To this end, we split the sample into high- and low-social-norm countries, then compare sin M&As across countries.

First, in Chapter 3, we examine the short-term market reaction to M&A announcements. This method is most often used to assess M&A performance. Moreover, the negative effect of stigmatized sin targets could quickly harm non-sin acquirers' reputations rather than their operating performance. Explicitly, in Chapter 3, we investigate the effect of sin targets on sin and non-sin acquirers. In Chapter 4, to identify the potential explanations for the results in Chapter 3, we investigate long-term operating performance and market performance. Finally, in Chapter 5, we further examine the motives behind M&A decisions. The adopted methodologies and results will be briefly discussed below. Across three empirical chapters, we employ the G20 countries as the primary sample. The G20 are economically significant and form a good representation of the whole world. To highlight the differences in sin M&As across countries, we classify the G20 sample into high and low social norm countries.

1.4. Summary of main findings

In Chapter 3, investigating the short-term market reaction to M&A announcements, we examine 11,923 acquisitions from 1993 to 2017 in the G20 countries. To compute the cumulative abnormal return (CAR) in M&A announcements, we use the procedure developed by Brown and Warner (1980, 1985). Then we compare the CAR between sin and non-sin acquirers to see how they differ. We find that the M&A announcement 5-day cumulative abnormal return (CAR) [-2, 2] of the sin acquirer is 12 basis points higher than the non-sin acquirer. In countries with high social norm levels, the discrepancy is even more pronounced: the sin acquirer's M&A announcement CAR is 16 basis points higher than the non-sin acquirer's. While it was expected that the acquirer would benefit from the undervaluation of the sin target through a positive CAR in M&As, this is not the case. The non-sin acquirer's announcement return is even negatively affected by the sin target. This finding is supported by the theory of social stigma, such that the social stigmatization from the sin target spills over to the non-sin acquirer. This detrimental effect is more pronounced in countries with high social norm levels.

In Chapter 4, aiming to explain the short-term market return for sin acquirers' shareholders, we investigate the change in operating performance after M&A. Moreover, we examine whether long-term market performance shows the same pattern as short-term performance. In this chapter, our sample includes 2,337 acquisitions from 1993 to 2017 in G20 countries (Australia, Brazil, Canada, China, Croatia, France, Germany, India, Indonesia, Japan, Mexico, Netherlands, South Africa, South Korea, Spain, Sweden, Switzerland, Turkey, United Kingdom, United States).² For operating performance, we mainly report results based on EBITDA (earnings before interest, taxes, depreciation, and amortization), adjusted for changes in working capital (EBITDA- Δ WC). EBITDA is deflated before and after the takeover by the book value of total assets to construct comparable terms across firms (Powell and Stark, 2005; Hardford et al., 2012; Gao and Mohamed, 2018). Operating performance is also adjusted for the performance of the industry to which the acquirer or the matched firms belong (Powell and Stark, 2005). To test and assess the change in operating performance, we use the two most popular methods in the literature, the change model and the intercept model (e.g. Powell and Stark, 2005; Gao and Mohamed, 2018). We find that after M&A, neither the sin acquirer nor the non-sin acquirer's operating performance improves. Furthermore, no difference in operating performance change exists between sin and non-sin acquirers. However, three years after the

² The sample size in Chapter 4 is smaller than in Chapter 3. The reason is that we require more accounting data. Moreover, the method to measure operating performance requires matched non-acquirer firms. If we cannot find the matched firm for an acquirer, that acquirer will be excluded. As a result, there are fewer countries covered; Please see section 4.3.2.1 for further discussion.

effective date, the stock market performance, as evaluated by the BHAR (Barber and Lyon, 1997; Mitchell and Stafford, 2000; Li et al., 2018b) of the sin acquirer, is considerably favourable at 4.66%. This positive BHAR is more pronounced at 5.63% in countries with high social norm levels, where people are more concerned about the negative effects of sin industries than the rest of the world. Furthermore, the BHAR of sin acquirers is substantially greater than that of non-sin acquirers, at 6.17% for the entire sample. The difference reaches 7.97% in high-social-norm countries.

In Chapter 5, investigating the M&A motives, we examine 2,848 acquisitions from 1993 to 2017 in G20 countries (Australia, Canada, China, France, Germany, India, Indonesia, Japan, Mexico, South Korea, United Kingdom, United States).³ We use the Rhodes-Kropf et al. (2005) market-to-book (M/B) decomposition technique to analyse the acquirer's motivations. Market-to-value (M/V, which captures overvaluation and the market-timing motive) and value-to-book (V/B, which captures the synergy drive) are the two components of M/B. We show that both the sin and non-sin acquirers are motivated by market-timing and synergy. The sin acquirer, on the other hand, is less influenced by market-timing than the non-sin acquirer. The sin acquirer is 15.88% less overpriced than the non-sin acquirer in terms of economic value. In high-social-norm countries, the difference in market-timing motivation between sin acquirers and non-sin acquirers is more pronounced (23.85% in mean value). However, there is no substantial difference in synergy incentive between sin acquirers and non-sin acquirers.

1.5. Contribution

This thesis is one of the first, if not the first, to look at M&A performance in sin industries in several aspects worldwide. First, we look at short- and long-term performance and examine the motives behind the M&A decisions. Second, we show how social norms affect performance and motives in different countries. We will discuss the contributions briefly below.

First, in terms of performance and motives of sin acquirers versus those of non-sin acquirers, previous research has focused mainly on M&A in a single sin sector nationally (e.g. Beneish et al., 2008). Our study expands on these findings by looking at multiple sin sectors on a worldwide basis. In Chapter 3, we find that sin acquirers have more favourable market returns in M&A announcements than non-sin acquirers. The more favourable returns of sin acquirers persist in the long term (Chapter 4). However, we do not find evidence for improvement in operating performance after sin acquisitions. This thesis is also the first to investigate the

³ In Chapter 5, the sample size is smaller than in Chapter 3. The reason is that we require more accounting data. Moreover, the method to identify the motives requires a sufficient number of firms in each industry-country-year combination. Please see section 5.3.2.1 for further discussion.

motives behind sin acquisitions. In Chapter 5, we find that sin acquirers are less motivated by market-timing than non-sin acquirers.

Second, regarding the difference in performance and motives between sin and non-sin acquisitions across countries, other research mainly assumes that societal attitude towards sin industries is constant (e.g. Guidi et al., 2020). We allow for variation in social norms across countries and examine how sin M&As differ with respect to market reaction, operating performance, and motives across countries. Previous research has shown that differences in social norms have an impact on market participants' behaviour; for example, institutional investors are less likely to own sin stocks (Hong and Kacperczyk, 2009). In high-social-norm countries, according to Fauver and McDonald (2014), sin firms have a lower valuation and a larger abnormal return than non-sin firms. Our research adds to this effect by presenting evidence in the realm of mergers and acquisitions. We discover that in countries with high social norm levels, the gains of sin acquirers over non-sin acquirers are elevated. Furthermore, the differences in motives between sin and non-sin acquirers are pronounced.

The findings of this thesis have important implications for investors, managers, and policymakers. One of the biggest tobacco firms, Philip Morris International, has recently conducted a series of acquisitions of pharmaceuticals firms: Vectura, Fertin Pharma, and Fertin Pharma.⁴ This is to restate their aim for a “smoke-free future”. Through the findings of this thesis, investors could consider investing in sin acquirers (e.g. Philip Morris International) rather than non-sin acquirers if they want to get a higher return on M&A announcements. However, they should notice that the operating performance of either sin or non-sin acquirers will not improve after acquisitions. Furthermore, when non-sin acquirers acquire sin targets, investors, policymakers, and managers must pay greater attention, as these deals may reduce shareholder wealth due to the negative impact of sin industries, particularly in high-social-norm countries. In addition, policymakers should pay greater attention to non-sin acquirers, who have been recognized as being more motivated by value-decreasing motivations (e.g. market timing) than sin acquirers.

1.6. Thesis structure

The thesis is structured as follows: Chapter 2 reviews the literature, offers definitions for the key terms used across this thesis (e.g. M&As, sin industries, social norms, motives), and discusses and explains key theories in our work. Chapter 2 also introduces the current

⁴ <https://pmi.com/media-center/news/pmi-progresses-on-acquisition-of-three-pioneering-pharmaceutical-companies-to-accelerate-beyond-nicotine-vision>

approaches applied in M&A research and the determinants of M&A performance. Chapter 3 presents the first empirical study about the short-term market reaction to M&A announcements in sin industries. Chapter 4 presents the second empirical study on long-term operating and market performance in sin M&As. Chapter 5, the third and last empirical study, shows the motives of sin M&As. Finally, Chapter 6 concludes and summarizes the thesis, its contributions and implications. It also discusses the limitations and future research.

2. Literature review

2.1. Institutional background

2.1.1. Mergers and Acquisitions (M&A)

Mergers and acquisitions (M&A) is a general term that describes the consolidation of firms or businesses. In an acquisition, one firm purchases another firm; a merger is a voluntary combination of two firms. Though merger and acquisition are distinct terms, they are often used interchangeably in the literature (e.g. Gao and Mohamed, 2018; Renneboog and Vansteenkiste, 2019) and so in this thesis.

M&A is one of the most important events for any corporation. It requires a lot of effort from the acquirer's and target's boards of managers to get a good deal and get it done. To compensate for that effort, M&As offer huge value to participants. Just as there is a slight difference between mergers and acquisitions, there are many types of M&As (e.g. horizontal, vertical, conglomerate), which can benefit the two parties in different ways. For example, in a horizontal merger, the two parties are in the same sector; the merged firm can benefit by economies of scale and improved productivity. In a vertical merger, the two parties are at different stages of production; the merged firm can gain cost efficiency. In a conglomerate merger, the two parties are in unrelated or indirectly related industries (Mueller, 1969); the merged firm can reduce the risk associated with one industry.

2.1.2. Sin industries

A firm whose operations are related to sin industries is considered a sin firm. The KLD database, which is widely used in social responsibility research, lists tobacco, alcohol, gambling, firearms, military, and nuclear operations as sin industries.⁵ In the literature, the definition of sin industries is contradictory; most scholars add or cross out some industries. This depends on the researcher's context; for example, the firearms industry might be sinful in the US because there are a lot of deaths due to misuse of guns. However, in China, where the government controls the firearms industry, and use of guns by the public is prohibited, that is not the case. However, it is broadly accepted that casinos, tobacco, and alcohol are sin industries (see Hong and Kacperczyk, 2009). These industries are considered sinful due to their addictive properties and undesirable consequences for society when consumed excessively. While

⁵ Data from KLD Research & Analytics, Inc. Available at wrds-www.wharton.upenn.edu/pages/about/data-vendors/kld-research-analytics-inc-kld/

alcohol and casinos have been recognized as sinful for a long time, tobacco has gained its sinful status as recently as the past four decades (Hong and Kacperczyk, 2009).

Because of undesirable consequences for society, sin industries are heavily criticized. Moreover, sin industries are stigmatized and discriminated against. As a result, sin firms have neglected characteristics. Merton (1987) suggests that neglected firms have fewer investors and are undervalued. This makes sin industries attractive as offering a high stock return.

2.1.3. Social norms

Society in general, or investors, normally stigmatize or discriminate against sin industries due to social norms. The Oxford dictionary defines norms as “standards of behaviour that are typical of or accepted within a particular group or society”. Similarly, Liu et al. (2014) define social norms as the rules and standards that are understood by members of a group or society; social norms guide and constrain social behaviour. In the economics field, the impacts of social norms on economic behaviour as well as market outcomes have been studied for a long time. This was first applied in the context of the labour market. In the work of Becker (1957), agents pay for the discrimination arising from community norms. The agents bear the financial costs of their decisions when they refuse to make contracts with particular types of people. While social norms can be costly (Akerlof, 1980), they continue to exist because of the significant cost of deviating from such norms.

The variation in social norms across countries leads to variations in people’s attitudes towards sin stocks. This difference drives the variety of institutional ownership and financial analyst coverage in each country (Liu et al., 2014). Fauver and McDonald (2014) split the world into sin countries and non-sin countries. The sin countries in their work are equivalent to high-social-norm countries in this study, and the non-sin countries are equivalent to low-social-norm countries.⁶ Sin stocks have a significantly lower pricing in sin countries (i.e. high-social-norm countries) compared with the market. In sin countries, the return from sin investment is also higher than non-sin investment (Fauver and McDonald, 2014).

Next, we define high-social-norm and low-social-norm countries. In high-social-norm countries, people are more concerned about the negative consequences of sin industries than in the rest of the world (i.e. low-social-norm countries). Fauver and McDonald (2014) designate a country as a sin country (high-social-norm country) based on two different measures. First,

⁶ We use different terminologies to Fauver and McDonald (2014) for better understanding. The use of high-social-norm and low-social-norm countries can directly reflect the societal attitudes of people in these countries.

they use data gathered from the World Values Survey (WVS), which is mostly used in socially responsible investing literature, to create a social sin measure to classify each country as viewing sin industries (tobacco, alcohol, and gambling) as sinful. Second, they use a measure based on a mixture of WVS data, time-varying sin product consumption, and time-varying legal statutes across countries.

2.1.4. The G20 countries

The G20 countries are Argentina, Australia, Brazil, Canada, China, France, Germany, India, Indonesia, Italy, Japan, Republic of Korea, Mexico, Russia, Saudi Arabia, South Africa, Turkey, the United Kingdom, the United States, and the European Union. As of 2020, the G20 population is about 4.7 billion, accounting for nearly 60% of the world's population. The G20 economies account for about 85% of World GDP (World Bank, 2021).⁷ Besides its significant proportion of the world's population and economies, the G20 has variety in geography and demographics. Geographically, G20 countries are found on all continents except Antarctica. Demographically, for example, the G20 includes "old population countries" where the proportion of the population aged 65 and above is very high (e.g. Japan, Italy). It also includes "young population countries" where the proportion of the population aged 15 and below is very high (e.g. Indonesia, India) (World Bank, 2020). The G20 also includes countries where the majority are Christian (e.g. the US, the UK), Muslim (e.g. Indonesia), or of mixed religions (South Korea, China). The G20 also includes both developed (or advanced) countries (e.g. the US, the UK) and emerging countries (e.g. China, India) (IMF, 2021).⁸ In summary, given these diversities in G20 countries, the G20 could be considered as a good representative for the world.

Due to data availability, the number of countries studied in each of the three empirical chapters is different. In Chapter 4, besides requiring more accounting indicators than in Chapter 3, we need a similar non-acquirer firm for each acquirer to compare (Chapter 4). Also, in Chapter 5, we need a sufficient number of firms in each country-industry-year combination to employ the chosen research method. However, there are still good diversities in geography and demographics. In Chapter 3, the sample consists of Argentina, Australia, Brazil, Canada, China, Croatia, Estonia, Finland, France, Germany, Hungary, India, Indonesia, Italy, Japan, Mexico, Netherlands, Poland, Russia, Slovenia, South Africa, South Korea, Spain, Sweden, Switzerland, Turkey, the United Kingdom, and the United States. In Chapter 4, the sample consists of Australia, Brazil, Canada, China, Croatia, France, Germany, India, Indonesia, Japan, Mexico, Netherlands, South Africa, South Korea, Spain, Sweden, Switzerland, Turkey, the United

⁷ <https://data.worldbank.org/>

⁸ <https://www.imf.org/en/Publications/WEO/weo-database/2021/April>

Kingdom, and the United States. In Chapter 5, the sample consists of Australia, Canada, China, France, Germany, India, Indonesia, Japan, Mexico, South Korea, the United Kingdom, and the United States.

2.2. Motives in mergers and acquisitions

There are several theories explaining the motives behind mergers and acquisitions. In this section, we discuss these motives and empirical evidence supporting their existence. In general, they can be divided into value increasing (e.g. synergy) or value decreasing (e.g. agency, market timing).

2.2.1. Synergy

Efficiency theory suggests that acquirers seek to achieve synergy in M&As. Synergy is defined as two or more agents interacting or cooperating to generate a combined impact larger than the sum of their individual effects. According to Berkovitch and Narayanan (1993), mergers are driven by the economic gains or efficiency from combining the resources of the acquirer and target. There are three types of synergy (Chatterjee, 1986): operational, financial, and collusive. First, operational synergy can be achieved by economies of scale or scope, for example cost reduction (Homburg and Bucerius, 2006), or an effective combination of resources (Chatterjee and Lubatkin, 1990). This seems the most popular source of synergy; it usually appears in mergers with some degree of relatedness between acquirers and targets. The removal of duplicated operations between acquirer and target is the source of synergy (e.g. Lubatkin, 1983). However, it is not only seen in related acquisitions: Larsson and Finkelstein (1999) suggest that operational synergy also drives acquisitions between complementary firms.

Second, financial synergy is achieved from a reduction in financial costs or tax burden. This synergy can be observed in the efficient combined firm as the successful merger will gain more trust from shareholders. As a result, the cost of capital might be reduced. Financial synergy usually appears in conglomerate mergers, or diversification mergers (Kitching, 1967). Trautwein (1990) suggests that this type of merger can lower the systematic risk; as a result, the acquirer will enjoy a lower cost of capital. Moreover, the effect of financial synergy is linked to the acquirer's and target's sizes. The bigger the combined firm, the better position in bargaining power when seeking external capital.

The last type, collusive synergy, comes from the ability to set a higher price for a product or service. The theory of oligopoly (Stigler, 1964) suggests that firms tend to collude in oligopolistic markets to extract more value from customers. Similarly, the acquirers in

oligopolistic industries tend to acquire their rivals to benefit from oligopoly. This is especially noticeable in the tobacco industry, where the top three manufacturers (China National Tobacco Corporation, Philip Morris International, and British American Tobacco) account for 70% of the worldwide market share as of 2019 (Statista, 2021).⁹ However, this type of synergy has become less common recently due to antitrust laws in many countries.

2.2.2. Monopoly power

This theory is linked to efficiency theory: acquirers want to expand their size and market share, or market power, through acquiring a rival or complementary firm (Trautwein, 1990). However, this theory not only applies to related acquisitions: acquiring an unrelated target is sometimes considered as a monopolistic acquisition as the acquirer can use the profit generated in this type of acquisition to increase their strength (Trautwein, 1990). For example, an airline acquirer may invest in a profitable technology firm or retail industry. Then the airline firm can use the cash flows and profits from its investment to increase its market share by buying more planes.

An example of monopolistic acquisition is the US Steel firm in the early 1900s. This was one of the biggest monopolistic firms in history, with capitalization in 1901 accounting for 6.8% of US GNP (McCraw and Reinhardt, 1989). US Steel not only gained a monopoly in its industry but also other industries (e.g. oil and tobacco). However, controlled under antitrust laws, US Steel had to divest its investments from 1911 to 1920.

2.2.3. Empire-building

Empire-building theory suggests that managers conduct M&As to serve their own benefit. This type of acquisition usually destroys the wealth of shareholders. The root of this behaviour is in agency theory. This theory explains the conflict that occurs when there is a separation between ownership and control (Jensen and Meckling, 1976). On the one hand, the manager wants to increase his importance in a firm so that the firm needs his skills. The manager affected by empire building wants to increase the firm's size dramatically without caring about its efficiency. On the other hand, the decision serving the manager's benefit leads to many financial consequences such as cashflow deficit or profit reduction. These consequences not only destroy shareholder wealth but also harm the manager's job as he will be replaced by a better manager, or his firm may be acquired by another acquirer.

⁹ <https://www.statista.com/statistics/279873/global-cigarette-market-share-by-group/>

Empirical research suggests that acquisitions serving the manager's benefit destroy shareholders' value. For example, Yang et al. (2019) argue that cash-rich acquirers, who are more likely to have agency problems, tend to make value-destroying acquisitions. For a Chinese acquisition sample from 1998 to 2015, they find that the short- and long-term performance of cash acquirers are poor. This evidence is consistent with the cost of free cash flow in Jensen (1986). Rather than paying cash to shareholders, the manager seeks low-benefit or even value-destroying acquisitions.

2.2.4. Hubris

The term "hubris" refers to a person's excessive self-confidence or pride. In 1986, Richard Roll became the first academic to apply the renowned psychological literature on hubris to M&A processes. He portrayed managers as people who have a propensity to be too optimistic about the future and overconfident in their own ability to lead their firms. Unlike the empire-building and managerial competition models, hubris simply means that executives initiate M&As because they are overconfident and, as a result, overinvest.

According to Jensen and Ruback (1983), M&As have considerable detrimental consequences on a bidding firm's announcement of their agreement. This is consistent with hubris (Roll, 1986). Managers who are affected by hubris feel that they are far better prepared than their peers to run a firm effectively. This increased belief in the individual manager's competence leads to M&As, since they feel they can complete a deal. Though they recognize evidence that M&As devalue bidding firms, they still ignore it because they are confident in their own abilities and feel that this will not happen to their deals. They underestimate the risks of M&As and give little weight to evidence of wealth destruction; concurrently, they assess possible synergies higher than their real level. These characteristics, when combined, assist in explaining M&A activity.

The literature is unequivocal on the value destruction of managerial hubris. For example, Malmendier and Tate (2005), who are world-renowned experts in the field of hubris research, focus on CEO qualities and their impact on corporate decision-making. They suggest that overconfident managers will invest heavily when their firms have ample internal financial resources to support such behaviour. On the other hand, when CEOs need to raise external cash to support potential investments, they are hesitant to do so for various reasons, including overestimating the investment's potential returns and their differing views on the underlying value of the firm they oversee. This market mismatch considerably helps to explain corporate investment distortions. The manager's "better than average" perspective has a big impact on

their capacity to properly manage the investments of the firms they oversee. Malmendier and Tate's findings have been confirmed in subsequent research. Their 2009 research on Superstar CEOs looks at the impacts on business performance when the CEO wins an award and obtains a boost in performance as a result. The manager's confidence is boosted once more, and their enterprises underperform severely in the next term.

More specifically, Doukas and Petmezas (2007) look at overconfident managers and find that they are more likely to perform mergers. They claim that overconfident managers make more acquisitions than rational managers because they wrongly exaggerate the rewards from M&As and consistently dismiss evidence of value destruction. They are also more inclined to pay in cash rather than stock since they assume that the market has undervalued their firm. This research also suggests that when there is a large level of information asymmetry between bidder and target – for example, when the target is privately held and there is little available public information – managers must depend heavily on their own personal judgement. In this case, if the managers are overconfident, the consequences will be more pronounced. To find evidence for this, the study employs a UK dataset, which benefits from a strong bias for private target purchases and a preference for cash-financing. The results show that, between 1980 and 2004, as compared to rational managers, overconfident managers failed to harvest large financial benefits for shareholders from merger activity. Self-attribution has also been found to lead to management arrogance. While overconfident acquisitions provide favourable short-term outcomes, the amount of return is lower than single acquirers, and when analysed over the long term, the associated enterprises perform poorly. Overall, the research supports the hubris theory and the negative consequences it can have on shareholder value.

2.2.5. Market-timing

The market-timing hypothesis connects merger activity to the stock market. It assumes that the manager is rational, and the investor is irrational. As a result, a firm might profit from misvaluations. Introducing the theoretical model that underpins the theory, Shleifer and Vishny (2003) explain who acquires whom, and how the valuation affects the medium of payment choice, mergers, and merger waves. One of the theory's fundamental assumptions is that the market is not always efficient. In other words, short-term deviations from intrinsic values are possible. The rational management profits by timing the market and choosing the best time to merge. While it is understood that the market may have short-term inefficiencies, it is necessary for the market to be long-term efficient. If this were not the case, the manager would not be

able to benefit shareholders by strategic mergers. Thus, mergers are effectively used as a type of arbitrage by rational managers in inefficient markets (Shleifer and Vishny, 2003: 296).

Shleifer and Vishny (2003) also suggest links between overvaluation and mergers. They suggest that (1) the use of stock as currency increases when the overvaluation is higher, and as a result, the acquirers that have enjoyed higher returns than their peers tend to use their stock in acquisitions; and (2) the overvaluation acquirer usually engages in earning manipulation and its managers usually engage in insider trading. Owen (2006) provides support to Shleifer and Vishny (2003) when investigating US and UK acquisitions in the last century. Similarly, Dong et al. (2006) suggest that the third wave of mergers is characterized by stock finance when the market valuation is high. Rhodes-Kropf et al. (2005) suggest a benchmark of firm overvaluation by decomposing market-to-book ratio into market-to-value and value-to-book; the market-to-value represents the overvaluation. They find that cash acquirers are less overvalued than stock acquirers. Acquisitions could be explained as the short-run deviations in valuation from long-run value, especially in stock acquisition.

The principle behind this theory is that the acquirer, by utilizing overpriced shares as a form of payment, increases the shareholders' wealth, therefore cushioning the shares' long-term fall (Shleifer and Vishny, 2003: 301). Though this principle might predict that the overvalued acquirer can generate value for shareholders, Shleifer and Vishny (2003) suggest that the long-term market performance after stock acquisition is normally negative. The reason might be that the target is more overvalued than the acquirer, or the acquirer overpays. Also, to explain value destruction acquisitions of overvalued acquirers, Jensen (2005) suggests agency costs of overvalued equity. Overvalued stock means that the firm will not meet the operating performance that was priced into its stock price before the acquisition. As a result, under pressure to accomplish unattainable goals, managers may undertake risky activities that impair shareholder value, such as value destruction acquisition.

Since Jensen (2005), many authors have backed up this view of the value destruction acquisition of overvalued acquirers (e.g. Akbulut, 2013; Fu et al., 2013; Ben-David et al., 2014). For example, Akbulut (2013) investigates 11,796 US M&As from 1993 to 2009. He uses insider trading as a measure for overvaluation and finds that the acquirer whose manager abnormally sells more of its shares is more likely to take part in stock acquisition. Moreover, the short and long-term market return is more negative than for overvalued non-acquirers.

Fu et al. (2013) investigate 1990 M&As from 1985 to 2006 in the US. They find that overvalued acquirers usually overpay for their targets. Moreover, they are not likely to gain synergy from

acquisitions and they have governance problems. The authors also find that the motivation behind M&A decisions is CEO compensation rather than shareholder value creation. CEOs of overvalued acquirers gain significant financial benefits (e.g. large new restricted stock and option grants). These benefits outweigh the slight declines in the value of CEOs' shares in their firms.

For more recent work, Meng and Vjih (2021) use a sample of 34,792 US acquisitions from 1985 to 2018 to investigate the link between stock mergers and industry performance. They suggest using their merger activity variable (MAV) as an alternative to industry merger waves. Different from merger waves, where acquisitions can only be classified as in wave or out of wave, the MAV allows a continuous measure of the waves. Meng and Vjih support the market-timing hypothesis and also show the negative performance after acquisitions motivated by overvaluation. They find that the industry most active in M&As had previously outperformed the least active industry by 13.46% in terms of market performance, but it underperformed by 10.3% during the subsequent quarter. The results of industry operational performance back up the industry misvaluation theory of stock merger activity.

2.3.Theoretical background

Legitimacy theory and the theory of social stigma are the two key theories in our work. Legitimacy theory can explain the more favourable abnormal return for sin acquirers than non-sin acquirers. Also, the sin acquirer is less influenced by value-decreasing motives (e.g. market-timing) than the non-sin acquirer. Meanwhile, social stigma explains the less favourable abnormal return of non-sin acquirers when acquiring sin targets. Though these theories seem to have some similarities, they are in two continua (Helms et al., 2019). According to the theory of social stigma, the stigmatized firm does not care about what has tainted them. Therefore, they continue to do their sin businesses (Helms and Patterson, 2014). However, according to legitimacy theory, these stigmatized organizations need to improve their image to continue to exist. We will discuss these two theories further in the following subsections.

2.3.1. Legitimacy theory

Suchman (1995, p. 574) defines legitimacy as “a generalized perception or assumption that the actions of the entity are desirable, proper, or appropriate within some socially constructed system of norms, values, and definitions”. Going back to the very first work about legitimacy, Dowling and Pfeffer (1975) suggest that a corporation must act in congruence with society's values and norms in order to continue existing. If it does not, the firm can choose among three options. First, it can change its output, goals, and methods of operation to fit the legitimacy.

Second, it can attempt to change the legitimacy so that the new social legitimacy fits the firm's output, goals, and methods of operation. Third, it can try to be identified with things which have a strong fit of social legitimacy. In the sin industries context, the sin firm has three options: stop operating in the sin industry, make people think the sin industry is good, or do good things (e.g. socially responsible activities). As Dowling and Pfeffer (1975) argue, changing the social norms is difficult. Therefore, the firm can choose between the two other options. Sin firms may choose the first option of ceasing to operate in the sin industry. However, sin industries have existed for hundreds or even thousands of years; their profitable nature keeps them alive on the Earth. That makes it our intuition that the sin firm's priority is choosing the third option to comply with social norms.

The empirical research on sin industries has proven the intention of sin firms to conduct socially responsible activities (Ahrens, 2004; Lauwo et al., 2020). Sin firms also produce higher quality financial information than non-sin firms (Kim and Venkatachalam, 2011). The recent potential takeover of Philip Morris and Vectura is evidence for an attempt to improve the image of the sin firm Philip Morris.¹⁰ By acquiring the pharmaceuticals firm Vectura, Philip Morris can restate their aim for a "smoke-free future".

2.3.2. Social stigma

Goffman (1963, p. 3) defines stigma as an "attribute that is deeply discrediting", which converts the bearer "from a whole and usual person to a tainted, discounted one". After Goffman, stigma researchers have questioned whether a stigma must have a physical manifestation (e.g. skin tone) or can exist even if there are fewer visible signs (e.g. criminal history). The literature appears to have settled on the idea that the mark is socially produced, and thus less about "real" or "objective" traits (Link and Phelan, 2001). Organizational stigma research is still in its infancy, but it also defines stigma in terms of a discounted identity and ruined image (see e.g. Sutton and Callahan, 1987; Hudson, 2008; Devers et al., 2009; Hudson and Okhuysen, 2009).

Similarly, the sin firm bears a significantly negative impact of organization social stigma which Devers et al. (2009, p.155) describe as "a label that evokes a collective stakeholder group-specific perception that an organization possesses a fundamental, deep-seated flaw that deindividuates and discredits the organization". The reason for this stigmatization is that sin industries' core businesses are hugely different from widely accepted standards of organizational behaviour (Leventis et al., 2013). Moreover, because of the addictive nature of

¹⁰ News is available at <https://www.theguardian.com/business/2021/aug/18/vectura-shareholders-urged-to-reject-philip-morris-takeover>

their products and their devastating impact on families and communities (Hudson, 2008; Vergne, 2012), sin industries have long been denounced. As a result, sin firms permanently live with a “negative headline risk” and remain under closed value judgements of society (Fabozzi et al., 2008, p. 86). Society not only has negative evaluations of sin firms, but also applies considerable hostility (Hudson, 2008); for example, legislative restrictions and adverse social activism.

As with trying to be congruent with social norms and values in legitimacy theory, keeping disapproval at a minimum level or mitigating the negative consequences of this stigmatization is crucial for sin firms (Hampel and Tracey, 2017; Lauwo et al., 2020).

2.3.3. Discrimination

Though there are many similarities between discrimination and stigmatization, discrimination theory is used largely as an underlying theory in research about sin industries. According to the discrimination theory developed by Becker (1957), agents pay for the discrimination arising from community norms. The agents bear the financial costs of their decisions when they refuse to make contracts with particular types of people. Since then, the theory of social norms (e.g. Akerlof, 1980) has provided contemporary conditions under which social norms that are disadvantageous to the individual may persist if individuals are sanctioned by loss of reputation for not following the norms. While social norms can be costly, they continue to exist because of the significant cost of deviating from such norms. In the sin industries context, people know that investing in sin industries could offer them high returns; however, as the social norms (i.e. discrimination against sin industries) constrain them from such activities, the financial cost is that people cannot utilize those high-return investments. The high returns persist as long as the discrimination still exists. Empirical work has given evidence for discrimination against sin industries; for example, sin firms have lower institutional ownership, financial analyst coverage (Fauver and McDonald, 2014; Liu et al., 2014), and valuation (Fauver and McDonald, 2014).

Our intuition is that sin target acquisition will prompt the acquirer to be criticized by the shareholders. After acquisition, the non-sin firm will be perceived by society as a sin firm. As a result, the acquirer has to pay the cost for not following social norms. The acquirer will be stigmatized and discriminated against by society. As a result, the acquirer becomes neglected; this transformation affects the investor base and valuation of the acquirer. Merton (1987) suggests that the neglected firm will have fewer investors and be undervalued. Therefore, the non-sin acquirer will suffer lower returns from an M&A announcement with a sin target.

We will close this section by giving recent evidence of how non-sin firms are also discriminated against like sin firms if they establish a link with each other. In September 2021, the takeover between Philip Morris (tobacco firm) and Vectura (pharmaceuticals firm) had a significant negative impact on Vectura. After the deal was sealed, academics objected and Oxford Global cancelled Vectura's sponsorship and participation in the Formulation and Delivery UK conference.¹¹ This signals a significant negative impact to Vectura's business.

2.4. Performance measurements in mergers and acquisitions

2.4.1. Short-term market performance

Since the 1970s, short-run event studies have been the most prevalent method of evaluating M&As (Martynova and Renneboog, 2008). Renneboog and Vansteenkiste (2019) conduct a comprehensive review of M&As in the past few decades. Out of the 151 studies in their review, 62 only look at short-term returns, 23 only look at long-term returns, and 66 look at both short- and long-term wealth impacts. Considering the weighted average of bidder and target announcement returns, M&As are projected to produce value on average (Andrade et al., 2001; Betton et al., 2008; Maksimovic et al., 2011; Alexandridis et al., 2017). However, most of the gains go to target shareholders. The more favourable market return for targets than acquirers in M&A announcements is more pronounced over time. While two-day returns for US targets in the 1960s and 1970s were about 6% (Eckbo, 1983; Eckbo and Langohr, 1989), the return for European targets was about 16% in the 1990s (Martynova and Renneboog, 2011). The CARs for targets in the US increased to about 24% and 29% in the 2000s and the 2010s respectively (Netter et al., 2011; Alexandridis et al., 2017). However, the announcement returns for acquirers are either close to or indistinguishable from zero (Eckbo, 1983; Martynova and Renneboog, 2011; Netter et al., 2011; Alexandridis et al., 2017).

2.4.2. Long-term market performance

When the time window is extended to many years after the acquisition, the majority of research shows that acquirer shareholders receive substantial negative returns. Agrawal and Jaffe (2000), Andrade et al. (2001), King et al. (2004), Martynova and Renneboog (2008), Dutta and Jog (2009), Bessembinder and Zhang (2013), and Renneboog and Vansteenkiste (2019) give assessments of long-term post-acquisition performance literature. For example, Andrade et al. (2001) indicate negative abnormal returns for the merged firm across 3- to 5-year periods after the merger. Also, King et al. (2004) show that returns for acquirers start to drop from 22 days

¹¹ The news is available at <https://www.theguardian.com/business/2021/sep/16/tobacco-philip-morris-takeover-uk-inhaler-vectura-health>

after the deal's announcement to 3 years and later. They find that, at the very least, M&As do not improve the performance of the acquirer (or merged firm).

Renneboog and Vansteenkiste (2019) list at least three theoretical explanations for negative long-term bidder anomalous returns. First, the most popular argument is that the market responds slowly to an M&A announcement; the long-term return represents the true value that was missed by the announcement returns. In other words, the projected synergies are first overstated, and the overestimation is only gradually reversed. Second, according to the earnings-per-share (EPS) myopia theory, managers are more willing to overpay for an acquisition if it boosts EPS in the short term. As a result, the acquirer will suffer a negative long-run post-acquisition stock correction. However, Rau and Vermaelen (1998) find no support for this idea and propose a performance extrapolation hypothesis: when valuing a new purchase, both the acquirer and the market extrapolate prior performance. Third, the disparity between the outcomes of short-term and long-term performance is incomparable due to methodological differences.

2.4.3. Operating performance

When merely looking at stock market values over the short term, it is difficult to tell the difference between the expectation of economic improvements and market mispricing (Healy et al., 1992). Accounting-based performance measures, such as EBIT, cash flows, sales, and employee growth, can be a more direct indicator of synergies or losses, and demonstrate the value added by the M&As (Fu et al., 2013). However, as Renneboog and Vansteenkiste (2019) point out, we need to keep in mind the statistical properties and potential measurement mistakes (e.g. restatements, write-downs, special depreciation or amortization) in studies based on long-run post-takeover operating performance. Consequently, it is impossible to separate the impact of a merger. Moreover, changes in accounting standards over time, as well as differences between earnings and cash flow performance, can have a significant impact on the results (Ravenscraft and Scherer, 1988, 1989).

To examine the effect of M&As, we could compare the operating performance pre- and post-acquisition. However, if the merger is driven by industry shock, the firm's pre-merger performance will not be suitable as a comparison. In this case, the intercept of a cross-sectional regression of the firm's post- on its pre-merger industry-adjusted performance is a typical strategy (Healy et al., 1992). Nevertheless, if the acquirer's performance exceeded industry-median peers before the acquisition, adjusting for industry performance is not sufficient (Martynova et al., 2007). There are at least two arguments for the outperformance of the

acquirer. First, the acquirer may be larger and hence more profitable than the non-acquirer (Fama and French, 1995). Second, the acquirer may make an acquisition when its operating performance is high. To solve this, long-run operational performance should be compared to control firms that are in the same industry and had similar performance and size before the acquisition (Morck et al., 1990; Barber and Lyon, 1997; Loughran and Vijh, 1997).

More recent works also try to address problems with performance benchmarks. While Harford (2005) uses analyst forecasts as a benchmark for operating performance, Bessembinder and Zhang (2013) control for additional firm characteristics that are popularly used in stock-return analysis (e.g. illiquidity, volatility, and market beta). More recently, Malmendier et al. (2018) take advantage of tight merger fights. They argue that the winners and losers in these tight fights are similar so that the losers are a good benchmark. They find that losers outperform winners by 24% in the US, which is consistent with acquirers' long-run underperformance.

2.5. Determinants of M&A performance

2.5.1. Size

Acquirer size is a key explanatory factor which is used popularly in M&A research (e.g. Gao and Mohamed, 2018; Li et al., 2018b). Because many acquirers are big, it was assumed that firm size would have a role in merger activity. In one of the first works controlling for acquirer size in M&A long-term performance, Agrawal et al. (1992) contribute to the ongoing debate over whether M&As create or destroy value. After accounting for size and beta risk, they find that US acquirers lose 10% on average during the five years after acquisitions.

Later, Moeller et al. (2004) comprehensively examine US M&As over the period 1980 to 2001. They find that the large acquirers (belonging to the fourth quartile) lose \$312 billion while small acquirers (belonging to the first quartile) gain \$9 billion. This is consistent with Agrawal et al. (1992): when accounting for the acquirer's size, mergers destroy shareholders' wealth. Billett and Qian (2008) also examine M&As in the US from 1980 to 2002 and find a consistently negative relationship between acquirer size and return.

Scholars have tried to explain the effect of size on merger performance; for example, by ownership and control separation (Demsetz and Lehn, 1985), or short selling relating to overvaluation of the acquirer (Mitchell et al., 2004). First, relating to the separation between ownership and control, Demsetz and Lehn (1985) argue that a big acquirer usually has a separate manager and owners. This could lead to an agency problem (Jensen and Meckling, 1976), empire building (Jensen, 1986), and hubris (Roll, 1986). Consequently, a big acquirer is

more likely to destroy shareholder value. However, in a small acquirer, usually the manager and owner are one person or have a close relationship. The benefits to owners and managers are linked, so that the small acquirer is more likely to generate value in M&As. Second, Mitchell et al. (2004) investigate the price pressure around a variety of corporate events, including M&As. They find that the acquirer's return is negative especially when the acquirer uses stock as payment. Moreover, this negative return might be explained by short-selling of the acquirer's stock. However, Moeller et al. (2004) find no support for this theory. Instead, their results are consistent with the hubris hypothesis.

2.5.2. Diversification

One of the five merger waves was especially driven by diversification. The third merger wave, which is popularly accepted as consisting of diversifying acquisitions, showed no clear benefit of this type of merger to acquirer performance. For example, Hubbard and Palia (1999) investigate M&As in the US from 1961 to 1970 and find that unrelated mergers bring insignificant announcement return (0.24%) to the acquirer. However, the acquirer gains 1.61% announcement return in related mergers.

The benefit of diversification might derive from the concept of portfolio diversification built by Markowitz in the 1950s. Diversification can decrease the level of unsystematic risk. The investor can hold stocks which are less than perfectly correlated. In this vein, the acquirer can adapt the diversification technique by buying a target in a different rather than the same industry. In addition, Berger and Ofek (1995) list increasing operating efficiency, lowering taxes, and a greater capacity to hold debt as benefits of diversification. However, the real benefit of diversifying acquisition should be questioned. The fact is that right after the diversifying merger wave (third wave), the acquirers turned 180 degrees back to focus on non-diversifying acquisitions. If diversifying acquisitions could bring value to the acquirer, why then did the diversification trend not persist? There are several studies showing the benefits of focusing on the main business and the drawbacks of diversifying. For example, John and Ofek (1995) examine whether a firm can improve its operating performance by focusing on its main business. Among 321 divestitures from 1986 to 1988 in the US, 75% sold assets unrelated to the core business. As expected, the authors find that these divestitures can either improve the firms' operating performance or gain positive abnormal returns from the event announcements. In addition, Berger and Ofek (1995) look at US firms from 1986 to 1991. Corporate diversity results in a 13% to 15% reduction in a firm's value. At least two mechanisms explain why diversification destroys firm value. First, the acquirer overinvests in an industry with limited

opportunity. Second, they suggest cross-subsidization: the new subsidiary may drain resources from the acquirer.

2.5.3. Relative size

The larger the relative size of the deal and acquirer, the bigger the positive impact on acquirer stock return (e.g. Asquith et al., 1983; Jensen and Ruback, 1983). For example, Asquith et al. (1983) find support for this effect when examining 211 US M&As from 1963 to 1979. Interestingly, a target that is half the size of an acquirer will yield 1.8% more returns than a target that is one-tenth the size. Furthermore, these benefits are amplified if the transaction is completed, since the acquirer gets rewarded for winning the acquisition.

Later studies find more empirical support for the positive effect of relative deal size on acquirer performance; for example, Jarrell and Poulsen (1989) and Loderer and Martin (1990). Studying US M&As from 1963 to 1986, Jarrell and Poulsen (1989) find that the relative size between target and acquirer plays an important role in determining acquirer shareholder returns in M&A announcements. Conducting a study over a similar period from 1966 to 1984, with 5,172 US acquisitions, Loderer and Martin (1990) also suggest a positive relationship between relative deal size and acquirer return.

The trend of supportive evidence continued in the 1990s. For example, Mulherin and Boone (2000) examine 1,305 firms from 59 US industries, and Fuller et al. (2002) investigate 3,135 takeovers from 1990 to 2000. Finally, in recent years, several studies have shown supporting evidence. For example, Uysal (2011) examine 7,814 US acquisitions and 52,642 firm-year observations from 1990 to 2007; they find a positive relationship between relative deal size and acquirer three-day announcement return. Li et al. (2018b) also find supportive results when investigating 17,910 acquisitions in the US from 1984 to 2014.

2.5.4. Private target

Whether the target is a private or a public firm has an important effect on M&A announcement returns (Chang, 1998; Fuller et al., 2002; Conn et al., 2005; Capron and Shen, 2007). Announcement returns for acquiring large and public targets are normally negative, and conversely positive when acquiring small and private targets (Schneider and Spalt, 2017). There are some theories to explain the difference in return between public and private targets; for example, synergies, financial liquidity, valuation uncertainty, and bid resistance. Jaffe et al. (2015) examine these theories, but suggest that they do not explain the effect of private targets on acquirer performance.

In later work, Alexandridis et al. (2017) find that though acquirer returns for public targets are negative from 1990 to 2009, they improve to 1.05% in the post-2009 period. However, they suggest that these returns are mainly driven by mega deals (over \$500 million).

Numerous mechanisms have been proposed in the M&A literature to explain the empirical effect of private targets. For example, Chang (1998) tests two assumptions, the limited competition hypothesis and the information hypothesis. First, the limited competition hypothesis assumes that private targets receive less attention and hence will attract fewer bids. As a result, the premium should be effectively lower than for public targets. Second, the information hypothesis suggests that if the private target receives equity as payment, it must have had access to the acquirer's confidential information and prospects, as a private target usually has a small number of owners. The simple logic is that when these few owners lose control of their firm, they will ask for money in order to move out of the firm as early as possible. In this sense, the market may interpret the target's acceptance of stock as a hint that the target's owners have obtained private information. By this information, the target's owners think that the merged firm has a bright future, and thus the market responds positively to such transactions.

Moreover, because a private target is typically owned by a small number of people, when the target's owners take equity, they usually become blockholders in the combined firm (Draper and Paudyal, 2006). The blockholders will keep an eye on the firm's executives so that there will be less agency problem (Chen et al., 2019). The creation of blockholders in the combined firm and their desire to watch the executive team will create value in the long term. This concept is known as the monitoring hypothesis, which explains the positive gains.

The empirical evidence supports the information and monitoring hypotheses over the limited competition hypothesis (Chang, 1998; Fuller et al., 2002; Draper and Paudyal, 2006). Chang (1998) points out that the returns for acquirers of private targets are comparable to the evidence of the establishment of a blockholder in the acquirer. Fuller et al. (2002) provide further support to Chang (1998) for US acquisitions. Their research also indicates a positive return for the acquirer when acquiring a private target and a negative return when acquiring a public target. In the UK, Draper and Paudyal (2006) find evidence supporting Chang (1998) when they comprehensively examine mergers relating to private targets. They conclude that acquiring a private target maximizes shareholder wealth.

2.5.5. Majority control

With the controlling right, the acquirer can generate value by improving the target's institutional and corporate governance practices. Moreover, with that close relationship, the acquirer is willing to share technological advantage and intangible assets (Chari et al., 2010). In a different angle, with the controlling right, the acquirer can extract the private benefit from the target (Jensen and Meckling, 1976; Dyck and Zingales, 2004). This could be explained by agency theory: the controlling party could destroy the firm's value to maximize its benefit at the cost of other shareholders.

However, getting majority control over the target might have a negative effect on the acquirer's wealth. For example, the acquirer needs to trade-off between diversification and having a controlling right in one firm. In the 1950s, Markowitz showed that diversification can decrease the level of unsystematic risk. In controlling a target, an acquirer might face more risk, especially when acquiring a financially distressed target (Barclay and Holderness, 1989). If the target fails after acquisition, the acquirer might face a loss of reputation, or in extreme cases, even some legal liabilities.

The empirical evidence supports the positive effect of majority control. For example, Chari et al. (2010) suggest that acquirers from developed countries share their advantages (e.g. technology, corporate governance) with targets from emerging countries, so that acquirers create value in acquisitions.

2.5.6. Method of payment

The acquirers will finance their deal by either cash or stock. On the one hand, the empirical research shows that cash acquisitions tend to have higher market return than stock acquisitions (e.g. Loughran and Vijh, 1997; Bhagat et al., 2005; Savor and Lu, 2009). This could be explained by the rationale behaviour of acquirers. If the acquirer's stock is overvalued, it will be used as currency in acquisition. However, if the acquirer's stock is undervalued, the acquirer will use cash instead. As such, the market reacts to this expectation positively in cash acquisitions and negatively in stock acquisitions.

However, there are also some arguments that the market will not necessarily react positively to cash acquisitions. In the acquisition combat, the rival stock acquirers drive up the target value: thus the cash acquirer needs to pay more to win (e.g. Li et al., 2018a). Moreover, market-timing cannot fully explain stock acquisition, as stock can be used in either value-increasing or value-decreasing acquisitions (e.g. Netter et al., 2011). There is evidence that stock acquirers can gain abnormal returns when acquiring private targets. As discussed in Section 2.5.4, the establishment of blockholders in the acquirer when acquiring a private target can signal an

increase in managerial monitoring; thus shareholders will have better protection (e.g. Chang, 1998; Fuller et al., 2002; Draper and Paudyal, 2006). Also, Yang et al. (2019) argue that cash-rich acquirers, who are more likely to have agency problems, tend to use cash as payments. For a Chinese acquisition sample from 1998 to 2015, they find that the announcement returns and operating performance of cash acquirers are below average.

In summary, the method of payment has an explanatory power over acquisition outcomes. Stock acquisitions can lead to negative market reactions. However, in some cases, for example acquiring private targets, the market may react positively instead. In contrast, cash acquisitions mostly offer positive market reactions; however, the market could react negatively if the acquirers' managers are motivated by their own interests.

2.5.7. Deal attitude

The majority of acquisitions are friendly deals in which the target and acquirer agree to merge voluntarily (e.g. Bouwman et al., 2009). Unlike friendly deals, hostile deals normally take the form of tender offers which bypass the target's board and offer to the target shareholders directly. Thus, hostile deals are faster and have higher completion rates. As a result, the acquirer returns in tender offers are higher relative to friendly mergers (Loughran and Vijh, 1997; Bouwman et al., 2009; Eckbo, 2011). However, hostile deals are also associated with higher premiums as the acquirers are more confident about the deals. Moreover, the acquirers face potential competing offers by rivals (Offenberg and Pirinsky, 2015). Shareholders fear that acquirers may overbid in hostile acquisitions. Thus, hostile deals might destroy firm value.

The empirical evidence suggests that acquirer returns are higher in hostile acquisitions (e.g. Eckbo, 2011). For example, Offenberg and Pirinsky (2015) examine US acquisitions from 2007 to 2012 and find that the acquirer returns are higher in tender offers. Moreover, the tender offers are faster to complete and the premiums in such deals are also higher than normal acquisitions.

2.6. The conclusion of Chapter 2

In Chapter 2, we have reviewed some key aspects in the M&A literature. Researchers have explored why firms initiate acquisitions and the effects of acquisitions on the acquirers after deal completion. However, there is still debate over whether acquirers can generate returns for shareholders in stock markets or improve their operating performance via synergies gained from targets.

As acquirers are overwhelmingly motivated by value-decreasing motives, many studies show that there is no improvement in operating performance or no gain in the stock market for

acquirers after acquisition. However, this thesis shows support for the positive effects of acquisitions. Affected by social stigma, sin acquirers try to improve their image by making better acquisitions than non-sin acquirers. In the empirical chapters, we aim to answer the following research questions:

How is sin acquirers' market performance different from non-sin acquirers in M&A announcements?

How are sin acquirers' long-term market performance and operating performance different from non-sin acquirers in M&As?

What are the differences in motives between sin and non-sin acquirers in M&As?

3. Sin M&As: An empirical examination of the short-term market reaction

3.1. Introduction

The common consensus from five decades of M&A research is that the acquirer market reaction to M&A announcements is either close to zero (minor statistically significant profits, or small losses) or indistinguishable from zero (Jensen and Ruback, 1983; Martynova and Renneboog, 2008; Netter et al., 2011; Renneboog and Vansteenkiste, 2019). For example, the acquirer gains a slight return around the announcement during the 1960s, 1970s (Asquith et al., 1983; Eckbo, 1983), 1990s (Martynova and Renneboog, 2011), and 2010s (Alexandridis et al., 2017), but realizes slightly negative returns during the 1980s (Morck et al., 1990; Chang, 1998). Though the acquirer should gain positive returns in M&As through synergies, the lack of evidence for acquirer positive returns could well be derived from acquirer value-decreasing motives (e.g. market-timing, agency, hubris) (Jensen and Ruback, 1983; Jensen, 1986; Roll, 1986; Martynova and Renneboog, 2008; Renneboog and Vansteenkiste, 2019).¹²

As acquirers' value-increasing and decreasing behaviours are the key factor for whether M&A decisions generate value for shareholders, sin industries (i.e. tobacco, alcohol, and casinos) should be a good context to observe the effects of acquirers' motives on M&A performance. In fact, in this research, we find significantly positive M&A announcement returns for sin acquirers. The reason is that sin acquirers' motives might be different from non-sin acquirers due to social norms and stigmatizations (as discussed in Section 2.3). Sin firms, in particular, are severely criticized and stigmatized by society due to the fact that their core businesses deviate from organizational behaviour standards and the severe harmfulness of their activities (Leventis et al., 2013).¹³ In addition, according to legitimacy theory, a corporation must act in line with its society's values and norms to continue to exist (Dowling and Pfeffer, 1975). This suggests that sin firms need to be identified as a strong fit to social legitimacy through, for example, engaging in socially responsible activities.

Moreover, sin industries typically are stigmatized and against social norms; therefore, they usually attract social criticism and significant hostility (Hudson, 2008). Sin firms also suffer from high regulatory scrutiny and legislation risks (Beneish et al., 2008; Kim and

¹² We discuss more deeply the motives for M&As in section 2.2.

¹³ Tobacco, alcohol, and gambling firms have long been denounced for the addictive nature of their products and their devastating impact on families and communities (Hudson, 2008; Vergne, 2012). According to the WHO (2019), tobacco-related diseases cause more than 8 million deaths per year, equivalent to 15 deaths per minute. The numbers for alcohol-related diseases are 3 million per year and 6 per minute. However, there is no exact estimate for deaths from gambling as these are long-term effects that are difficult to detect.

Venkatachalam, 2011), legislative restrictions (Janofsky, 2005), and adverse social activism (Bansal and Clelland, 2004; Galvin et al., 2005; Haniffa and Cooke, 2005; Devers et al., 2009; Banerjee and Bonnefous, 2011). As a result, sin firms have the characteristics of neglected stocks: they are undervalued and have a high cost of capital (see Merton, 1987). To lower their cost of capital and reduce these disadvantages associated with sin industries, sin firms attempt to improve their public image through, for example, doing socially responsible activities (Ahrens, 2004) and producing high-quality financial reporting (Kim and Venkatachalam, 2011). Therefore, we could expect that sin firms usually conduct good M&As. While improving their image by acquiring some good-reputation targets might not always be practical, sin acquirers may try to improve their image by making value-increasing acquisitions.¹⁴ Accordingly, this study investigates whether the market reaction to M&A announcements is more favourable for sin acquirers than their non-sin counterparts. To this end, we follow Brown and Warner (1980, 1985) in using the cumulative abnormal return (CAR) as an evaluation metric for M&A announcements. Specifically, we compare the CAR between sin and non-sin acquirers to identify the market reaction to M&As in sin industries.

Besides, in the M&A research universe, the abnormal returns from M&A announcements for the acquirer's shareholders are insignificant. This fact would cause concern among acquirers' shareholders when their firms are doing M&As. This uncertainty might fuel shareholders' negative thinking and worsen the returns of their firms' M&A announcements. Therefore, in this research, we aim to contribute more evidence to this process. Specifically, we aim to provide more significant positive return evidence so that shareholders and investors will be well informed to approach their firms' M&A decisions with a fresh mind.

We also investigate the different levels of social norms (high or low) affecting sin industry M&As.¹⁵ It is well documented in the literature that social norms affect financial decisions. Hong and Kacperczyk (2009) find that norm-constrained institutional investors are reluctant to hold sin stocks in their portfolios. Financial analysts also are less interested in covering sin industries. As a result, sin stocks have higher expected returns than non-sin stocks. Fauver and McDonald (2014) find that sin firms have lower valuation (Tobin's Q) and higher abnormal

¹⁴ Boone and Uysal (2020) suggest that negative-reputation firms are less likely to engage in acquisitions with neutral- or positive-reputation targets. These firms when making acquisitions will decrease the value of the target relative to other acquirers (Negative Spillover Hypothesis).

¹⁵ Social norms are the rules and standards that are understood by members of a group or society. Social norms guide and constrain social behaviour (Liu et al., 2014). We discuss this term in more depth in 2.1.3.

returns in sin countries.¹⁶ We would expect the higher social norms of acquirers' countries to strengthen this type of advantage in sin M&As. Using a global analysis, we examine the abnormal returns for sin acquirers' shareholders in general. We also investigate how sin acquirers' shareholder abnormal returns differ across countries with various attitudes towards sin industries. Given the advantages of using a sample of the G20 (see 2.1.4), which is economically significant and has a good variety for presenting the whole world, we use this as the primary sample in our analyses.

Although we expected that the undervaluation of sin targets would offer positive announcement cumulative abnormal returns (CAR) in M&A to acquirers, we find that this is not the case. The sin target even has a negative effect on the non-sin acquirer's announcement returns. This negative effect is stronger in high-social-norm countries. However, sin acquirers have more favourable CAR than non-sin acquirers. In the G20 country sample, the CAR median of sin acquirer M&A announcements in the five-day window [-2, 2] is 12 basis points higher than the non-sin acquirer CARs. In high-social-norm countries, the difference is further strengthened. Specifically, sin acquirers are 16 basis points higher in M&A announcement CAR than non-sin acquirers. These findings also hold when we control for various endogeneity problems. The results, especially the differences in sin M&As across high- and low-social-norm countries, are stronger in developed countries and countries with developed stock markets.

In three ways, this research contributes to the existing literature on M&As in sin industries, the variations in social norms across countries, and their impacts on participants' behaviour in equity markets. First, past works have primarily examined M&As in a single sin industry in a single country. For example, Beneish et al. (2008) investigate M&As in the tobacco industry in the US and find positive abnormal returns around M&A announcements. Our study extends their work by looking at multiple sin industries globally. We find that sin acquirers gain more in M&A announcements than non-sin acquirers.

Second, previous works have proven that variations in social norms have effects on market participants' behaviours. For example, institutional investors have less intention to hold sin stocks (Hong and Kacperczyk, 2009). Fauver and McDonald (2014) suggest that in sin countries, sin firms have lower Tobin's Q and higher abnormal returns than non-sin firms. Our study extends these efforts by providing evidence in the M&A field. We find that in high-social-

¹⁶ Sin and non-sin countries in Fauver and McDonald (2014) correspond to high- and low-social-norm countries in our work.

norm countries, the CARs of sin acquirers in M&A announcements are markedly more favourable than for non-sin acquirers.

Third, for individual investors, investing in sin firms could generate higher rates of return. For example, Fabozzi et al. (2008) suggest that investing in sin firms brings 19% more returns for individual investors yearly. They also suggest that institutional investors should consider investing in sin firms. In contrast, we actually find that investing in (i.e. acquiring) sin firms provides fewer returns to non-sin acquirers in M&A announcements. To the best of our knowledge, this is the first global study to examine M&A performance in multiple sin industries. Moreover, we investigate how this performance differs across countries due to social norm variations.

Moreover, the findings of this study have important implications for investors, policymakers, and managers. The total market value of the tobacco, alcohol and casino industries is significant: approximately US\$2.5 trillion as of 2019 (Statista, 2021), equivalent to the individual GDP of the UK, India, or France.¹⁷ The average value of M&As each year (US\$50 billion, see Figure 3.1) is equivalent to the GDP of Belarus or Croatia (IMF, 2021). Sin industries have emerged to attract investments, especially with their profitability. Based on our results, investors in sin acquirers could expect to gain more returns than their counterparts in non-sin acquirers in M&A announcements. Moreover, investors in non-sin acquirers need to pay more attention when their firms acquire sin targets as these deals will negatively affect their wealth. The more favourable returns of sin acquirers and the less favourable returns of non-sin acquirers in sin target acquisitions are more likely for high-social-norm countries.

Policymakers also need to pay more attention to acquisitions between non-sin acquirers and their sin targets, especially in high-social-norm countries. This type of deal is more likely to decrease shareholder values. Lastly, the managers of non-sin acquirers need to balance the benefit of acquiring an attractive investment (the sin target) and the negative effects of being contaminated by association with sin industries. Based on our results, though the effect of sin targets on non-sin acquirers is not clear in low-social-norm countries, it is clear that the negative effect of sin industries on non-sin acquirers is significant in high-social-norm countries.

¹⁷ As of 2019, the global market value of the tobacco industry is US\$760 billion:

(<https://www.statista.com/forecasts/1098876/tobacco-global-market-value>).

The global market value of the alcohol industry is US\$1,439 trillion:

(<https://www.statista.com/forecasts/696641/market-value-alcoholic-beverages-worldwide>)

The global market value of the casino industry is US\$262 billion:

(<https://www.statista.com/statistics/1186231/casino-and-online-gambling-industry-market-size-global>)

[Insert Figure 3.1 about here]

In the remainder of this chapter, Section 3.2 develops hypotheses. Section 3.3 outlines our data sources, sample, and methodology. Section 3.4 reports our empirical findings. Section 3.5 introduces further robustness checks. Finally, Section 3.6 is the conclusion.

3.2. Hypotheses development

Theoretically, scholars have provided many possible economics-based reasons why firms engage in M&As, such as increasing their market power and forming monopolies or oligopolies. Firms also do so to improve their efficiency. Depending on the type of deal (e.g. horizontal, vertical, or conglomerate), they could benefit from economies of scale and scope, learning economies, or transaction costs. Though these reasons give us the intuition that M&As would bring positive returns to the acquirers, the consensus in five decades of M&As shows insignificant positive or even negative returns to acquirers (Jensen and Ruback, 1983; Martynova and Renneboog, 2008; Netter et al., 2011; Renneboog and Vansteenkiste, 2019).

Besides the economic reasons, M&A decisions are driven by acquirers' motives. These motives could explain the non-positive significance of acquirers' returns in M&As. In general, the motives for M&As could be divided into value-increasing and value-decreasing motives (Nguyen et al., 2012). We discuss these two groups of motives in section 2.2. With value-increasing motives (e.g. increased market power, response to industry shocks, economies of scale), the acquirer tends to benefit from the synergy by merging with the physical operations of the target (Bradley et al., 1988). In contrast, value-decreasing motives (e.g. agency, hubris and market-timing) serve managers' benefits (Nguyen et al., 2012). The immoral and wrong decisions of managers in M&As lead to losses to the acquirer's shareholders.

However, some acquirers can generate value for shareholders in M&As if they are motivated by value-increasing motives. In fact, acquirers at risk tend to make value-increasing deals and realize positive returns. One of the most severe risks to a firm is bankruptcy. This risk derives from the overuse of debt without the ability to pay it back. Under this risk, the acquirer needs to consider an acquisition more thoroughly. Ahmed and Elshandidy (2018) find that over-deviated firms engage in foreign acquisition deals to relieve their financial constraints and mitigate their financial distress risks. As a result, acquisitions made by over-deviated firms typically generate value for shareholders. In addition to that, an acquirer under pressure from shareholders has to make the right decision. Chen et al. (2019) suggest that acquirers with more shareholder monitoring tend to make better returns. The better monitoring is from the more

balanced power of blockholders such as mutual funds and private families. Mutual funds and private families tend to have conflicting agendas. When there is a balanced voting power, these types of blockholders may be more motivated to negotiate and keep active communication with the management. It is relatively more difficult for managers to pursue their self-interest when conflicting blockholder groups constantly keep contesting and holding different scrutinies. This leads to a more careful selection of value-enhancing acquisitions, thus generating value for shareholders.

Similarly, sin firms' operations (products and services) are harmful and often cause devastating consequences to society. According to the theory of social stigma, they are stigmatized, neglected, and under community scrutiny. As a result, they are at risk of product boycotts and lack of investors. Moreover, Merton (1987) suggests that a neglected firm has a higher cost of capital than a regular firm due to a smaller investor base. According to legitimacy theory, sin firms need to show their congruence with social values and norms. Thus, sin firms are motivated to polish their tarnished images through, for example, doing socially responsible activities (Ahrens, 2004) and producing higher quality financial information (Kim and Venkatachalam, 2011). Though there is little research about M&As in sin industries, we can see a pattern of positive abnormal returns for sin acquirers from M&A announcements. Beneish et al. (2008) investigate 88 acquisitions of tobacco firms in the US from 1952 to 2002. They contradict previous research by finding positive returns for acquirers even though these firms are big and cash-rich. The abnormal positive return for tobacco acquirers is from lowering the expected cost of expropriation¹⁸ and increasing the ability to influence politicians. They also find positive returns for acquirers in the alcohol and gambling sectors, but the evidence is preliminary. Moreover, Beneish et al. (2008) hypothesize that M&As could transfer cash to the harder-to-expropriate operating assets. This hypothesis aligns with Stulz's (2005) prediction that even negative net-present-value investments can be transformed into value-increasing projects in countries with a high risk of expropriation. This good motive along with its real economic effect generates value for sin acquirers.

Given that the motive for conducting M&As is the key determinant of good or bad outcomes and that a sin acquirer tends to have value-increasing motives, we can expect significantly

¹⁸ Beneish et al. (2008) define expropriation as the reduction in tobacco-shareholder wealth due to regulatory restrictions on tobacco products (e.g. on sale, consumption, and advertising), state and federal excise taxes on tobacco products, and legal action for cost recovery and/or punitive damages by governments, consumers, and other affected parties. They identify motivations for expropriation: protecting the public, making a sin firm be responsible for the health-related costs of its products, increasing politicians' chance of re-election, and increasing the financial resources under their control.

positive M&A announcement abnormal returns for sin acquirers. The positive returns are from the market expectation and evaluation of good M&As and the potential synergy that the acquirer could gain. Our first hypothesis, therefore, is stated in an alternative form, as follows:

H1: The market reactions to M&A announcements of sin acquirers are more favourable than for non-sin acquirers¹⁹

The literature has well documented that social norms affect financial decisions (e.g. Hong and Kacperczyk, 2009; Fauver and McDonald, 2014; Liu et al., 2014). Also, relative social norm levels differ across countries (Knack and Keefer, 1997; Fauver and McDonald, 2014). Using a G20 sample from 1995 to 2009, Fauver and McDonald (2014) find that sin firms have lower valuation (Tobin's Q) and higher abnormal returns in sin countries. In contrast, in non-sin countries, sin firms have no significant undervaluation of equity. We expect that in high-social-norm countries, where people criticize the sin industries heavily, sin firms need to consider their decisions more carefully. As a result, the difference in market reaction between sin and non-sin acquirers will be pronounced. Conversely, in low-social-norm countries, people criticize the sin industries less, so that firms in the sin industries will be less different from normal firms. In this study, we classify countries into two groups – high- and low-social-norm countries – to investigate whether the differences in social norm levels across countries affect the M&As of sin firms. Our second hypothesis is stated in an alternative form as follows:

H2: In high-social-norm countries, the market reactions to M&A announcements of sin acquirers are significantly more favourable than for non-sin acquirers

Sin firms are undervalued, and investing in sin targets has higher returns than investing in regular firms (Fauver and McDonald, 2014). Therefore, we could expect more favourable CARs for acquirers when acquiring sin targets than non-sin targets. However, if acquirers' shareholders criticize such decisions as they are norm constrained, the CARs for acquirers will be lower than when acquiring normal firms. This observation can be explained by discrimination theory and the theory of organizational stigma. Moreover, in Beneish et al. (2008), sin acquirers get higher CARs in M&As with non-sin targets, as acquiring non-sin targets reduces the expropriation cost for the acquirer. In other words, sin acquirers want to reduce their firms' sin levels to reduce the litigation risks and regulatory scrutiny enforced by the government. In an alternative form, our third hypothesis is as follows:

¹⁹ In other words, the difference between the CARs of sin acquirers and non-sin acquirers is positive.

H3: The market reactions to M&A announcements for acquirers of sin targets are less favourable than for acquirers of non-sin targets

Similar to H2, we consider how the effect of sin targets differs across countries due to the differences in social norm levels. We could expect that the negative effect of sin targets will be pronounced in high-social-norm countries where they face more social stigma and scrutiny. In other words, our fourth alternative hypothesis is:

H4: In high-social-norm countries, the market reactions to M&A announcements for acquirers of sin targets are significantly less favourable than for acquirers of non-sin targets

3.3. Data and Methodologies

3.3.1. Sample selection

We use the Thomson One Banker (TOB) database to collect information on M&A transactions from 1993 to 2017. In addition, Datastream provides us with accounting and stock trading data. The World Values Survey database assesses global differences in people's attitudes towards sin industries (e.g. Fauver and McDonald, 2014; Liu et al., 2014). With 400,000 responses, it covers almost 100 nations and roughly 90% of the world's population. For our sample, the World Values Survey includes data for 28 nations with over 230,000 respondents. Our G20 sample is summarized in Table 3.1. To begin, it shows the number of acquisitions initiated by sin (panel A) and non-sin (panel B) acquirers in G20 countries. Panel C also shows the classification and change in the classification of G20 countries' social norm levels.

We choose the G20 countries as our primary sample. These countries constitute over 80% of the global economy and over 60% of the global population. The G20 is a good representative for the world as it is economically significant, includes a good variety (e.g. of developed and emerging markets), and is geographically and demographically diverse. Moreover, the G20 sample constitutes more than 80% of global deals. These numbers suggest that the G20 is a good sample, and we could generalize any findings from this sample to the global context.

[Insert Figure 3.2 about here]

To get a general idea about how social norms differ across countries, we draw some interesting maps. Figure 3.2 shows the high- and low-social-norm classifications for the G20 sample. This classification is based on the World Values Survey database for the period between 2010 and 2014.

Another reason to choose the G20 sample is for comparison purposes. Fauver and McDonald (2014) use the G20 sample and adopt the World Values Survey as one element in their principal component analysis. Besides WVS, they use consumption and legislation data to differentiate between high and low social norm levels. In general, the WVS classification and their principal component analysis have a high correlation and they suggest that WVS is useful on its own. Fauver and McDonald (2014) exclude some countries that are in the EU but do not have an independent representative in the G20. However, in our study, since these countries have a significant number of deals, we also include them (e.g. Sweden, Switzerland, Spain). Given that there are more countries in our G20 sample, there are some differences between our and Fauver and McDonald's (2014) classification. For the robustness of results, in section 3.5.5, we also adapt their classification for a smaller G20 sample and arrive at similar findings to our G20 sample.

To be included in our sample, the following criteria must be satisfied. The deal was announced and succeeded between 1993 and 2017; the acquirer owns at least a 5% share after the deal (Chari et al., 2010; Netter et al., 2011); the acquirer or target is in the sin industries (manufacturing and/or distributing tobacco, manufacturing and/or distributing alcohol, and casinos). Following Hong and Kacperczyk (2009), we start with the Fama and French (1997) 48-industries classification of stocks. Firms in group 4 industry (beer or alcohol, with SIC codes 2100–2199) and group 5 industry (smoke or tobacco, with SIC codes 2080–2085) are classified as sin firms. However, the Fama-French classification scheme does not have a separate gaming-firms group. For this group, we use the NAICS classification. The firms with NAICS codes 7132, 71312, 713210, 71329, 713290, 72112, and 721120 are classified as sin firms. Also, we include firms distributing alcoholic drinks (SIC codes 5181, 5182, 5813) and tobacco (SIC codes 5194, 5993) in the list of sin firms. We note that wine and tobacco cannot reach consumers without distribution channels (e.g. stores, bars). In this case, the harmful effects of these sin products will not have the chance to affect society. Given the vital role of those firms, we expand the scope of this research further to fully capture the sin industry. There are several further requirements: acquirer's trading data is available; acquirer's and target's ultimate parent are different; acquirer owns less than 50% of target shares before the deal; there is no other deal involving the same acquirer five days around the announcement day of an examined deal;²⁰ and acquirer's accounting data is available. Unlike many other studies, to maximize the representativeness of our sample, we do not limit the minimum or relative value of the deal and

²⁰ For robustness of the results, we also do the same analyses without the five-day minimum requirement. The results are similar.

the acquirer size. This is in line with Netter et al. (2011), who argue that applying such thresholds causes selection bias. For example, the number of deals missing the deal value in this work is about 55.3%. This number is similar to the number in Netter et al. (2011): 54.9% and 57.5% for non-US and US acquirers, respectively.

The final sample includes 4,420 deals in sin industries (i.e. either acquirer or target is in sin industries). For the control deals, we follow the procedure of Hong and Kacperczyk (2009) and Fauver and McDonald (2014): we include all deals in comparable industries. These industries are Fama and French (1997) industries group 2 (food, compared with tobacco), group 3 (soda, compared with alcohol), and group 7 (entertainment, compared with casinos). We also apply other screening criteria as used with the sin deals. In the control-deal group, there are 7,503 non-sin deals (i.e. both acquirer and target are non-sin). These control industries are used throughout our analyses, helping us to eliminate the industry-specific unexpected factors that could drive our results differently.

[Insert Table 3.1 about here]

Tables 3.1 and 3.2 present an overview of our sample. Our G20 sample includes deals triggered by acquirers from G20 countries. They are Argentina, Australia, Brazil, Canada, China, France, Germany, India, Indonesia, Italy, Japan, Mexico, the Russian Federation, Saudi Arabia, South Africa, South Korea, Turkey, the United Kingdom, the United States, and other European Union countries. Panel A includes deals triggered by a sin acquirer; panel B includes non-sin acquirers' deals. The classification and changes in the classification of the social norm levels of G20 countries are presented in panel C: the numbers one and zero represent high and low social norm levels, respectively.

3.3.2. Methodology

3.3.2.1. Excess return measure

We examine the abnormal returns of M&A transactions using the event study with the OLS-Market model (Brown and Warner, 1980, 1985). There are three main components to measure the cumulative abnormal returns: the market index, estimation period, and window length. The market index used for each firm's estimated return is the broadest index of the stock market in the country where that firm is listed. The estimation period is six months, from trading day [-20] to [-140] before the announcement. For window length, we choose the most popular windows in the literature: [0,1] and [-2,2]. For the robustness of the results, in untabulated work,

we use various window lengths, ranging from day [-20] to [20]. The Ordinary-Least-Squares (OLS) Market model is as below:²¹

$$AR_{it} = R_{it} - (\hat{\alpha}_i + \hat{b}_i * R_{mt}) \quad (3.1)$$

Where AR_{it} is the abnormal return of firm i at time t and R_{it} is the actual return of firm i at time t . $\hat{\alpha}_i$ and \hat{b}_i are the estimated intercept and slope of the OLS-market model. R_{mt} is the return of the market on day t . Then, we sum AR_{it} of the days around the M&A announcement to get cumulative abnormal return (CAR_i). There are several ways to compare the returns to the acquirer's shareholders between deals relating to sin firms and others. In this study, we employ two main methods. First, following Fauver and McDonald (2014), we include the deals in the relevant industries (i.e. the tobacco industry compared with the food industry, alcohol compared with the soda industry, and casinos compared with the fun and meals industries). We then use a dummy variable to distinguish sin firms from non-sin firms and investigate the significance of this variable in the regression. The other technique uses propensity score matching to find a similar deal in the relevant industry with the deal in the sin industry. Then, we also run the regression with the pooled sample, including sin deals and matched non-sin deals. The regression model is as below:

$$\begin{aligned} CAR_i = & \alpha + \beta_1 \mathbf{sin\ acquirer}_i + \beta_2 \mathbf{majority}_i + \beta_3 \mathbf{diversified}_i + \\ & \beta_4 \ln(\mathbf{acquirer's\ asset}) + \beta_5 \mathbf{relative\ size}_i + \\ & \beta_6 \mathbf{tobinQ}_i + \beta_7 \mathbf{private\ target}_i + \beta_8 \mathbf{sin\ target}_i + \varepsilon \end{aligned} \quad (3.2)$$

Where CAR_i is the cumulative abnormal return of firm i in determined event windows such as two-day [0,1] or five-day [-2,2]. $\mathbf{sin\ acquirer}_i$ is a dummy variable that takes a value of 1 if the acquirer is a sin firm and 0 otherwise. As discussed earlier, sin firms tend to have an intention to conduct value-increasing deals to improve their firm's image. As a result, sin firms have bigger investor bases, broader analyst coverages, and lower cost of capital. We expect a positive relationship between the acquirer's sinful status and the acquirer's return. Similarly, $\mathbf{sin\ target}_i$ is a dummy variable that takes a value of 1 if the target is a sin firm and 0 otherwise. In the literature, the sin target is undervalued and investing in sin targets brings a higher return than non-sin firms. Therefore, we could expect a positive effect of this variable. However, acquiring sin targets could make a non-sin firm become a sin firm as now the original

²¹ For robustness, we adopt mean adjusted return and market adjusted return (see Brown and Warner, 1980, 1985). We get similar results. This similarity is consistent with Brown and Warner's findings.

non-sin firm is involved in the sin industry. This could lead to criticism from shareholders and degrade the acquirer's shareholders' values. By this argument, we expect a negative effect of sin targets on the acquirer's announcement return. Therefore, the sin acquirer and sin target are the two main variables of interest.

We have some control variables in this model. First, the *majority_i* is a dummy variable that takes a value of 1 if the acquirer holds at least 50% of the target's shares after the transaction *i*, and 0 otherwise. Acquirers tend to help their targets unconditionally when they have a close-knit relationship (i.e. the acquirer has the controlling right). By utilizing the acquirer's advantages in management and technology, acquirers and their subsidiaries (formerly the independent targets) may create more value than the two separate entities they were before (Chari et al., 2010). We expect a positive relationship between the majority ownership and the acquirer's announcement abnormal return.

Second, *diversified_i* is a dummy variable that takes a value of 1 if the acquirer and target of the deal *i* are from different industries (defined by the two-digit SIC industry code), and 0 otherwise. Doing a deal relating to the main business of the acquirer might bring more value than diversifying deals as the former type increases the size and breadth of the firm so that it will benefit from economies of scale (Singh and Montgomery, 1987). We expect a negative relationship between diversifying deals and acquirer's announcement abnormal return.

Third, we control for the *acquirer's size*. Roll (1986) assumes that managers of large firms are more likely to overestimate the deal's synergy and overpay for their targets. Moeller et al. (2004) provide evidence consistent with hubris among large bidders. We expect a negative relationship between the acquirer's size and the announcement abnormal return. In the model, we adopt $\ln(\text{acquirer asset})_i$ which is the natural logarithm of the acquirer's total assets. This data is taken from DataStream of Reuters and is ln-transformed.

Fourth, *private_i* is a dummy variable that takes a value of 1 if the target is not a publicly listed firm. Private firms cannot be bought and sold as easily as public firms. The acquirer gets a discount for this lack of liquidity (Fuller et al., 2002). We also expect a positive relationship with the acquirer's announcement abnormal return here.

Fifth, we control for other variables that are documented in the literature that relates to the acquirer's announcement abnormal return: *Tobin-Q*, measured as (market value of equity plus the book value of debt) divided by (the book value of equity plus the book value of debt); *relative size*, measured as deal value divided by acquirer total assets; and other fixed effects

(country, year, industry). In untabulated work, we also control for *leverage*, measured as debt divided by total assets; *method of payment*; *tender offer*; and *deal attitude*. We get similar results.

3.3.2.2. Social norm levels

Following Knack and Keefer (1997) and Fauver and McDonald (2014), we begin with a set of six questions from the WVS covering three aspects: moral, environmental, and religious attitudes (two questions from each). Moral attitudes are expected to be closely related to attitudes towards sin industries, while trade-offs between the environment and economic development can be seen as similar to the choice between profit and morality in sin industries. Religion has been shown to impact economic behaviours. Guiso et al. (2003) document the effect of religion on economic attitudes; they report, on average, both positive (e.g. higher trust, stronger belief in the fairness of the market) and negative (e.g. more intolerant) consequences. Religious attitude is likely to play an important role in whether people, individually or collectively, criticize sin industries seriously. These three aspects are important in the decision-making process for criticizing sin industries. If morals are important in identifying the decision (e.g. criticizing sin industries), environmental attitudes represent the weighting-choosing process among alternatives (e.g. investing in sin industries or staying away). Finally, religious attitudes will define the intensity in taking action (e.g. religious people will criticize sin industries intensely).

Answers to the six WVS questions are converted into a 0–10 scale where 0 is least concerning and 10 is most concerning.²² Then we sum all marks for all questions from each respondent to get the total marks. For each country and year, we calculate the average marks of all respondents and use this as a proxy for the country’s social norm score. We sort countries’ social norm scores in each period. We identify countries above the median as high-social-norm countries and those below the median as low-social-norm countries.²³ In panel C of Table 3.1, we present the social norm levels of the G20 countries in our sample, with 1 and 0 depicting high and low-social-norm countries, respectively. Across the four year-groupings, the social norm classification is stable for most countries (with the exceptions of India, Indonesia, Slovenia, South Africa, South Korea, Sweden, and Switzerland). For the robustness of the proxy, we

²² For example, for a question in WVS, “Please tell me for each of the following statements whether you think it can always be justified, never be justified, or something in between: Avoiding a fare on public transport”, the answers are translated into 0–10, where 0 is least concerning and 10 is most concerning.

²³ To ensure our results are robust to the WVS questions used, we switch out some of the questions. For example, we change the question from “avoiding a fare on public transport” to “cheating on taxes”. Results are robust to the choice of WVS questions.

make changes in the set of questions; this does not greatly change the classification or the market-reaction analyses (see appendix A.3.1 to A.3.7).

3.4. Results

3.4.1. The difference in CAR between sin and non-sin acquirers across countries

First, Table 3.2 – Panel A gives us a general look at our sample using descriptive statistics. We present statistics initially for the G20 sample (column I) and then split them into high-social-norm countries (column II) and low-social-norm countries (column III) to allow comparison across the two categories. Considering the CAR for sin acquirers in the whole G20 and the two subsamples, both CAR [0,1] and CAR [-2,2] are positively significant at the 1% level. CAR [0,1] and CAR [-2,2] of sin acquirers in the whole G20 sample are 1% and 1.29%, respectively. We note that at this point, and in the rest of this study, CAR [-2,2] is higher than CAR [0,1]. This is as expected since the longer window can fully capture the effect under investigation. In high-social-norm countries, CAR [0,1] and CAR [-2,2] are more pronounced, at 1.14% and 1.60% respectively. In low-social-norm countries, CAR [0,1] and CAR [-2,2] are lower, 0.87% and 1%. Moreover, for the whole G20 sample, compared with non-sin acquirers, the mean and median of sin acquirers are both higher. Note that only the median comparison is significant. While the differences in the mean values between sin and non-sin acquirers for CAR [0,1] and CAR [-2,2] are 0.1% and 0.2%, respectively, the differences in the median values for the same metrics are significant at 0.14% and 0.12%. The result is clearer in the high-social-norm G20 subsample. The CARs of sin acquirers for window [-2,2] are significantly higher than for non-sin acquirers in both mean and median comparisons. For window [0,1], only the mean of sin acquirers is significantly higher than for non-sin acquirers, at 0.25%. The median comparison between the two groups is positive but insignificant at 0.1%. Moreover, as we expect, for the low-social-norm G20 subsample, the CARs for sin acquirers are not significantly higher than for non-sin acquirers. These very first results support our hypotheses H1 and H2. However, for the acquirer's CAR when acquiring a sin target, in the whole G20 and the two subsamples, both CAR [0,1] and CAR [-2,2] are not significantly negative. These results do not support the hypotheses H3 and H4.

[Insert Table 3.2 about here]

Table 3.2 (panel B) also presents some statistics about firms and their deals' characteristics in the G20 and two subsamples: the percentage of deals that involve diversifying, acquiring sin

targets, having majority control right after the deal, the cash-rich level (cash and cash equivalent/asset), and Tobin-Q. We also compare the difference between sin acquirers and non-sin acquirers as it is essential that the control variables in later regression analyses are not too different between the two types of acquirers. In general, sin acquirers do fewer diversifying deals (40.14% in the whole G20 sample) than non-sin acquirers (50.36% in the whole G20 sample). As expected, 53.33% of sin acquirers in the whole G20 sample acquire sin targets, whereas only 17.82% of non-sin acquirers acquire sin targets. For the percentage of deals where the acquirer has more than 50% ownership in its target, there is no clear difference between sin and non-sin acquirers.

The next interesting comparisons are cash-rich and Tobin-Q. Sin acquirers in the high-social-norm G20 countries send a signal of cash-richness while the whole sample and low-social-norm G20 countries do not. This finding is consistent with the literature (Jensen, 1986; Fauver and McDonald, 2014). The significant underpricing via Tobin-Q statistics of sin acquirers in our sample is also consistent with the literature. The underpricing of sin acquirers is stronger in high-social-norm G20 countries, which is consistent with Fauver and McDonald (2014). Moreover, qualitatively, when we compare the means or medians within the same category between high-social-norm (column II) and low-social-norm (column III) countries, or between sin and non-sin firms, the differences are not wide. This could suggest that firms' characteristics between these two subsamples (or between sin and non-sin firms) are balanced. This characteristic is important as we do not want any unobserved factors to mislead our results.

For the magnitude of acquirers' gains (see panel C of Table 3.2), the median dollar value gain (calculated by $CAR [-2,2] * \text{acquirer's capitalization}$) of sin acquirers in the whole G20 sample is US\$0.5801 million. In the high-social-norm subsample, sin acquirers gain more than those in the low-social-norm subsample. Specifically, they gain \$0.6702 and \$0.4960 million, respectively. Using the Wilcoxon signed-rank test of medians, sin acquirers' returns are significantly higher than the returns of their non-sin counterparts; about \$0.2940 million across the whole G20 sample. This dominance is even higher, \$0.4160 million, in high-social-norm countries. However, in the low-social-norm countries, this dominance is lower; \$0.1837 million. The announcement returns translate to an aggregate dollar value gain of \$32.9 billion for shareholders of sin acquirers in the whole G20 (calculated by multiplying the average dollar value gain per transaction, \$12.91 million, by the number of transactions, 2522). In the high- and low-social-norm subsamples, sin acquirers gain \$24.5 billion and \$8.1 billion, respectively. These numbers are anomalous when compared with the huge dollar-value losses for acquirers in the literature (see, for instance, Moeller et al., 2004). However, non-sin acquirers' losses in

our sample are in agreement with those well-documented in the literature. For the whole G20 sample, the non-sin acquirers' aggregate dollar value losses are \$44.8 billion.

While the dollar value gain tells us the total gain of acquirers' shareholders, the net synergy gain tells us the return expected at present value for each dollar spent on M&A. Note that the net synergy gain is calculated by dividing dollar value gain by deal value. At the median, sin acquirers gain more than non-sin acquirers in the whole G20 and the two subsamples. In the whole G20, the market expects each dollar spent on M&A to bring back to a sin acquirer a return of 5.12 cents at present value. The values for the high- and low-social-norm subsamples are 4.75 cents and 5.23 cents, respectively. Again, using the Wilcoxon signed-rank test of medians, sin acquirers' net synergy gains are significantly higher than non-sin acquirers' gains; about 1.72 cents in the whole G20 sample. This dominance increases to 2.02 cents in high-social-norm countries. However, in low-social-norm countries, the dominance is lower at 1.40 cents.

Panel D of Table 3.2 presents the correlations between various pairs of variables used in our analyses. In general, none of these correlations is strong enough to raise any meaningful concerns. The variables in our model capture diverse characteristics that could define the acquirer's performance in M&A announcements.

3.4.2. Multivariate analysis

While Table 3.2 has offered promising and interesting results about the more favourable CARs of sin acquirers than non-sin acquirers and the effects of social norms on their performance, there are many factors that we should control for to get the pure difference of sin acquirers. This can be achieved using regression analyses, which are the main topic of this section. In Table 3.3, we run six regression analyses in total. First, there are two regression analyses for the whole G20 sample; then, two regressions for each subsample to compare between the two categories, the high- and low-social-norm country subsamples. In each sample and subsample, we investigate the primary interesting variables: sin acquirers, sin targets, and their effects on the CARs in M&As. In this study, we control for these variables: *majority*, *diversifying deals*, *acquirer's assets*, *the relative size of deals and acquirer's total assets*, *Tobin Q*, and *private targets*. Note that the availability of deal value data is about 55% of the sample, and according to the literature and this research, the relative deal size (calculated by dividing deal value by the acquirer's assets) is good to explain the CAR. In each sample, subsample, and window, we run two regressions: one control for *relative size* (reported in Table 3.3) and one excluding this

variable (untabulated for brevity). In general, our results hold without the control for *relative size*.

At first glance, all six regressions have positive coefficients for sin acquirers. For the whole G20, *ceteris paribus*, sin acquirers' CAR [0,1] and CAR [-2,2] are 0.34% and 0.64% higher than non-sin acquirers, respectively. The positive effect is stronger in the high-social-norm country subsample (columns 3 and 4) than in the low-social-norm country subsample (columns 5 and 6). In the high-social-norm countries, all else being equal, sin acquirers' CAR [0,1] and CAR [-2,2] are 0.44% and 1.25% higher than non-sin acquirers, respectively. Note that, the coefficient of sin acquirer for CAR [0,1] here is insignificant. In low-social-norm countries, the CAR [0,1] and CAR [-2,2] of sin acquirers are lower and insignificant at 0.18% and 0.05%, respectively. Again, we can observe that CAR [-2,2] could more fully capture the difference between sin and non-sin acquirer than CAR [0,1].

The second interesting variable is *sin target*. At the beginning, we expected this variable to have a positive effect on acquirers' CARs as in general, sin firms are undervalued. In the literature, investing in sin firms has a positive return. However, in the M&A context, we have a different result. In all regressions, the coefficients for *sin target* are negative. For the whole sample, *ceteris paribus*, acquiring a sin target reduces CAR [0,1] and CAR [-2,2] by 0.53% and 0.69%, respectively. The effect of social-norm levels on acquirers' CARs when acquiring a sin target is mixed. In high-social-norm countries, all else being equal, acquiring a sin target reduces CAR [0,1] and CAR [-2,2] by 0.48% and 0.87%. Note that the coefficient of sin targets for CAR [0,1] here is insignificant. In low-social-norm countries, acquiring a sin target reduces CAR [0,1] and CAR [-2,2] by about 0.54%, and 0.47%. Here, the coefficient of sin target for CAR [-2,2] is insignificant.

In Table 3.3, the results are consistent with the literature. Specifically, we find a negative effect of *diversifying deals* on M&A announcement returns (e.g. Uysal, 2011; Gao and Mohamed, 2018). *The acquirer's assets* also have a negative effect on acquirers' CARs (e.g. Gao and Mohamed, 2018; Li et al., 2018b). We find a positive effect of *the relative size of deals and the acquirer's total assets* on acquirers' CARs (e.g. Uysal, 2011; Gao and Mohamed, 2018; Li et al., 2018b). *Private target* has a positive effect on acquirer's CAR (e.g. Li et al., 2018b).

[Insert Table 3.3 about here]

We investigate further the mixed effects of social-norm levels on acquirers' CARs when acquiring a sin target (see Table 3.4). Perhaps a sin acquirer could get some benefits purely via

synergy. Therefore, a sin acquirer might not get significantly negative effects from sin targets. When we run the pooled sample containing sin and non-sin acquirers (Table 3.3), the effects of the sin target may be reduced. To get the pure effects of sin targets on sin acquirers (or non-sin acquirers), we run the main regression for sin acquirers and non-sin acquirers separately. In Table 3.4, panel A, while we expect acquiring sin targets to have a positive effect on sin acquirers' returns via synergy, there is no clear signal of that positive effect, even for the low-social-norm subsample. The coefficient of sin targets is negative, but it is insignificant for the whole sample and both subsamples. Though it is not statistically significant, this is consistent with the literature that a sin acquirer gets better market returns when doing diversifying acquisitions (e.g. Beneish et al., 2008). Perhaps there is a mixed force between the positive effect via synergy and the negative effect of sin targets. The sin acquirer might have chosen its target with care, considering the trade-off between synergy and other risks (e.g. expropriation).

Moving on to panel B (Table 3.4), the effect of sin targets on non-sin acquirers is significantly negative across the whole G20 sample. This effect is strong in the high-social-norm subsample and insignificant in the low-social-norm subsample. For all the G20 countries, *ceteris paribus*, acquiring a sin target reduces CAR [0,1] and CAR [-2,2] by 0.60% and 0.79%, respectively. The effect of social-norm levels on non-sin acquirers' CARs when acquiring a sin target is significant. In high-social-norm countries, all else being equal, acquiring a sin target reduces CAR [0,1] and CAR [-2,2] by 0.72% and 1.06%, respectively. In low-social-norm countries, acquiring a sin target reduces CAR [0,1] and CAR [-2,2] by 0.53% and 0.65%. Here, the coefficients of sin targets are insignificant. All in all, the results support our hypothesis H3. The non-sin acquirer's shareholders criticize the decision to acquire the sin target as they are norm constrained, so that the CARs for acquirers are lower than when acquiring a normal firm. The criticism is stronger in high-social-norm countries and weaker in low-social-norm countries. The results are also consistent with Guidi et al. (2020) across their whole sample.²⁴

[Insert Table 3.4 about here]

Again, the regression analyses support our first (H1), second (H2), and third (H3) hypotheses. In this section, we also control *acquirer leverage*, *method of payment*, *tender offer*, and *deal attitude*; however, these factors do not explain the acquirer's CAR. In addition, similar to

²⁴ Rather than using social norm levels to split the entire sample as in this thesis, Guidi et al. (2020) use corporate social responsibility to classify the social-screening levels on the negative effect of sin industries.

Fauver and McDonald (2014), the results in our study might be driven by differences in the level of development or the legal environment between sin and non-sin countries. In Table A.4.3, we also investigate a variety of variables, such as an emerging market dummy variable; an English Common law dummy variable, a legal variable proposed by Doidge et al. (2007); the corruption index (available at <https://www.transparency.org/cpi2018>); the Kauffman transparency index variable (Kaufmann and Bellver, 2005); and some corporate governance variables. We receive similar results.

3.5. Robustness checks

To confirm that our results are robust and not driven by any unobserved factors, we do several robustness checks. The first is the matched sample check described in Section 3.5.1 to control endogeneity. In Section 3.5.1, we also adopt entropy balance to control this endogeneity concern. In Section 3.5.2, we use a wider sample (global sample) to make sure the result is not dependent on sample selection bias. To reduce the complexity in the global context and to confirm the better quality of the G20 over the global sample, we do two experiments for the US and the UK samples in Section 3.5.3. In Section 3.5.4, we divide the sample into developed and developing stock market groups to check our assumption that the market reaction in developed stock markets is faster and more reliable than in developing stock markets. We also divide the sample into developed and underdeveloped country groups. Finally, we use the classification of high and low social norm levels of previous works to make sure that our classification is not driven by any WVS selection biases; this is described in Section 3.5.5.

3.5.1. Endogeneity concern

In this research, we match a sin acquirer's deal with a similar non-sin acquirer's deal to exclude the effects of any unobservable factors. To get the pure differences between sin and non-sin acquirers, for each sin acquirer's deal we seek the most similar deal of a non-sin acquirer. We use firm-level characteristics to moderate the differences between the treatment group (sin acquirer's deals) and the control group (non-sin acquirer's deals) (see Shipman et al., 2017). We follow Beneish et al. (2008) and Erel et al. (2015); besides 11,923 deals that we currently have in the G20 sample, we also collect more deals to enhance the matching procedure. We collect all deals satisfying the following criteria. First, the deal is triggered by non-sin acquirers from the G20 countries. Second, the target firm operates primarily in an industry where sin acquirers' targets operate. We also use the other screening criteria (excluding those relating to industries) that we apply for the principal sample. We count all the overlapping deals between the newly collected deal set and the principal sample once. In total, there are 93,125 more deals

at the end of these steps. We match the sin acquirer with the non-sin acquirer exactly by the target's two-digit SIC code, within a time period of one year and in the same country. We do 1-to-1 and 1-to-3 matchings for the acquirer's size. Moreover, to strengthen the procedure, we limit the differences in total assets of a comparable acquirer and a sin acquirer to no more than 25%. Then, we run our regression analysis for the pooled treatment and control groups.

The results in Table 3.5 strongly support those in Table 3.3. A *sin acquirer* has more favourable CAR than a non-sin acquirer in M&A announcements across the whole G20 sample. Moreover, the more favourable CAR of sin acquirers remains significant in the high-social-norm country subsample and insignificant in low-social-norm countries. Similarly, a *sin target* has a significantly negative effect in the high-social-norm country subsample and is insignificant for the low-social-norm subsample. The control variables (*majority*, *diversifying deal*, *acquirer's assets*, *the relative size of deal and acquirer's total assets*, *Tobin-Q*, and *private target*) are consistent with those in Table 3.3. However, the matching procedure reduces the sample size dramatically. The number of observations in the whole G20 sample reduces from 6,107 to 1,454 for 1-to-1 matching and to 2,133 for 1-to-3 matching. This reduction also negatively affects the interpretability of our model. We can see the improvement in column 8 of Table 3.5 compared with column 6 of the same table as we have more observations in 1-to-3 matching.

[Insert Table 3.5 about here]

To avoid the disadvantages associated with propensity score matching (e.g. fewer observations), we adopt entropy balance to balance covariates between control (non-sin firms) and treatment (sin firms) groups (Hainmueller, 2012; Jacob et al., 2018; Chapman et al., 2019). We balance the mean and variance of firm-level variables used in the regressions: *majority*, *diversifying deal*, *acquirer's assets*, *the relative size of deal and acquirer's total assets*, *Tobin-Q*, and *private target*. Besides the advantage that we can retain and reweight all observations, entropy balancing "exactly" balances covariates between control and treatment groups, while propensity score matching can only moderately balance these covariates due to differences between treatment and control observations along several determinants. After re-weighting the control observations (non-sin firms), we run the same regression analyses as shown in Table 3.3. Table 3.6 offers robust results with all of the above analyses.

[Insert Table 3.6 about here]

3.5.2. Global sample test

Perhaps there is a selection bias when we choose the G20 sample as our main investigating object. For robustness of the results, we expand the G20 sample into a global sample. Accordingly, we include all countries having sin acquisitions available in the Thomson One Banker and World Values Survey databases. Then, we reclassify social norm levels. In the global sample, some countries switch from high- to low-social-norm countries and vice versa.²⁵ This is understandable as there are different numbers of countries in the global and G20 samples. The classification into a high- or low-social-norm country is based on whether each country's social norm score is above or under the median score across all countries. However, these switches do not affect the conclusion drawn from our analyses. Our method is to compare the market performance difference between high and low-social-norm groups in M&A announcement. The classification into high or low-social-norm group is relative depending on which countries are included in the sample. For example, the US switches from high (G20 sample) to low (Global sample) social norm group as there are more countries having higher social norms than the US in the global sample. Nevertheless, in the global sample, we still observe the return of sin acquirer in high social norm group is more favourable than in low-social-norm group. Our empirical results are consistent even for countries that switch side between G20 and Global samples. In particular, sin acquirers in the US receive more benefits compared to those in countries in G20 with lower level of social norms. However, when compared to countries in Global sample, they receive relatively less benefits compared to those in countries with higher level of social norm. To validate our empirical results, we further adopted a continuous social norm level variable to ensure the switch between high and low social norm status for some countries does not affect our analyses. In this analysis, rather than splitting the sample, we adopt the interaction between sin acquirers and continuous social norm level variable. The results are robust and are reported in appendix 4.

Table 3.7 is for the global sample. We compare Table 3.7 with Table 3.3 to see the differences between the global and G20 samples. In column I, the results are consistent with the G20 sample; for example, sin acquirers have more favourable CAR than non-sin acquirers and sin targets have less favourable CAR than non-sin targets.. All else being equal, sin acquirers' CAR for the [-2,2] window in high-social-norm countries is 1.46% more than non-sin acquirers, while

²⁵ See Figures 3.2 and 3.3 for the illustration of the differences between the G20 and global samples.

sin acquirers' CAR for the [-2,2] window in low-social-norm countries is 0.46% more than non-sin acquirers.

[Insert Table 3.7 about here]

However, the difference in social norms across countries has less effect on acquirers' CAR in the global sample than in the G20 sample. The available countries in the WVS database might cause a potential bias in social-norm classification in the global sample. Coincidentally, a large proportion of high-social-norm countries have their financial markets classified as developing (i.e. Emerging or Frontier) by major leading financial institutions (e.g. FTSE, S&P, MSCI). Meanwhile, a large proportion of low-social-norm countries have their financial markets classified as developed. Research based on a market reaction depends much on the market's characteristics (e.g. infrastructure, liquidity). In a developed market, the market reaction will be faster than in a frontier market. Figures 3.4, 3.5, and 3.6 illustrate the differences in market reaction between developed and emerging stock markets in our sample. These figures suggest that the market reaction is quicker and more precise in developed stock markets. In developing stock markets, there might be a pre-movement of information; they also take a longer time to react. In this research, the window period to examine CAR is short (i.e. two-day [0,1] and five-day [2,2]). Thus, it is better to have a more balanced sample (i.e. one where the proportion of deals in countries with developed stock markets is similar in both high and low-social-norm subsamples) with a higher proportion of deals in developed stock markets. The G20 sample is better suited to this research setting. In either high- or low-social-norm countries, more than 80% of deals are from countries having developed stock markets. By this argument, in the wider (global) sample, where many deals in the high-social-norm subsample are from countries with developing stock markets, the more favourable CAR in M&As of sin acquirers will be less significant than in the G20 sample.

3.5.3. The US versus the UK

In this section, we run regressions for two specific countries: the US and the UK. These countries are chosen as they are classified as high- and low-social-norm respectively in the G20 sample but the same (i.e. low-social-norm countries) in the global sample. Examining these two countries also suggests to us which is the more suitable sample, G20 or global. In addition, the M&A number and value of deals in the US and UK are significant not only in our sample but also the entire M&A world. Also, these two countries have developed stock markets so that our short-term event study is well suited to them. In Figure 3.4, the market reaction in M&A announcements in these two countries is mainly on days [0] and [1]. Even with a very short

window [0,1], we could capture the effect of M&A announcements significantly. Moreover, our intuition is that the G20 and global samples include many countries, so that they might become complicated to analyse. In an international setting, there are some unobservable factors that may drive the results differently; for example, the differences in regulation across countries.

Table 3.8 presents the results for regressions in the US and UK. We also use the whole sample and matching 1-to-1 and 1-to-3 techniques. The effect of *sin acquirer* (*sin target*) to acquirer's CAR in M&As is significantly positive (negative) for the US, which is consistent with the high-social-norm country results we have analysed throughout this work. Meanwhile, the effect of *sin acquirer* (*sin target*) on acquirer's CAR in M&As in the UK is insignificantly positive (negative). This is consistent with the low-social-norm country results. For this specific-country investigation, we could control for other industry factors (e.g. liquidity index (Schlingemann et al., 2002), Herfindahl index (Uysal, 2011)). However, in untabulated work, these factors do not help to enhance our model.

[Insert Table 3.8 about here]

3.5.4. Developed versus developing stock markets and developed versus underdeveloped countries

In Table 3.9, we divide the sample into developed stock market and developing stock market subsamples. In each subsample, we reclassify the social norm level based on the available countries. Our results are robust in the developed stock market group (panel A). The CAR of *sin* acquirers is more favourable than non-*sin* acquirers, *ceteris paribus*; *sin* acquirers' CAR [0,1], and CAR [-2,2] are 0.52% and 0.99% higher, respectively (columns 1 and 2). In high-social-norm countries, all else being equal, *sin* acquirers' CAR [0,1] and CAR [-2,2] remain higher than non-*sin* acquirers by 0.71% and 1.67% (columns 3 and 4). Moreover, acquirers' CAR [0,1] and CAR [-2,2] are 0.53% and 0.82% lower when acquiring a *sin* target (Columns 1 and 2). In high-social-norm countries, all else being equal, acquirers' CAR [0,1] and CAR [-2,2] remain lower when acquiring a *sin* target, by 0.97% and 1.48% (columns 3 and 4). However, in the low-social-norm countries subsample (columns 5 and 6), there is no clear difference in market reaction between *sin* and non-*sin* acquirers, or between *sin* and non-*sin* targets.

In panel B, Table 3.9, the developing stock market group, there is no difference in market reaction between *sin* and non-*sin* acquirers, or between *sin* and non-*sin* targets, in the whole sample (columns 1 and 2), in high-social-norm countries (columns 3 and 4), or low-social-norm

countries (columns 5 and 6). This is as expected as developed stock markets have much better infrastructure and liquidity will reflect and react to a specific event much faster and more precisely than in developing stock markets. The speed and precision properties are important for short-term event study research. For the non-developed stock market subsample, the market needs more time to react. Moreover, the sample size of developing stock markets is 20.83% (1,592 deals) of the whole sample. The reduced sample will weaken the explanation by the model.

[Insert Table 3.9 about here]

In Table 3.10, we also divide the sample into developed and underdeveloped country subsamples. In each subsample, we reclassify the social norm level based on available countries in each subsample. Perhaps the differences between these two subsamples (e.g. income, Human Development Index (HDI)) could drive the social norm level. Interestingly, in the developed countries group (panel A), we get a similar result to the previous analyses, especially in the developed stock market subsample (Table 3.9, panel A). The CAR of sin acquirers is more favourable than non-sin acquirers, *ceteris paribus*: CAR [0,1], and CAR [-2,2] are 0.50% and 0.91% higher, respectively (columns 1 and 2). In high-social-norm countries, all else being equal, sin acquirers' CAR [0,1] and CAR [-2,2] remain higher than non-sin acquirers by 0.52% and 1.51% (columns 3 and 4). Moreover, acquirers' CAR [0,1] and CAR [-2,2] are 0.49% and 0.72% lower when acquiring a sin target (columns 1 and 2). In high-social-norm countries, all else being equal, acquirers' CAR [0,1] and CAR [-2,2] remain lower when acquiring a sin target by 0.65% and 1.14% (columns 3 and 4). However, in the low-social-norm countries subsample (columns 5 and 6), there is no clear difference in market reaction between sin and non-sin acquirers, or between sin and non-sin targets. In panel B, Table 3.10, the underdeveloped countries group, there is no difference in market reaction between sin and non-sin acquirers, or between sin and non-sin targets, either in the whole sample (columns 1 and 2), high-social-norm countries (columns 3 and 4) or low-social-norm countries (columns 5 and 6).

[Insert Table 3.10 about here]

In summary, given that there is no comprehensive worldwide social norm classification, there is some switching between high and low social norm classifications in different samples. If the conclusions drawn from different ways to split the sample still hold, the classification and the effect of sin acquirers, as well as sin targets, can be trusted. The results suggest a clear difference between high- and low-social-norm countries. In high-social-norm countries, the effect of sin

acquirers (sin targets) is significantly positive (negative) to the acquirer announcement abnormal return. In low-social-norm countries, these effects are insignificant.

3.5.5. Other social norm level classifications

In Table 3.11, we also use a social norm level classification from other authors (Fauver and McDonald, 2014) to make sure our classification is not driven by WVS question selection bias. Fauver and McDonald's classification combines the WVS, time-varying sin product consumption, and time-varying legal statutes across countries. In general, the WVS classification and the classification of Fauver and McDonald have a high correlation. Therefore, Fauver and McDonald suggest that WVS is useful alone. However, their G20 sample differs from our G20 sample. They exclude some countries: those that are in the EU but do not have an independent representative in the G20. In our sample, these countries have a significant number of deals, so we include them (e.g. Sweden, Switzerland, Spain). Given that there are more countries in our G20 sample, there are some differences in our and Fauver and McDonald's (2014) classifications. For the robustness of the results, we also adopt their classification; we get similar results.

In Table 3.11, the CAR of sin acquirers is more favourable than non-sin acquirers, *ceteris paribus*. Sin acquirers' CAR [0,1] and CAR [-2,2] are 0.31% and 0.62% higher, respectively (columns 1 and 2). In high-social-norm countries, all else being equal, sin acquirers' CAR [0,1], and CAR [-2,2] remain higher by 0.49% and 1.02% (columns 3 and 4). Moreover, acquirers' CAR [0,1], and CAR [-2,2] are 0.53% and 0.62% lower when acquiring a sin target (columns 1 and 2). In high-social-norm countries, all else being equal, acquirers' CAR [0,1], and CAR [-2,2] remain lower when acquiring a sin target by 0.69% and 0.96% (columns 3 and 4). However, in low-social-norm countries (columns 5 and 6), there is no clear difference in market reaction between sin and non-sin acquirers, or sin and non-sin targets.

[Insert Table 3.11 about here]

3.6. The Conclusion of Chapter 3

This chapter investigates the market reactions to M&A events in the sin industries (tobacco, alcohol, and gambling) in G20 countries from 1993 to 2017. We are motivated by the primitive research on this area, both academic and practical work. We find significant positive CAR for sin acquirers in M&As. This is interesting as in the M&A research universe, the abnormal returns from these event announcements for the acquirer's shareholders are insignificantly positive. At first thought, since sin firms are underpriced (Fauver and McDonald, 2014), we

could expect that the higher CAR for sin acquirers comes from their sin target. However, we find that in M&A, a sin target brings a negative CAR to the acquirer. We could explain this phenomenon using socially responsible investment literature. The investor and market participants are norms constrained. This leads to social criticism, regulatory scrutiny, and legislation risk (Beneish et al., 2008; Kim and Venkatachalam, 2011). Acquiring a sin target will make the shareholders criticize the acquirer. As a result, there will be a discount on the stock price. The positive CAR for sin acquirers also comes from this social norm. The sin acquirer is against the social norm, so that they are neglected and criticized by society, and have regulatory scrutiny and legislation risk. These disadvantages translate into a high cost of capital. Knowing this, sin acquirers have the intention to do “good” things to improve their firm’s image. Thus, sin firms will conduct good M&A.

The significantly positive market reaction for sin acquirers and the negative effect of sin targets have a clear relationship with the social norm level. In this work, we take a step further by dividing the sample into high and low social norm levels. We find that in high-social-norm countries, the positive cumulative abnormal returns of sin acquirers and the negative effect of sin targets on acquirer cumulative abnormal returns are stronger than in low-social-norm countries.

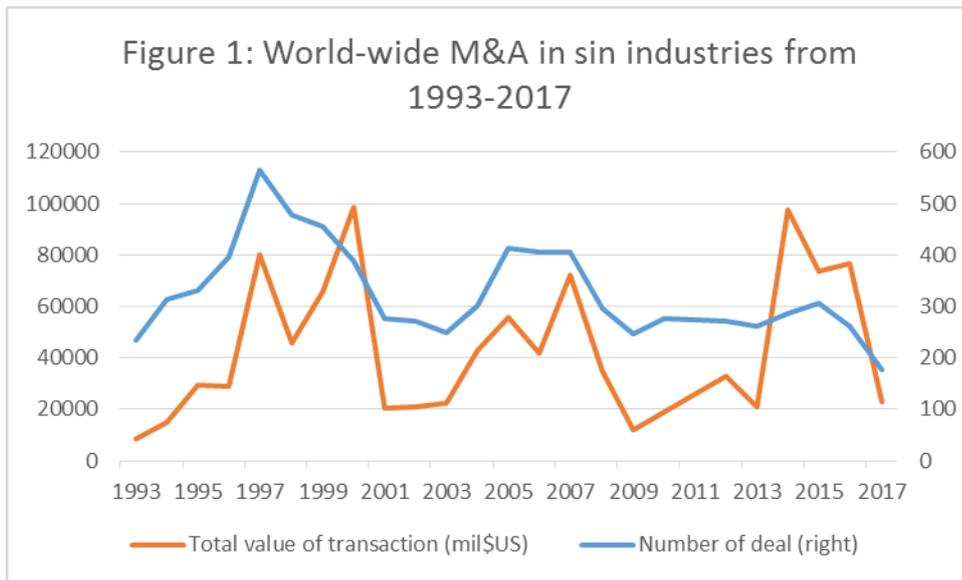
For robustness tests, we employ a global sample that includes all countries available in both the Thomson One Banker and World Values Survey databases to ensure our results are not driven by sample selection bias. However, there is a coincident bias in the global sample: the proportion of deals in developed stock markets in the high-social-norm subsample (53%) is significantly lower than in the low-social-norm subsample (91%). As the market reaction in developed and developing markets is practically different, it is as expected that the difference between high- and low-social-norm countries in the global sample is not as clear as in the G20 sample. We also employ a G20 sample social norm level classification used by Fauver and McDonald (2014) to ensure that our proxy to classify high- and low-social-norm countries is not biased by World Values Survey questions selection. Our conclusions hold for this check. Moreover, we use propensity score matching to match deals of sin firms to non-sin firms to eliminate some unobservables. The results also hold in this test. Moreover, we conduct the experiment for two representative countries: the US and the UK. These countries are classified as low-social-norm in the global sample, but the US is classified as high-social-norm in the G20 sample. The results suggest that the US should be classified as a high-social-norm country, so the G20 is better in terms of classifying countries into high- and low-social-norm subsamples. Our last check is to divide the sample into developed and developing stock market groups. Our

results are strengthened in the developed stock market group and insignificant in multivariate regression analyses in the developing stock market group. This is as expected: developed stock markets with much better infrastructure and liquidity will reflect and react to a specific event much faster and more precisely. The speed and precision properties are important for short-term event study research. We have the same conclusions when dividing the sample into developed and underdeveloped countries.

This work contributes to the M&A literature on sin industries, the variation of social norms across countries, and their impacts on market behaviours. While the prior research on sin M&As mainly focuses on a single industry and country, this study expands the scope to a global scale with multiple sin industries. By this expansion, this study can draw a more complete picture about short-term market performance in sin industries. Moreover, this study can show how this performance is different across countries due to the variations in social norms. The findings of this study could also provide investors with more understanding about what they are investing in, helping them evaluate the deals that firms enrol in. Policymakers could also gain more knowledge and have better management of these “harmful” industries. This is especially important given the profitability of sin industries and their significant contribution to the global economy.

Figures

Figure 3. 1: Worldwide M&As in sin industries from 1993 to 2017



This figure shows the number of deals and the total value of transactions in sin industries (i.e., tobacco, alcohol, and gambling) from 1993 to 2017. We sum the number of deals and the total value of transactions which are available in Thomson one banker (2018). The total value of transactions is just for referencing purpose due to the availability in only 65% of deals.

Source: Thomson one banker (2018)

Figure 3. 2: World Values Survey classification for High and Low-social-norm countries – G20 sample

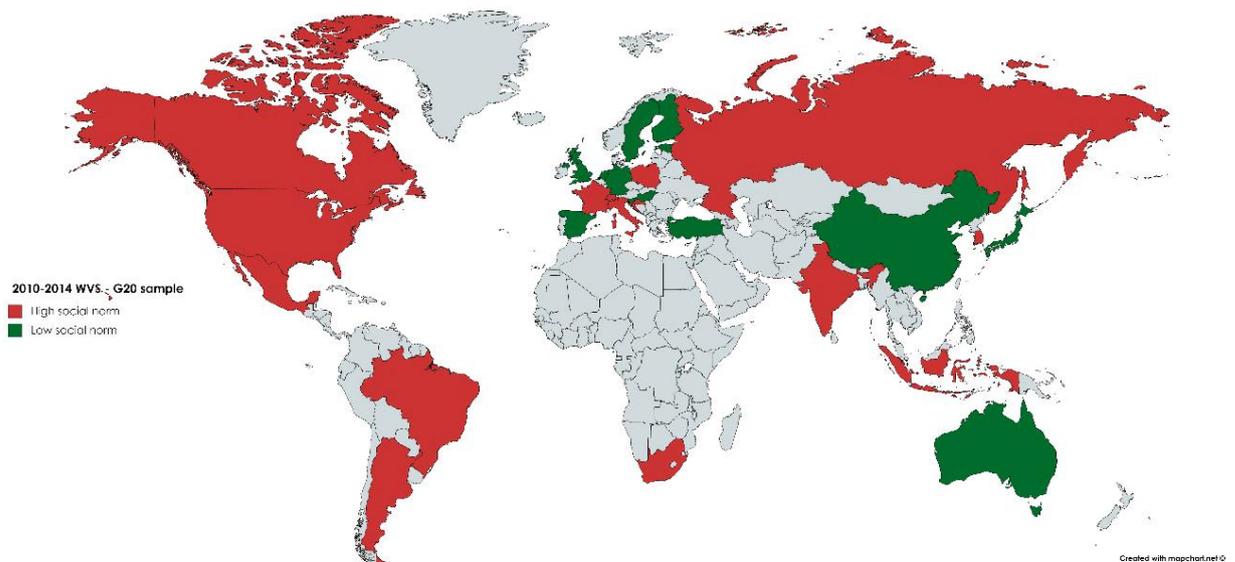


Figure 3.3: World Values Survey classification for High and Low-social-norm countries – Global sample

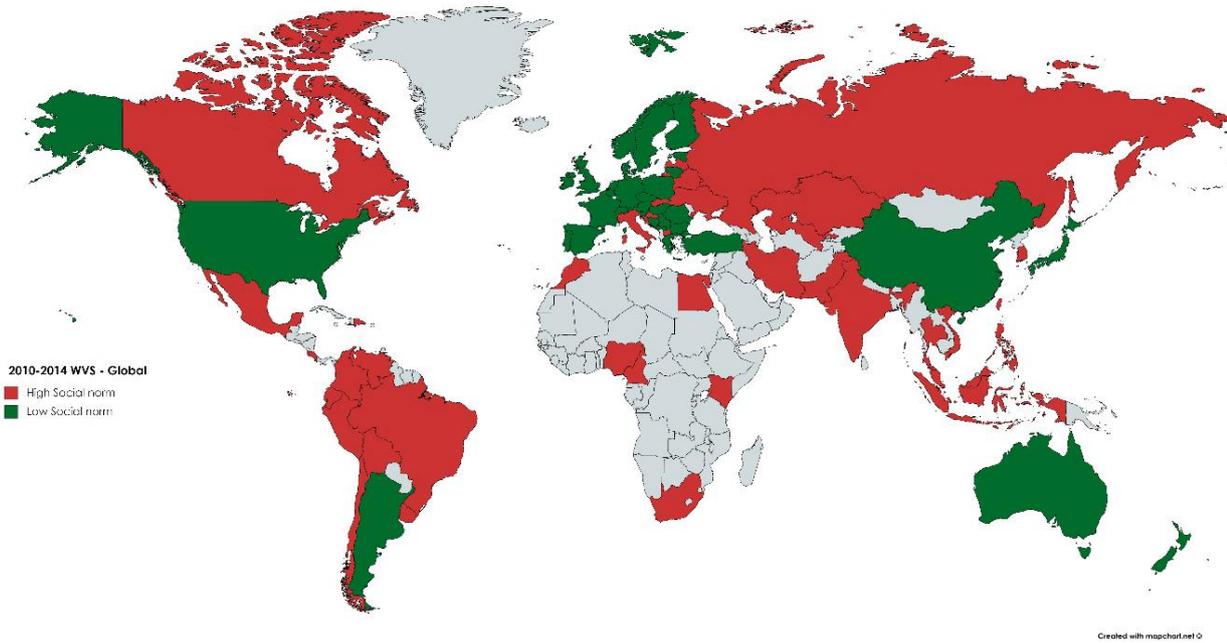
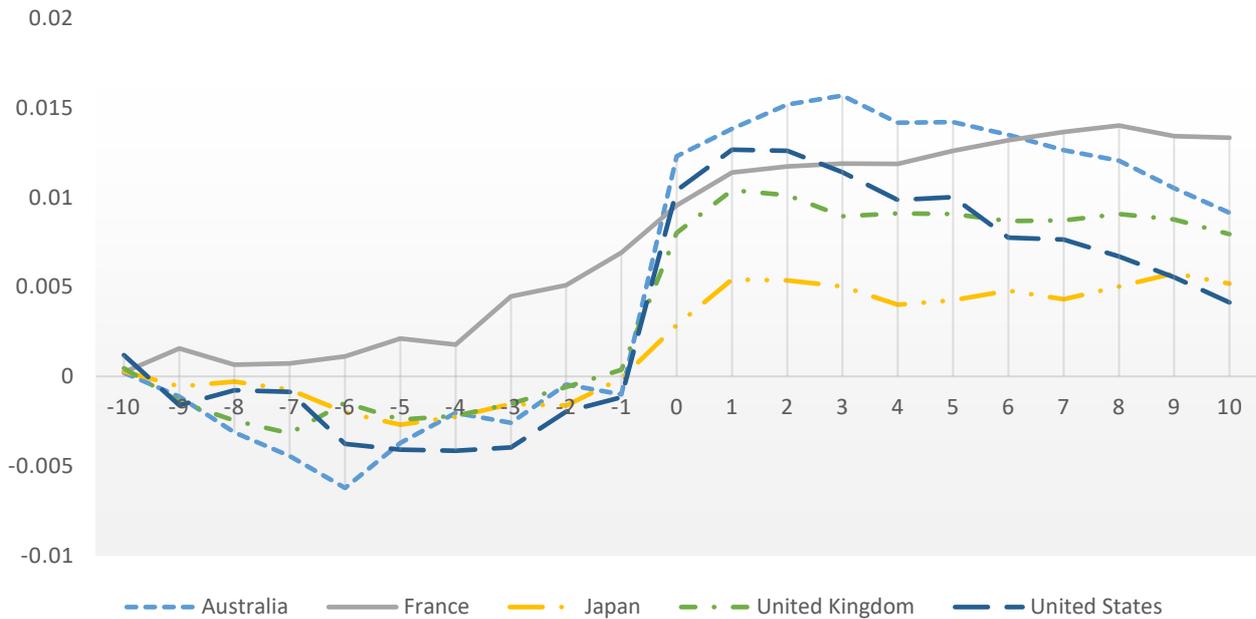
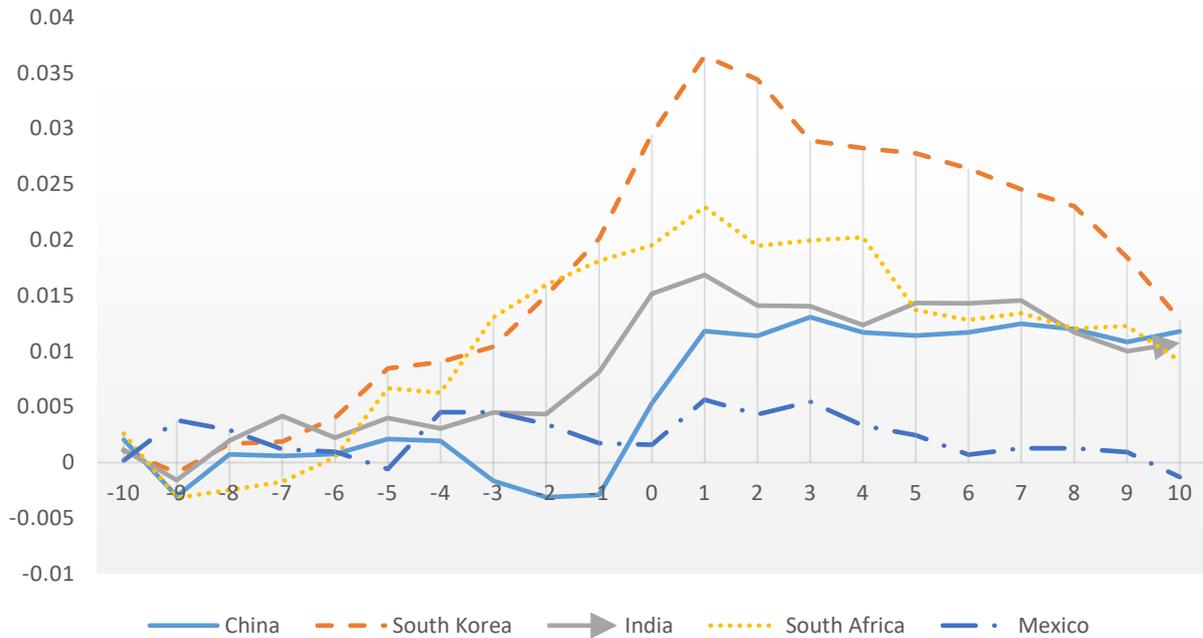


Figure 3.4: Acquirer's CAR in Developed Stock market in M&A announcement



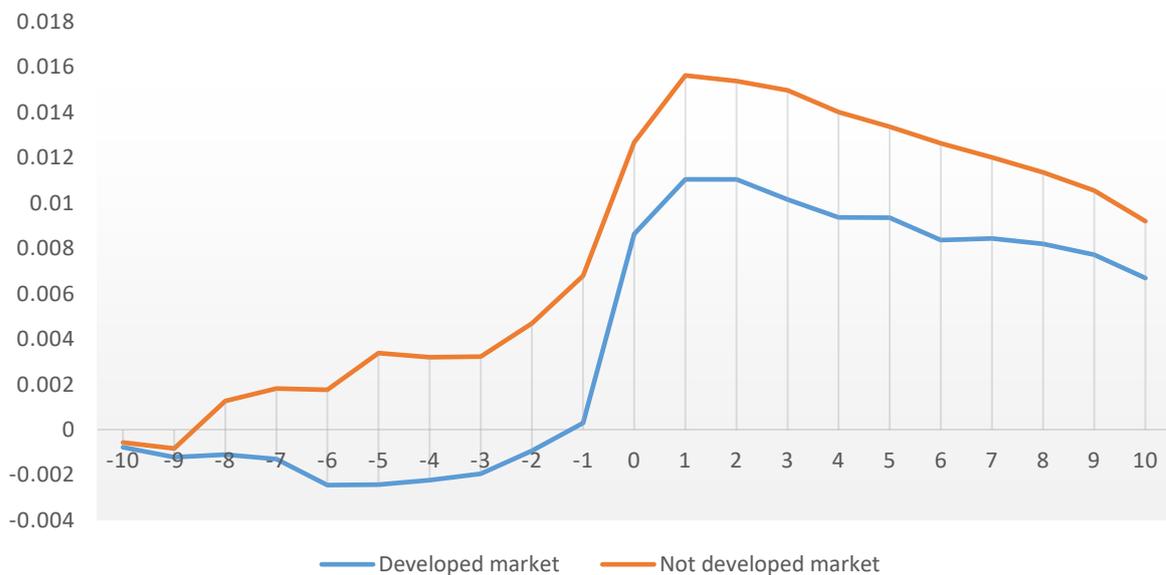
This figure shows the market reaction in five representative developed stock markets. These five markets are chosen as they constitute the largest proportion of deals in our G20 sample among developed stock markets. The values of -10, -9, -8, etc. in the horizontal axis are the acquirer's announcement cumulative abnormal return from date (-10) (i.e., 10 days before the deal announcement to date (-10), (-9), (-8), etc. respectively).

Figure 3.5: Acquirer's CAR in Emerging stock market in M&A announcement



This figure shows the market reaction in five representative emerging stock markets. These five markets are chosen as they constitute the largest proportion of deals in our G20 sample among emerging stock markets. The values of -10, -9, -8, etc. in the horizontal axis are the cumulative abnormal return from date (-10) (i.e., 10 days before the deal announcement to date (-10), (-9), (-8), etc. respectively).

Figure 3.6: CAR comparison between Developed and developing stock markets in M&A



This figure shows the difference in market reaction in mean value of CARs between developed and developing (emerging and frontier) stock markets in M&A event in our sample. The values of -10, -9, -8, etc. in the horizontal axis are the cumulative abnormal return from day (-10) (i.e., 10 days before the deal announcement to day (-10), (-9), (-8) respectively).

Tables

Table 3.1: G20 sample

Country	(A) Sin acquirer deals		(B) No sin acquirer deals		(C) Social norm classification			
	Freq.	Percent	Freq.	Percent	1994-1998	1999-2004	2005-2009	2010-2014
Argentina	10	0.36	31	0.34	1	1	1	1
Australia	169	6.02	316	3.46	0	0	0	0
Brazil	18	0.64	54	0.59	1	1	1	1
Canada	65	2.32	375	4.11	1	1	1	1
China	82	2.92	238	2.61	0	0	0	0
Croatia	4	0.07	14	0.13	1	1	1	1
Estonia	6	0.21	25	0.27	0	0	0	0
Finland	6	0.21	30	0.33	0	0	0	0
France	261	9.34	429	4.70	1	1	1	1
Germany	33	1.18	137	1.49	0	0	0	0
Hungary	6	0.21	12	0.13	0	0	0	0
India	59	2.1	178	1.95	0	1	1	1
Indonesia	7	0.25	37	0.41	0	0	1	1
Italy	39	1.39	52	0.57	1	1	1	1
Japan	291	10.42	1,578	17.30	0	0	0	0
Mexico	43	1.53	115	1.26	1	1	1	1
Netherlands	74	2.64	239	2.62	0	0	0	0
Poland	37	1.32	30	0.33	1	1	1	1
Russian Fed	5	0.18	39	0.43	1	1	1	1
Slovenia	1	0.04	10	0.11	1	1	1	0
South Africa	28	1	68	0.75	0	1	1	1
South Korea	36	1.28	396	4.34	1	0	0	1
Spain	55	1.96	102	1.12	0	0	0	0
Sweden	54	1.93	76	0.83	1	0	0	0
Switzerland	68	2.42	196	2.15	1	1	0	0
Turkey	14	0.5	36	0.39	0	0	0	0
United Kingdom	498	17.82	1,040	11.40	0	0	0	0
United States	825	29.60	3,276	35.85	1	1	1	1
Total	2,794	100	9,129	100	14	14	14	14

Table 3.1 cont.
(D) Distribution of deal by year and industry

Year	Industry												All
	Tobacco		Food		Alcohol		Soda		Casino		Entertainment		
	Freq.	Percent	Freq.	Percent	Freq.	Percent	Freq.	Percent	Freq.	Percent	Freq.	Percent	
1993	8	2.44	110	3.01	54	3.67	47	2.82	19	1.91	71	1.86	309
1994	12	3.66	128	3.50	58	3.94	48	2.88	32	3.22	90	2.36	368
1995	6	1.83	144	3.94	52	3.53	49	2.94	34	3.42	103	2.70	388
1996	8	2.44	148	4.05	58	3.94	54	3.25	49	4.93	139	3.65	456
1997	15	4.57	124	3.40	66	4.48	61	3.67	62	6.24	175	4.59	503
1998	12	3.66	147	4.03	72	4.89	56	3.37	59	5.94	159	4.17	505
1999	30	9.15	180	4.93	98	6.65	71	4.27	73	7.35	198	5.19	650
2000	25	7.62	168	4.60	79	5.36	87	5.23	52	5.24	208	5.46	619
2001	16	4.88	140	3.83	70	4.75	61	3.67	25	2.52	143	3.75	455
2002	12	3.66	97	2.66	51	3.46	75	4.51	38	3.83	114	2.99	387
2003	9	2.74	117	3.20	54	3.67	47	2.82	36	3.63	97	2.54	360
2004	16	4.88	119	3.26	47	3.19	70	4.21	42	4.23	137	3.59	431
2005	12	3.66	134	3.67	72	4.89	87	5.23	49	4.93	195	5.11	549
2006	12	3.66	172	4.71	76	5.16	89	5.35	37	3.73	244	6.40	630
2007	12	3.66	180	4.93	83	5.63	103	6.19	47	4.73	195	5.11	620
2008	15	4.57	175	4.79	68	4.62	81	4.87	34	3.42	195	5.11	568
2009	14	4.27	136	3.72	48	3.26	61	3.67	29	2.92	126	3.30	414
2010	4	1.22	148	4.05	34	2.31	75	4.51	34	3.42	148	3.88	443
2011	12	3.66	155	4.24	50	3.39	66	3.97	32	3.22	159	4.17	474
2012	14	4.27	169	4.63	57	3.87	59	3.55	37	3.73	164	4.30	500
2013	8	2.44	150	4.11	46	3.12	63	3.79	33	3.32	157	4.12	457
2014	17	5.18	154	4.22	40	2.72	54	3.25	35	3.52	172	4.51	472
2015	15	4.57	184	5.04	41	2.78	86	5.17	48	4.83	173	4.54	547
2016	11	3.35	159	4.35	58	3.94	68	4.09	32	3.22	145	3.80	473
2017	13	3.96	114	3.12	41	2.78	46	2.76	25	2.52	106	2.78	345
Total	328	100	3652	100	1473	100	1664	100	993	100	3813	100	11923

This table presents the number of deals those triggered by sin (panel A) and non-sin (panel B) acquirers in G20 sample. The classification and changes in the classification of the social norm levels of G20 countries are presented in panel C: the numbers one and zero represent high and low social norm levels, respectively. We begin with a set of six questions from the WVS covering three aspects (two questions from each) (moral, religious, environmental attitudes). Answers to the six WVS questions are converted into a 0-10 scale where 0 is least concerning and 10 is most concerning. Then we sum all marks for all questions from each respondent to get the total marks. For each country and year, we calculate the average marks of all respondents and use this as a proxy for the country's social norm score. We sort countries' social norm scores in each period. We identify countries above the median as high-social-norm countries and those below the median as low-social-norm countries. For the robustness of the proxy, we make changes in the set of questions and this does not make much change in this classification and the Cumulative abnormal return analysis later. The four year-grouping is based on WVS. The distribution of deals by year and industry is presented in (Panel D). Food, soda, and entertainment industries are comparable industries with Tobacco, alcohol, and casino, respectively.

Table 3.2: Descriptive statistics and Correlation Matrix for G20 sample

Variable	(I) Entire G20 sample (N=11,923)		(II) High-social-norm G20 countries sample (N=5,802)		(III) Low-social-norm G20 countries sample (N=6,121)	
	Mean	Median	Mean	Median	Mean	Median
Panel A: Descriptive statistics of dependent variables used in subsequent tables						
CAR [0,1]						
(a) Sin acquirer Obs.	0.0100*** 2,794	0.0032	0.0114*** 1,346	0.0029	0.0087*** 1,448	0.0034
(b) Non-sin acquirer Obs.	0.0090*** 9,129	0.0018	0.0089*** 4,456	0.0019	0.0091*** 4,673	0.0016
Difference (a-b)	0.0010	0.0014**	0.0025*	0.0010	-0.0004	0.0018
(c) Sin target Obs.	0.0095*** 3,120	0.0022	0.0103*** 1,533	0.0022	0.0088*** 1,587	0.0106
(d) Non-sin target Obs.	0.0091*** 8,803	0.0020	0.0092*** 4,269	0.0021	0.0091*** 4,534	0.0122
Difference (c-d)	0.0004	0.0002	0.0012	0.0001	-0.0003	-0.0016
CAR [-2,2]						
(e) Sin acquirer Obs.	0.0129*** 2,794	0.0038	0.0160*** 1,346	0.0038	0.0100*** 1,448	0.0038
(f) Non-sin acquirer Obs.	0.0109*** 9,129	0.0026	0.0094*** 4,456	0.0022	0.0123*** 4,673	0.0028
Difference (e-f)	0.0020	0.0012**	0.0066***	0.0016**	-0.0023	0.0010
(g) Sin target Obs.	0.0115*** 3,120	0.0021	0.0124*** 1,533	0.0020	0.0106*** 1,587	0.0022
(h) Non-sin target Obs.	0.0113*** 8,803	0.0034	0.0104*** 4,269	0.0029	0.0122*** 4,534	0.0038
Difference (g-h)	0.0001	-0.0013	0.0020	-0.0009	0.0017	-0.0016
Panel B: Descriptive statistics of independent variables used in subsequent tables						
Diversifying deal	Mean		Mean		Mean	
(i) Sin acquirer Obs.	0.4014 2,805		0.4071 1,356		0.3961 1,449	
(j) Non-sin acquirer Obs.	0.5036 9,156		0.4772 4,480		0.5289 4,676	
Difference (i-j)	-0.1022***		-0.0701***		-0.1327***	
Acquiring sin target						
(k) Sin acquirer Obs.	0.5333 2,805		0.4977 1,356		0.5666 1,449	
(l) Non-sin acquirer Obs.	0.1782 9,156		0.1931 4,480		0.1640 4,676	
Difference (k-l)	0.3551***		0.3047***		0.4026***	
Majority						
(m) Sin acquirer Obs.	0.9055 2,805		0.9211 1,356		0.8910 1,449	
(n) Non-sin acquirer Obs.	0.8492 9,156		0.8938 4,480		0.8065 4,676	
Difference (m-n)	0.0564***		0.0273***		-0.0845***	
Cash&cash equivalent/asset						
(o) Sin acquirer Obs.	0.0933 2,597	0.0601	0.0923 1,236	0.0654	0.0942 1,361	0.0565
(p) Non-sin acquirer Obs.	0.1098 8,551	0.0735	0.0931 4,108	0.0576	0.1253 4,443	0.0869
Difference (o-p)	-0.0165***	-0.0134***	0.0008	0.0078*	-0.0311***	-0.0304***
Tobin – Q						
(q) Sin acquirer Obs.	1.4543 2,580	1.1393	1.5657 1,229	1.2101	1.3530 1,351	1.0652
(r) Non-sin acquirer Obs.	1.5287 8,514	1.1553	1.6485 4,083	1.2431	1.4183 4,431	1.0588
Difference (q-r)	-0.0744***	-0.016	-0.0828**	-0.033	-0.0653***	0.0064

Table 3.2: Descriptive statistics and Correlation Matrix for G20 sample (cont.)

	(I) Entire G20 sample		(II) High-social-norm G20 countries sample		(III) Low-social-norm G20 countries sample			
Panel C: Magnitude of acquirer gain								
	Mean	Median	Mean	Median	Mean	Median		
Dollar value gain (in Million \$US) =CAR[-2,2]*acquirer capitalization								
(s) Sin acquirer	12.9109	0.5801	19.8715	0.6702	6.2738	0.4960		
Obs.	2,522	2,522	1,231	1,231	1,291	1,291		
(t) Non-sin acquirer	-5.2315	0.2861	-10.9572	0.2542	0.2637	0.3123		
Obs.	8,568	8,568	4,196	4,196	4,372	4,372		
Difference (s-t)	18.1424**	0.2940**	30.8287**	0.4160*	6.0101	0.1837*		
Net synergy gain =Dollar value gain/deal value								
(u) Sin acquirer	0.2258	0.0512	0.0768	0.0475	0.3447	0.0523		
Obs.	1,640	1,640	728	728	912	912		
(v) Non-sin acquirer	-0.4465	0.0340	0.1728	0.0273	-0.9623	0.0383		
Obs.	4,952	4,952	2,250	2,250	2,702	2,702		
Difference (u-v)	0.6723*	0.0172*	-0.0960	0.0202*	1.3070**	0.0140		
Panel D: Correlation Matrix								
Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1.Sin acquirer	1							
2.Majority	0.0499***	1						
3. Diversifying deal	-0.103***	-0.0672***	1					
4. Ln (acquirer asset)	-0.0176*	-0.1077***	-0.0912***	1				
5. Relative size	0.0027	0.1053***	0.0142	-0.3395***	1			
6.Tobin Q	-0.0272***	0.004***	-0.0102	-0.1167***	0.2204***	1		
7. Private target	0.002	0.3325***	0.0127***	-0.2039***	-0.0327***	0.0259***	1	
8. Sin target	0.321***	0.1006***	0.0247	-0.0499***	0.0329**	-0.1098**	0.0597**	1

This table presents the descriptive statistics for dependent (Panel A) and independent (Panel B) variables used in subsequent tables, the magnitude measures of acquirer's gain in M&A announcement (Panel C), the correlation matrix of independent variables (Panel D). All the mean and median values are significantly different from 0 at the 1% level.

Table 3.3: Regression analysis for two-day [0,1] and five-day [-2,2] window CAR (cumulative abnormal return) around M&A announcement.

Variable	(I)		(II)		(III)	
	All countries		High-social-norm countries		Low-social-norm countries	
	(1) Window [0,1]	(2) Window [-2,2]	(3) Window [0,1]	(4) Window [-2,2]	(5) Window [0,1]	(6) Window [-2,2]
Sin acquirer	0.0034* (1.65)	0.0064** (2.38)	0.0044 (1.43)	0.0125*** (3.14)	0.0018 (0.65)	0.0005 (0.14)
Sin target	-0.0053*** (-2.79)	-0.0069*** (-2.64)	-0.0048 (-1.63)	-0.0087** (-2.18)	-0.0054** (-2.05)	-0.0047 (-1.32)
Majority	0.0008 (0.37)	-0.0024 (-0.81)	-0.0003 (-0.08)	-0.0020 (-0.43)	0.0016 (0.59)	-0.0025 (-0.65)
Diversifying Deal	-0.0049*** (-3.12)	-0.00537** (-2.56)	-0.0067*** (-2.78)	-0.0078** (-2.43)	-0.0038* (-1.82)	-0.0036 (-1.29)
Ln asset	-0.0028*** (-6.17)	-0.0035*** (-5.66)	-0.0037*** (-4.57)	-0.0044*** (-4.09)	-0.0021*** (-3.88)	-0.0028*** (-3.84)
Deal value/ Acquirer asset	0.0084** (2.36)	0.0142*** (2.99)	0.0051 (0.92)	0.0032 (0.648)	0.0104** (2.24)	0.0226*** (3.54)
Tobin Q	-0.0014 (-1.61)	-0.0016 (-1.31)	-0.0013 (-1.17)	-0.0021 (-1.36)	-0.0013 (-0.93)	-0.0007 (-0.35)
Private target	0.0068*** (3.36)	0.0103*** (3.88)	0.0060* (1.68)	0.0074 (1.6)	0.0069*** (2.80)	0.0109*** (3.33)
(Intercept)	0.0231** (2.82)	0.0556*** (3.58)	0.0244** (2.50)	0.0548*** (3.24)	0.1421** (1.99)	-0.0071** (-2.23)
Country, year, industry dummies	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.0426	0.0433	0.0537	0.0451	0.0519	0.0657
Adj R-squared	0.0327	0.0335	0.0351	0.0264	0.0372	0.0512
Obs.	6,107	6,107	2,762	2,762	3,345	3,345

This table reports the results of regressions of Cumulative abnormal return (CAR) (dependent variable) for two windows [0,1] and [-2,2] on a Sin acquirer, sin target dummy variables and other control variables for G20 sample over the period 1993-2017. *Sin acquirer* (*sin target*) takes a value of 1 if the acquirer (target) in the sin industries (i.e., tobacco, alcohol, and casino), and 0 otherwise. Majority is the dummy variable and takes a value of 1 if the acquirer owns from 50% share of the target after the deal, and 0 otherwise. Ln asset is calculated by taking the natural logarithm of acquirer's assets. The private target is a dummy variable and takes a value of 1 if the target is a private firm and 0 otherwise. The diversifying deal is a dummy variable and takes a value of 1 if acquirer and target are from different industries (as measured by 2-digit SIC) and 0 otherwise. In columns II and III, we split the sample into high and low-social-norm sub-samples to allow comparison across two categories. The t-statistics in parentheses are based on standard errors adjusted for heteroscedasticity²⁶. The dependent and control variables are winsorized at the 1st and 99th percentiles. * indicates significance at the 10% level; ** at the 5% level; and *** at the 1% level. Numbers are rounded up to the fourth decimal place. The deals which are announced in the period of five days before and after other deals' announcements of the same acquirer are excluded.

²⁶ We use robust standard error and not use cluster by firm, country, and/or year as the clustered standard error is not much different from robust standard error. Petersen (2009) suggests using the cluster when the clustered standard error is 2-4 time higher than white standard error. If there is no much difference, the effect of firm, country, and/or year does not present.

Table 3.4: Sin target effect on sin/non-sin acquirer's CAR around M&A announcement

Variable	(I)		(II)		(III)		
	All countries		High-social-norm countries		Low-social-norm countries		
	(1)	(2)	(3)	(4)	(5)	(6)	
	Window [0,1]	Window [-2,2]	Window [0,1]	Window [-2,2]	Window [0,1]	Window [-2,2]	
(Panel A) Sin acquirer	Sin target	-0.0055 (-1.38)	-0.0054 (-1.09)	-0.0022 (-0.37)	-0.0061 (-0.80)	-0.0051 (-0.92)	-0.0026 (-0.39)
	(Intercept)	0.0395** (2.29)	0.0601** (2.16)	0.0299 (1.28)	0.0651* (1.91)	0.1519** (2.03)	0.2241*** (2.65)
	controls and fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
	R-squared	0.0749	0.0761	0.0965	0.1088	0.1031	0.1095
	Obs.	1,377	1,377	629	629	748	748
(Panel B) Non-Sin acquirer	Sin target	-0.0060*** (-2.46)	-0.0079** (-2.30)	-0.0072* (-1.87)	-0.0106** (-1.97)	-0.0053 (-1.58)	-0.0065 (-1.38)
	(Intercept)	0.0081 (0.75)	0.0386* (1.69)	0.0118 (0.96)	0.0421* (1.72)	0.0307 (1.57)	0.0591*** (2.77)
	controls and fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
	R-squared	0.0462	0.0510	0.0638	0.0473	0.0505	0.0759
	Obs.	4,730	4,730	2,133	2,133	2,597	2,597

This table reports the results of regressions of Cumulative abnormal return (CAR) (dependent variable) for two windows [0,1] and [-2,2] on a Sin target dummy variable and other control variables for a G20 sample. We split the sample into sin (panel A) and non-sin (Panel B) acquirer subsamples over the period 1993-2017 to investigate the different effect of sin target to sin and non-sin acquirers. In columns II and III, we split the sample into high and low-social-norm sub-samples to allow comparison across two categories. The t-statistics in parentheses are based on standard errors adjusted for heteroscedasticity. The dependent and control variables are winsorized at the 1st and 99th percentiles. All regressions include country, calendar year, and comparable industries dummies. * indicates significance at the 10% level; ** at the 5% level; and *** at the 1% level. Numbers are rounded up to the fourth decimal place. The deals which are announced in the period of five days before and after other deals' announcements of the same acquirer are excluded.

Table 3.5: Regression analysis with control for endogeneity using Propensity score matched sample

Variable	(I) All countries				(II) High-social-norm countries				(III) Low-social-norm countries			
	Matching 1-1		Matching 1-3		Matching 1-1		Matching 1-3		Matching 1-1		Matching 1-3	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Window [0,1]	Window [-2,2]	Window [0,1]	Window [-2,2]	Window [0,1]	Window [-2,2]	Window [0,1]	Window [-2,2]	Window [0,1]	Window [-2,2]	Window [0,1]	Window [-2,2]
Sin acquirer	0.0061 (1.58)	0.0154*** (3.13)	0.0047 (1.39)	0.0125*** (2.98)	0.0038 (0.65)	0.0141* (1.83)	0.0039 (0.78)	0.0171*** (2.66)	0.0078 (1.53)	0.0145 (1.29)	0.0032 (0.72)	0.0049 (0.91)
Sin target	-0.0047 (-1.31)	-0.0072 (-1.57)	-0.0049 (-1.61)	-0.0065* (-1.71)	-0.0078 (-1.40)	-0.0096 (-1.31)	-0.0096** (-1.98)	-0.0110* (-1.79)	-0.0015 (-0.31)	-0.0032 (-0.54)	-0.0008 (0.22)	-0.0016 (-0.33)
Majority	-0.0054 (-0.94)	-0.0024 (-0.29)	-0.0035 (-0.73)	-0.0034 (-0.50)	0.0053 (0.63)	0.0154 (1.24)	0.0031 (0.42)	0.0070 (0.66)	-0.0140* (-1.74)	-0.0161 (-1.40)	-0.0110* (-1.71)	-0.0129 (-1.43)
Diversifying Deal	-0.0088*** (-2.62)	-0.0015 (-0.34)	-0.0074** (-2.59)	-0.0029 (-0.81)	-0.0128** (-2.35)	0.0005 (0.07)	-0.0104** (-2.24)	-0.0001 (-0.02)	-0.0060 (-1.35)	-0.0042 (-0.73)	-0.0050 (-1.37)	-0.0046 (-0.97)
Ln asset	-0.0031*** (-2.61)	-0.0044*** (-3.08)	-0.0025*** (-2.69)	-0.0035*** (-3.14)	-0.0040** (-1.99)	-0.0046* (-1.85)	-0.0039** (-2.25)	-0.0036* (-1.77)	-0.0020 (-1.43)	-0.0034** (-2.07)	-0.0012 (-1.11)	-0.0030** (-2.37)
Deal value/ Acquirer asset	0.0255*** (3.75)	0.0299*** (3.66)	0.0186*** (2.77)	0.0249*** (3.25)	0.0177** (2.09)	0.0255** (2.50)	0.0135 (1.56)	0.0232** (2.46)	0.0391*** (3.80)	0.0399*** (3.06)	0.0243** (2.29)	0.0274** (2.09)
Tobin Q	-0.0013 (-0.61)	0.0008 (0.29)	-0.0015 (-0.88)	0.0005 (0.21)	-0.0002 (-0.08)	0.0017 (0.46)	-0.0006 (-0.27)	0.0014 (0.49)	-0.0032 (-0.84)	-0.0018 (-0.39)	-0.0041 (-1.32)	-0.0024 (-0.61)
Private target	0.0151*** (3.05)	0.0173*** (2.89)	0.0144*** (3.50)	0.0179*** (3.59)	0.0053 (0.66)	0.0150 (1.51)	0.0099 (1.47)	0.0200** (2.41)	0.0243*** (4.01)	0.0202*** (2.69)	0.0179*** (3.55)	0.0154** (2.46)
(Intercept)	-0.0040 (-0.25)	0.0008 (0.04)	-0.0014 (-0.09)	0.0083 (0.41)	-0.0093 (-0.43)	-0.0079 (-0.27)	0.0082 (0.42)	0.0118 (0.48)	0.2058*** (3.19)	0.2628*** (2.98)	0.2141*** (3.48)	0.2678*** (3.24)
Previous controls and fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.1025	0.0936	0.0698	0.0715	0.1085	0.0989	0.0841	0.0861	0.1601	0.1395	0.1047	0.1013
Obs.	1,454	1,454	2,133	2,133	716	716	1,033	1,033	738	738	1,100	1,100

This table reports the results of regressions of Cumulative abnormal return (CAR) (dependent variable) for two windows [0,1] and [-2,2] on a Sin acquirer, sin target dummy variables and other control variables for G20 matched sample over the period 1993-2017. *Sin acquirer* (*sin target*) takes a value of 1 if the acquirer (target) in the sin industries (i.e., tobacco, alcohol, and casino), and 0 otherwise. Majority is the dummy variable and takes a value of 1 if the acquirer owns from 50% share of the target after the deal, and 0 otherwise. Ln asset is calculated by taking the natural logarithm of acquirer's assets. The private target is a dummy variable and takes a value of 1 if target is private firm, and 0 otherwise. The diversifying deal is a dummy variable and takes a value of 1 if acquirer and target are from different industries (as measured by 2-digit SIC), and 0 otherwise. The t-statistics in parentheses are based on standard errors adjusted for heteroscedasticity. The dependent and control variables are winsorized at the 1st and 99th percentiles. All regressions include country, calendar year, and comparable industries dummies. * indicates significance at the 10% level; ** at the 5% level; and *** at the 1% level. Numbers are rounded up to the fourth decimal place. The deals which are announced in the period of five days before and after other deals' announcements of the same acquirer are excluded.

Table 3.6: Regression analysis with control for endogeneity using entropy balance

Variable	(I)		(II)		(III)	
	All countries		High-social-norm countries		Low-social-norm countries	
	G20		G20		G20	
	(1)	(2)	(3)	(4)	(5)	(6)
	Window [0,1]	Window [-2,2]	Window [0,1]	Window [-2,2]	Window [0,1]	Window [-2,2]
Sin acquirer	0.0036 (1.50)	0.0087*** (2.85)	0.0059 (1.35)	0.0152*** (3.21)	0.0014 (0.42)	0.0019 (0.47)
Sin target	-0.0043* (-1.95)	-0.0062** (-2.15)	-0.0021 (-1.09)	-0.0069 (-1.48)	-0.0053* (-1.80)	-0.0048 (-1.26)
(Intercept)	0.0257** (2.37)	0.0693** (2.07)	0.0158 (1.22)	0.0556* (1.71)	0.1467** (2.07)	0.2224*** (2.88)
Previous controls and fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.0439	0.0412	0.0567	0.0533	0.0556	0.0544
Obs.	5,580	5,580	2,515	2,515	3,065	3,065

This table reports the results of regressions of Cumulative abnormal return (CAR) (dependent variable) for two windows [0,1] and [-2,2] on a Sin acquirer, sin target dummy variables and other control variables for G20 matched sample over the period 1993-2017. *Sin acquirer* (*sin target*) takes a value of 1 if the acquirer (target) in the sin industries (i.e., tobacco, alcohol, and casino), and 0 otherwise. Majority is the dummy variable and takes a value of 1 if the acquirer owns from 50% share of the target after the deal, and 0 otherwise. Ln asset is calculated by taking the natural logarithm of acquirer's assets. The private target is a dummy variable and takes a value of 1 if target is private firm, and 0 otherwise. The diversifying deal is a dummy variable and takes a value of 1 if acquirer and target are from different industries (as measured by 2-digit SIC), and 0 otherwise. The t-statistics in parentheses are based on standard errors adjusted for heteroscedasticity. The dependent and control variables are winsorized at the 1st and 99th percentiles. All regressions include country, calendar year, and comparable industries dummies. * indicates significance at the 10% level; ** at the 5% level; and *** at the 1% level. Numbers are rounded up to the fourth decimal place. The deals which are announced in the period of five days before and after other deals' announcements of the same acquirer are excluded.

Table 3.7: Regression analysis for Global sample.

Variable	(I)		(II)		(III)	
	All countries		High-social-norm countries		Low-social-norm countries	
	Window [0,1]	Window [-2,2]	Window [0,1]	Window [-2,2]	Window [0,1]	Window [-2,2]
Sin acquirer	0.0040** (2.16)	0.0079*** (3.27)	0.0032 (0.79)	0.0146*** (2.71)	0.0037* (1.77)	0.0046* (1.68)
Sin target	-0.0047*** (-2.72)	-0.0072*** (-3.04)	-0.0017 (-0.43)	-0.0122** (-2.28)	-0.0057*** (-2.91)	-0.0054** (-2.10)
Majority	0.0017 (0.89)	-0.0020 (-0.74)	-0.0004 (-0.08)	-0.0039 (-0.70)	0.0021 (0.97)	-0.0014 (-0.44)
Diversifying Deal	-0.0046*** (-3.28)	-0.0042** (-2.25)	-0.0048 (-1.55)	-0.0063 (-1.53)	-0.0051*** (-3.15)	-0.0050** (-2.31)
Ln asset	-0.0025*** (-5.95)	-0.0032*** (-5.49)	-0.0018 (-1.66)	-0.0025* (-1.69)	-0.0028*** (-6.19)	-0.0034*** (-6.38)
Deal value/ Acquirer asset	0.0107*** (3.35)	0.0164*** (3.87)	0.0125** (2.09)	0.0113 (1.49)	0.0094** (2.43)	0.0182*** (8.15)
Tobin Q	-0.0012 (-1.61)	-0.0014 (-1.34)	-0.0028* (-1.78)	-0.0048** (-2.26)	-0.0006 (-0.67)	0.0003 (0.30)
Private target	0.0055*** (2.93)	0.0087*** (3.54)	0.0017 (0.37)	0.0039 (-0.64)	0.0071*** (3.55)	0.0111*** (3.68)
(Intercept)	0.0238*** (2.99)	0.0584*** (3.65)	0.0329*** (2.90)	0.0809*** (4.19)	0.0113 (0.99)	0.0086 (0.11)
Country, year, industry dummies	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.0468	0.0488	0.0626	0.0661	0.0513	0.0567
Adj R-squared	0.0326	0.0347	0.0285	0.0322	0.0378	0.0433
Obs.	7,299	7,299	1,881	1,881	5,265	5,265

This table reports the results of regressions of Cumulative abnormal return (CAR) (dependent variable) for two windows [0,1] and [-2,2] on a Sin acquirer, sin target dummy variables and other control variables for a Global sample over the period 1993-2017. *Sin acquirer* (*sin target*) takes a value of 1 if the acquirer (target) in the sin industries (i.e., tobacco, alcohol, and casino), and 0 otherwise. Majority is the dummy variable and takes a value of 1 if the acquirer owns from 50% share of the target after the deal, and 0 otherwise. Ln asset is calculated by taking the natural logarithm of acquirer's assets. The private target is a dummy variable and takes a value of 1 if target is private firm, and 0 otherwise. The diversifying deal is a dummy variable and takes a value of 1 if acquirer and target are from different industries (as measured by 2-digit SIC), and 0 otherwise. The t-statistics in parentheses are based on standard errors adjusted for heteroscedasticity. The dependent and control variables are winsorized at the 1st and 99th percentiles. All regressions include country, calendar year, and comparable industries dummies. * indicates significance at the 10% level; ** at the 5% level; and *** at the 1% level. Numbers are rounded up to the fourth decimal place. The deals which are announced in the period of five days before and after other deals' announcements of the same acquirer are excluded.

Table 3.8: Regression analyses for the US and the UK sample

Variable	The United State						The United Kingdom					
	All		Matching 1-1		Matching 1-3		All		Matching 1-1		Matching 1-3	
	Window [0,1]	Window [-2,2]	Window [0,1]	Window [-2,2]	Window [0,1]	Window [-2,2]	Window [0,1]	Window [-2,2]	Window [0,1]	Window [-2,2]	Window [0,1]	Window [-2,2]
Sin acquirer	0.0073* (1.84)	0.0158*** (3.12)	0.0107 (1.48)	0.0175* (1.85)	0.0110* (1.71)	0.0182** (2.18)	0.0069 (1.09)	0.0000 (0.00)	-0.0122 (-0.7900)	-0.0064 (-0.33)	-0.0044 (-0.34)	0.0029 (0.18)
Sin target	-0.0095** (-2.57)	-0.0133*** (-2.69)	-0.0168** (-1.99)	-0.0236** (-2.13)	-0.0149** (-2.04)	-0.0195** (-2.06)	-0.0073 (-1.26)	-0.0060 (-0.82)	0.0036 (0.23)	-0.0051 (-0.27)	-0.0047 (-0.35)	-0.0140 (-0.84)
Majority	-0.0080 (-1.44)	-0.0105 (-1.54)	0.0117 (0.19)	0.0228 (0.27)	0.0243 (0.39)	0.0433 (0.53)	0.0001 (0.02)	-0.0030 (-0.36)	0.0149 (0.48)	0.0249 (0.73)	0.0816 (1.57)	0.0959* (1.76)
Diversifying Deal	-0.0078*** (-2.63)	-0.0076* (-1.90)	-0.0044 (-0.58)	-0.0044 (-0.47)	-0.0056 (-0.85)	-0.0041 (-0.49)	-0.0056 (-1.28)	-0.0033 (-0.61)	0.0046 (0.37)	0.0184 (1.14)	-0.0065 (-0.62)	-0.0026 (-0.20)
Ln asset	-0.0043*** (-4.89)	-0.0053*** (-4.41)	-0.0045 (-1.56)	-0.0056 (-1.53)	-0.0045* (-1.81)	-0.0048 (-1.55)	-0.0011 (-1.15)	-0.0009 (-0.72)	-0.0030 (-1.15)	-0.0041 (-1.25)	-0.0030 (-1.35)	-0.0032 (-1.12)
Deal value/ Acquirer asset	-0.0039 (-0.71)	-0.0032 (-0.44)	0.0245 (1.53)	0.0256 (1.30)	0.0093 (0.68)	0.0082 (0.47)	0.0101 (1.41)	0.0159* (1.66)	-0.0050 (-0.21)	-0.0138 (-0.56)	0.0007 (0.03)	-0.0005 (-0.01)
Tobin Q	-0.0032*** (-2.60)	-0.0028* (-1.68)	-0.0097** (-2.04)	-0.0120** (-2.17)	-0.0055 (-1.55)	-0.0069 (-1.61)	-0.0041 (-1.47)	-0.0066* (-1.96)	-0.0136** (-2.06)	-0.0142 (-1.59)	-0.0156*** (-2.89)	-0.0170** (-2.48)
Private target	0.0090** (2.10)	-0.0140** (-2.54)	0.0085 (0.50)	0.0268 (-1.22)	0.0018 (0.12)	0.0161 (0.83)	0.0190*** (3.12)	0.0245*** (3.30)	-0.0431** (2.02)	-0.0345 (-1.55)	0.0620 (1.35)	-0.0484 (-1.05)
(Intercept)	0.0452*** (3.82)	0.0596 (3.21)	0.0752 (0.95)	0.0946 (0.89)	0.0531 (0.73)	0.0528 (0.55)	0.1394* (1.94)	0.2062 (2.60)	0.0322 (0.71)	0.0478 (0.77)	-0.0354 (-0.69)	-0.0225 (-0.35)
Year, industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.0555	0.0436	0.1567	0.1551	0.1063	0.0947	0.0717	0.0766	0.2601	0.2901	0.1828	0.2030
Adj R-squared	0.0386	0.0264	0.0615	0.0596	0.0397	0.0272	0.0340	0.0390	0.0314	0.0695	0.0232	0.0473
Obs.	1,986	1,986	336	336	491	491	897	897	136	136	203	203

This table reports the results of regressions of Cumulative abnormal return (CAR) (dependent variable) for two windows [0,1] and [-2,2] on a Sin acquirer, sin target dummy variables and other control variables for The US and The UK sample over the period 1993-2017. *Sin acquirer* (*sin target*) takes a value of 1 if the acquirer (target) in the sin industries (i.e., tobacco, alcohol, and casino), and 0 otherwise. Majority is the dummy variable and takes a value of 1 if the acquirer owns from 50% share of the target after the deal, and 0 otherwise. Ln asset is calculated by taking the natural logarithm of acquirer's assets. The private target is a dummy variable and takes a value of 1 if target is private firm, and 0 otherwise. The diversifying deal is a dummy variable and takes a value of 1 if acquirer and target are from different industries (as measured by 2-digit SIC) and 0 otherwise. The t-statistics in parentheses are based on standard errors adjusted for heteroscedasticity. The dependent and control variables are winsorized at the 1st and 99th percentiles. All regressions include country, calendar year, and comparable industries dummies. * indicates significance at the 10% level; ** at the 5% level; and *** at the 1% level. Numbers are rounded up to the fourth decimal place. The deals which are announced in the period of five days before and after other deals' announcements of the same acquirer are excluded.

Table 3.9: Developed stock markets vs developing stock markets.

Variable		(I)		(II)		(III)	
		All countries		High-social-norm countries		Low-social-norm countries	
		(1)	(2)	(3)	(4)	(5)	(6)
		Window	Window	Window	Window	Window	Window
		[0,1]	[-2,2]	[0,1]	[-2,2]	[0,1]	[-2,2]
(Panel A)	Developed stock markets						
	Sin acquirer	0.0052** (2.39)	0.0099*** (3.56)	0.0071** (2.28)	0.0167*** (4.14)	0.0023 (0.079)	0.0014 (0.35)
	Sin target	-0.0053*** (2.73)	-0.0082*** (-3.15)	-0.0097*** (-3.34)	-0.0148*** (-3.75)	-0.0015 (-0.54)	-0.0025 (-0.66)
	(Intercept)	0.0259*** (3.80)	0.0448*** (4.69)	0.0446*** (3.48)	0.0353** (2.16)	0.0163** (2.06)	0.0415*** (4.06)
	Previous controls and fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
	R-squared	0.0479	0.0470	0.0633	0.0570	0.0589	0.0639
	Obs.	5,415	5,415	2,703	2,703	2,712	2,712
(Panel B)	Developing stock markets						
	Sin acquirer	-0.0048 (-1.07)	-0.0048 (-0.77)	-0.0068 (-1.28)	-0.00000 (-0.00)	-0.0029 (-0.38)	-0.0093 (-0.90)
	Sin target	-0.0045 (-1.05)	-0.0037 (-0.56)	0.0010 (0.19)	-0.0021 (-0.31)	-0.0104 (-1.36)	-0.0055 (-0.43)
	(Intercept)	0.0503 (1.33)	0.0845 (1.52)	0.0242 (0.64)	0.0416 (0.75)	0.0236 (1.18)	0.0228 (0.76)
	Previous controls and fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
	R-squared	0.0825	0.0883	0.0916	0.1025	0.1112	0.1212
	Obs.	1,443	1,443	706	706	737	737

This table reports the results of regressions of Cumulative abnormal return (CAR) (dependent variable) for two windows [0,1] and [-2,2] on a Sin target dummy variable and other control variables for a G20 sample with sin and non-sin acquirer subsamples over the period 1993-2017. In panel A and B, we split the sample into deal from developed and developing stock market to allow comparison across two categories. The t-statistics in parentheses are based on standard errors adjusted for heteroscedasticity. The dependent and control variables are winsorized at the 1st and 99th percentiles. All regressions include country, calendar year, and comparable industries dummies. * indicates significance at the 10% level; ** at the 5% level; and *** at the 1% level. Numbers are rounded up to the fourth decimal place. The deals which are announced in the period of five days before and after other deals' announcements of the same acquirer are excluded.

Table 3.10: Developed countries vs underdeveloped countries.

Variable		(I)		(II)		(III)	
		All countries		High-social-norm countries		Low-social-norm countries	
		(1) Window [0,1]	(2) Window [-2,2]	(3) Window [0,1]	(4) Window [-2,2]	(5) Window [0,1]	(6) Window [-2,2]
(Panel A) Developed countries	Sin acquirer	0.0050** (2.38)	0.0091*** (3.33)	0.0052* (1.73)	0.0151*** (3.87)	0.0040 (1.36)	0.0012 (0.30)
	Sin target	-0.0049** (-2.58)	-0.0072*** (-2.74)	-0.0065** (-2.35)	-0.0114*** (-2.98)	-0.0036 (-1.25)	-0.0028 (-0.70)
	(Intercept)	0.0249*** (3.01)	0.0590*** (3.64)	0.0251*** (2.64)	0.0547*** (3.27)	0.0259** (2.44)	0.0480*** (3.07)
	Previous controls and fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
	R-squared	0.0451	0.0458	0.0560	0.0535	0.0538	0.0630
	Obs.	5,848	5,848	3,017	3,017	2,831	2,831
(Panel B) Underdeveloped countries	Sin acquirer	-0.0072 (-1.41)	-0.0030 (-0.42)	-0.0065 (-1.11)	0.0026 (0.34)	-0.0095 (-0.96)	-0.0094 (-0.72)
	Sin target	-0.0057 (-1.15)	-0.0075 (-1.10)	0.0050 (0.88)	-0.0011 (-0.14)	-0.0324*** (-3.28)	-0.0278** (-2.10)
	(Intercept)	0.0266 (0.72)	0.0297 (0.55)	0.0328 (0.86)	0.0299 (0.54)	-0.0391 (-0.74)	-0.0173 (-0.27)
	Previous controls and fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
	R-squared	0.1310	0.1312	0.0974	0.1000	0.2703	0.2768
	Obs.	1000	1000	635	635	365	365

This table reports the results of regressions of Cumulative abnormal return (CAR) (dependent variable) for two windows [0,1] and [-2,2] on a Sin target dummy variable and other control variables for a G20 sample with sin and non-sin acquirer subsamples over the period 1993-2017. In panels A and B, we split the sample into deal from developed and underdeveloped countries to allow comparison across two categories. The t-statistics in parentheses are based on standard errors adjusted for heteroscedasticity. The dependent and control variables are winsorized at the 1st and 99th percentiles. All regressions include country, calendar year, and comparable industries dummies. * indicates significance at the 10% level; ** at the 5% level; and *** at the 1% level. Numbers are rounded up to the fourth decimal place. The deals which are announced in the period of five days before and after other deals' announcements of the same acquirer are excluded.

Table 3.11: Fauver and McDonald (2014)' social norm level classification.

Variable	(I) All countries		(II) High-social-norm countries		(III) Low-social-norm countries	
	(1) Window [0,1]	(2) Window [-2,2]	(3) Window [0,1]	(4) Window [-2,2]	(5) Window [0,1]	(6) Window [-2,2]
	Sin acquirer	0.0031 (1.43)	0.0062** (2.20)	0.0049* (1.73)	0.0102*** (2.85)	-0.0004 (-0.14)
Sin target	-0.0053*** (-2.75)	-0.0062** (-2.32)	-0.0069*** (-2.73)	-0.0096*** (-2.91)	-0.0033 (-1.02)	-0.0007 (-0.14)
(Intercept)	0.0219*** (2.67)	0.0520*** (3.34)	0.0201* (1.96)	0.0220* (1.68)	0.0181 (1.14)	0.0425* (1.70)
Previous controls and fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.0389	0.0384	0.0452	0.0424	0.0543	0.0731
Obs.	5,749	5,749	3,576	3,576	2,173	2,173

This table reports the results of regressions of Cumulative abnormal return (CAR) (dependent variable) for two windows [0,1] and [-2,2] on a Sin acquirer, sin target dummy variables and other control variables for G20 sample over the period 1993-2017. *Sin acquirer (sin target)* takes a value of 1 if the acquirer (target) in the sin industries (i.e., tobacco, alcohol, and casino), and 0 otherwise. In column II and III, we split the sample into high and low-social-norm subsamples based on Fauver and McDonald (2014)' classification. The t-statistics in parentheses are based on standard errors adjusted for heteroscedasticity. The dependent and control variables are winsorized at the 1st and 99th percentiles. * indicates significance at the 10% level; ** at the 5% level; and *** at the 1% level. Numbers are rounded up to the fourth decimal place. The deals which are announced in the period of five days before and after other deals' announcements of the same acquirer are excluded.

4. Sin M&As: An empirical examination of the operating performance and long-term market reaction

4.1. Introduction

With synergy, M&As could improve the acquirers' operating performance in the long term by gaining cost efficiency and economies of scale. As a result, the acquirers' long-term market returns should be significantly positive. However, the common evidence in research is that M&A activity improves neither the acquirers' long-term operating performance nor their stock-market performance (reviews by Jensen and Ruback, 1983; Martynova and Renneboog, 2008; Renneboog and Vansteenkiste, 2019). The source of the value destruction in M&As could well be the acquirers' decisions and motives (e.g. Jensen, 1986; Roll, 1986). We are motivated by this contradiction: if the acquirer's motive has a vital role in deciding whether M&A is value-increasing or not. Alternatively, investigating the group of acquirers who make the right decisions could offer a brighter picture. Thus, we focus on sin acquirers who make value-increasing acquisitions as their motives are to polish their tarnished images due to social norms and corporate stigmatization.^{27,28} Supporting the motive to improve the sin firm's image, Kim and Venkatachalam (2011) suggest that sin firms generate higher quality financial reporting than non-sin firms. With an improved appearance, sin firms can reduce the disadvantages associated with sin industries. In this chapter, we aim to find out whether a sin acquirer is different from a non-sin counterpart in two ways: operating performance changes and stock market long-term returns after M&As. We also aim to provide additional analyses on sin industries as there is a limited amount of research in this area. The reason for this "neglect" could be that sin industries are heavily criticized and stigmatized by society due to their severe harmfulness that is not in line with social norms. As a result, investors typically neglect these firms and financial analysts also rarely cover these industries (Hong and Kacperczyk, 2009).²⁹

We also investigate how sin M&As are different across countries due to differences in social norms. There is evidence that social norms can affect financial decisions, especially in sin industries. According to Hong and Kacperczyk (2009), norm-constrained institutional investors have less desire to hold sin stocks in their portfolios than non-sin stocks. Financial analysts also

²⁷ Social norms are the rules and standards that are understood by members of a group or society. Social norms guide and constrain social behaviour (Liu et al., 2014). We discuss this term further in 2.1.3.

²⁸ Devers et al. (2009, p.155) describe corporate stigmatization as "a label that evokes a collective stakeholder group-specific perception that an organization possesses a fundamental, deep-seated flaw that deindividuates and discredits the organization".

²⁹ According to WHO (2019), tobacco-related diseases cause more than 8 million deaths per year, equivalent to 15 deaths per minute. The numbers for alcohol-related diseases are 3 million and 6 deaths. However, there is no exact estimate for deaths from gambling as this is a long-term effect that is difficult to detect.

cover sin industries less than non-sin industries. As a result, the expected returns on sin stocks are greater than those on non-sin stocks. In sin countries, according to Fauver and McDonald (2014), sin firms have a lower Tobin's Q and a larger abnormal return.³⁰ As there is variety in social norms and values across countries, sin industries might be considered as negative in one country but neutral in others.³¹ To fully capture the differences in sin industries M&As due to this variety, following Knack and Keefer (1997) and Fauver and McDonald (2014), we divide the examining sample into high- and low-social-norm subsamples. Specifically, we divide the sample using three categories in the World Values Survey: moral, environmental, and religious attitudes. We would expect that in high-social-norm countries, where people heavily criticize sin industries, when facing public criticism, sin acquirers are more motivated by good motives, such as synergy. As a result, sin acquirers are more likely to generate value for shareholders from M&As than their non-sin counterparts. Using a global sample, besides examining the long-term performance after M&As of sin acquirers in general, we can see how this performance differs across countries due to the variety in social norms. In this study, we use a sample of the G20, which is economically significant and has a good variety for presenting the whole world.

We investigate 690 deals triggered by sin acquirers and 1,647 deals triggered by non-sin acquirers in G20 countries from 1993 to 2017. We adopt a variety of measures of operating performance (e.g. EBITDA/total asset, EBITDA adjusted for changes in working capital/total asset) and market performance (e.g. buy and hold abnormal return, BHAR). We start our analyses with descriptive statistics. Interestingly, we find that after M&A, operating performance does not improve, either for sin acquirers or non-sin acquirers. Moreover, there is no difference in operating performance changes between sin acquirers and non-sin acquirers. The results are consistent across G20 countries. However, the stock-market performance, measured by the BHAR of sin acquirers, is significantly positive three years from the effective day. This positive BHAR is more pronounced in high-social-norm countries. The median BHAR of sin acquirers' shareholders is significantly positive by 4.66% in three years from the effective day; this increases to 5.63% in high-social-norm countries. Moreover, the BHARs of sin acquirers are significantly higher than non-sin acquirers, by 6.17% for the whole sample.

³⁰ Sin and non-sin countries in Fauver and McDonald (2014) correspond to high- and low-social-norm countries in our work.

³¹ For example, regarding the question "On this list are various groups of people. Could you please mention any that you would not like to have as neighbors?" in the World Values Survey for the period 2017–2020, in the US (high-social-norm country) 70.0% of respondents mention heavy drinkers, while in the UK (low-social-norm country) only 48.2% of respondents mention this. We can see that in the US, people view heavy drinkers negatively, while in the UK, people are neutral about heavy drinkers. Perhaps this could be generalized to the alcohol industry.

This increases to 7.97% in high-social-norm countries. This contradiction is explainable by the suggestion in Chapter 3 that sin acquirers might be motivated by relatively better motives than non-sin acquirers. We investigate this possibility further in the next section (Chapter 5). In brief, we find that sin acquirers are less motivated by market-timing than non-sin acquirers. This leads to fewer market corrections afterwards, and the long-term market performance of sin acquirers is more favourable than non-sin acquirers. In Chapter 5, though we find synergy motives of sin acquirers, there is no difference between non-sin and sin acquirers when comparing the potential synergy gain. This explains why there is no difference in long-term operating performance between the two.

To measure the difference between sin and non-sin firms, we provide regression analyses with constraints on firms' deals and characteristics. We find the results robust with previous analyses that there is no difference in operating performance changes between sin acquirers and their non-sin counterparts. However, the BHAR of sin acquirers is more favourable than that of non-sin acquirers. *Ceteris paribus*, the BHAR of sin acquirers is 21.22% higher than that of non-sin acquirers in the G20 sample. In high-social-norm countries, this dominance is higher at 31.01%.

However, there might be an endogeneity problem in our analyses arising from sample selection bias or omission of correlated variables. For example, Beneish (2008) and Fauver and McDonald (2014) show that sin firms are typically larger than their non-sin counterparts in the US and G20 samples. Bigger acquirers have more resources to acquire another firm. Through acquisition, sin acquirers can increase their size faster and gain more economies of scale than non-sin acquirers. This raises a potential drawback that the large portion of "big" firms in our sample might be sin firms. Similarly, the endogeneity problem could happen to other variables used in our model (e.g. leverage, diversifying deals, Tobin's Q). We address potential endogeneity concerns by employing the propensity score matching procedure (see Rosenbaum and Rubin, 1983) and entropy balance (see Hainmueller, 2012). By these methods, we can compare the performance of sin firms with similar non-sin firms in a more balanced and comparable sample. With this consideration, the results remain similar to previous analyses.

Using propensity score matching, the mean difference in operating performance change between sin acquirers and non-sin acquirers after M&A remains insignificant. Also, the mean difference in BHAR between sin acquirers and non-sin acquirers is 7.50% for the G20 sample and even higher in high-social-norm countries at 36.39%. Using the entropy balance procedure in the regression analyses, we find solid results with previous analyses that there is no difference in operating performance change between sin acquirers and non-sin acquirers. Also, the BHAR

of sin acquirers is more favourable than that of non-sin acquirers. *Ceteris paribus*, the BHAR of sin acquirers is 21.82% higher than non-sin acquirers in the G20 sample. In high-social-norm countries, this dominance is even higher at 39.97%.

While much is known about the impact of M&As in regards to improvement in operating performance and acquirers' long-term market returns, much less is known about the impact of M&As by firms in sin industries. This research aims to contribute to the existing literature on M&As in sin industries, demonstrating how acquirers' performance differs due to variations in social norms across countries. Prior studies on M&As in sin industries have mainly explored the short-term market performance (e.g. Beneish et al., 2008). To our knowledge, this is the first study to investigate acquirers' long-term performance in sin industries. This research is also unique as we investigate the impact of the variations in social norms across different countries and timeframes on acquirers' long-term performance. Moreover, while the short-term returns of sin acquirers are significantly positive (e.g. Beneish et al., 2008), by focusing on the long-term performance, this work can further confirm the reliability of short-term positive returns of sin acquirers. As a result, sin acquirers continue to generate value for shareholders in the long term.

This research also aims to provide more empirical evidence for investors. For example, based on this study, the investor can know that the operating performance of sin firms might not significantly improve after acquisition; however, sin acquirers could generate long-term returns in the stock market. Before this study, due to the lack of research on sin industries, especially about M&As, the reference point for investors might be M&A research on regular industries.³² However, considering the entire M&A research, investors could determine that an M&A decision in a sin industry is value destruction. Our findings challenge the common perception that M&As tend to be value destroying. Moreover, this research confirms that positive short-term market returns (e.g. Beneish et al., 2008) are reliable and that, in the long term, sin acquirers continue to generate additional value for shareholders. For a broader scope, this research can dilute the normalized investing perception above so that investors in other industries can make better evaluations and decisions (i.e. less bias). For example, socially responsible acquirers, who also want to do "good" things, can generate value for shareholders

³² Hong and Kacperczyk (2009) suggest some similarities (e.g. production and distribution) between the following Fama and French (1997) industry groups: tobacco (smoke) and food, alcohol (beer) and soda, casinos and entertainment (fun). Moreover, in some industry classification schemes, these industries are often lumped together. After Hong and Kacperczyk, other authors also utilize these natural comparables to highlight sin firm characteristics (e.g. Fauver and McDonald, 2014). If there is not much research into sin industries, the investor might refer to these natural comparables to enhance their decisions.

in the long term. Through this study, policymakers may also gain more knowledge and manage the market better. For example, our study suggests that sin acquirers do not destroy shareholders' wealth as much as non-sin acquirers. Specifically, sin industries are viewed as less risky by market guards (e.g. SEC – the US Securities and exchange commission). Perhaps market guards should prioritize their resources to scrutinize non-sin industries.

Given that the knowledge of sin industries is primitive, more profound research in this area could benefit both academic research and sin industry stakeholders. In Chapter 3, we comprehensively investigated short-term market reaction in sin M&A announcements. Specifically, we now investigate two mechanisms that could explain why sin acquirers have more favourable abnormal returns in M&A announcements than their non-sin counterparts. First, sin acquirers could gain more synergy from their targets through improvement in operating performance after M&As. Second, sin acquirers may have better motives than non-sin acquirers when deciding to make acquisitions; that possibility will be discussed in Chapter 5. In this chapter, we investigate the possibility that short-term abnormal returns in M&A announcements come from synergy, looking for improvement in long-term operating performance. However, as there is no evidence for improvement in operating performance of sin acquirers in either absolute or relative terms, the more favourable abnormal returns of shareholders in sin industries should come from the better motives of sin acquirers.

The remainder of this chapter is structured as follows. Section 4.2 develops hypotheses. Section 4.3 discusses the data, sample selection, and methodologies. Section 4.4 reports our empirical findings. Section 4.5 presents some robustness checks. Section 4.6 is the discussion and conclusion.

4.2. Hypotheses development

Over the last few decades, mergers and acquisitions have drawn widespread attention from practitioners and academics. M&A is an important event for a firm. It requires a lot of effort from the acquirers, their targets, and analysts to succeed. To compensate for that effort, M&As typically offer considerable value to participants via synergy. For example, the acquirers might increase their size quickly and efficiently to gain more power in the market (see Jensen and Ruback, 1983; Martynova and Renneboog, 2008; Renneboog and Vansteenkiste, 2019).

In brief, in the long term, the raw operating performance is usually worse after the acquisition; however, if the raw performance is adjusted, for example, by industry median or matched firm, this downturn effect becomes insignificant (see Martynova et al., 2007). On the good side, for

example, Powell and Stark (2005) find modest improvement in operating performance in takeovers in the UK from 1985 to 1993; however, the improvements depend on the definition of operating performance. In terms of long-term stock market performance, in general, the returns after M&A are significantly negative, or at best, not significantly different from zero (e.g. Dutta and Jog, 2009).

Though there are many mechanisms for acquirers to generate value from M&As (e.g. economies of scale and scope), the absence of improved performance or value creation may well derive from the value-decreasing motives of the acquirer. One of these motives is explained by agency theory (Jensen, 1986). According to this theory, the acquirer's managers intentionally increase their firm size beyond the optimum to gain more power and financial compensation. The hubris hypothesis by Roll (1986) also explains the potential for insignificant improvement in M&As. Roll states that firms engage in M&As because they are overconfident and consequently overestimate their own competence and capability to do M&A activities, as well as overvaluing their target firms and the potential gains from the M&As.

An acquisition might create benefits for a firm if it is motivated by value-creating motives. In reality, an acquirer who is at risk will be more likely to make a value-increasing deal. An acquirer with higher risks of bankruptcy must evaluate the deal more thoroughly. According to Ahmed and Elshandidy (2018), over-deviated firms engage in overseas acquisition agreements to alleviate financial constraints and reduce their financial risk. As a result, over-deviated businesses gain value through acquisitions. As another example, an acquirer with higher pressure from shareholders will make a better acquisition. According to Chen et al. (2019), acquirers under more shareholder supervision tend to have higher returns. Better supervision is provided through more evenly distributed power among blockholders, such as mutual funds and families, which may have opposing goals. When voting power is evenly distributed, both categories of blockholders may be more inclined to negotiate and maintain open lines of communication with management. When two opposing blockholder groups are constantly competing and scrutinizing, it is more difficult for managers to follow their own interests. This often results in a more thorough selection of value-enhancing acquisitions, creating additional value for shareholders.

Similarly, as sin firms' products and services are detrimental to society's well-being, they usually face more social neglect, and higher regulatory scrutiny and litigation risks than non-sin firms (Beneish et al., 2008; Kim and Venkatachalam, 2011). These things lead to a higher cost of capital for sin firms (Hong and Kacperczyk, 2009). Improving the sin firm's image

among individual investors, institutional investors, and other market participants could reduce these disadvantages. In the literature, with the incentive to improve their image, sin firms often generate high-standard financial reporting (Kim and Venkatachalam, 2011) and do socially responsible activities (Ahrens, 2004). In Chapter 3, we investigate the short-term abnormal returns in M&A announcements of sin acquirers and find they are significantly more favourable than those of non-sin acquirers. A sin acquirer with a higher social risk might consider M&As more carefully than a non-sin firm, so they will have more chance to gain synergy from their target. We investigate the possibility that the more favourable short-term abnormal returns of sin acquirers in M&A announcements come from more favourable long-term operating performance. Our first hypothesis, therefore, is stated in an alternative form, as follows:

H1: Following M&A, the operating performance change of sin acquirers is more favourable than non-sin acquirers.³³

We could expect a more favourable long-term stock market return to reflect the more favourable long-term operating performance change of sin acquirers via a more favourable buy and hold abnormal return (BHAR) after the acquisition. However, even if the change in operating performance of sin acquirers is not significantly more favourable than non-sin acquirers, the BHAR of sin acquirers is still expected to be higher. Stulz (2005) and Beneish et al. (2008) prove that even negative net present value investments can be transformed into value-increasing projects in countries with a high risk of expropriation because M&As can transfer cash to harder-to-expropriate operating assets. In the context of this research, sin industries are stigmatized and against social norms; thus, the expropriation risk to sin firms is even “in favour” of the public interest. Therefore, sin firms often face a higher risk of expropriation. There is a lot of historical evidence about the increase in the expropriation risk when it is in favour of the public interest (even if unlawful) (e.g. land reform in many Asian countries in the 1950s).³⁴

³³ In other words, the difference between sin acquirers’ and non-sin acquirers’ operating performance change is positive.

³⁴ For example, the Chinese or North Vietnamese land reform in the 1950s, which killed up to millions and thousands of landlords respectively (see Roberts, 2006, p. 257). In modern society, where international organizations help to scrutinize legal actions and human rights, the risk of expropriation is reduced; however, it still exists and takes other forms. Examples include legislative restrictions (Janofsky, 2005) and adverse social activism (Bansal and Clelland, 2004; Galvin et al., 2005; Haniffa and Cooke, 2005; Devers et al., 2009; Banerjee and Bonnefous, 2011). We follow Duanmu (2014) in using the property rights protection index constructed by the Heritage Foundation to measure the risk of expropriation. However, as expected, the number of countries having this risk is low; only China, Croatia, and Indonesia have an index lower than 50 (i.e. the country is defined as “Expropriation is possible”). These countries only have 39 deals in sin industries, a very small proportion of the total. Another problem with the expropriation risk level is that it is biased and not reliable. Asiedu et al. (2009) point out that such indices do not accurately reflect developing countries, poor countries, or small countries. Moreover, it depends on the experts’ perspective. For these reasons, we believe that using the social norm level to reflect the level of expropriation risk has a good fit to our research.

Moreover, in Chapter 5, we find that sin acquirers are less motivated by market-timing than non-sin acquirers. As a result, we could expect there to be fewer market corrections for sin acquirers after acquisitions. Our second alternative hypothesis is based on the expectation that the long-term stock-market performance of a sin acquirer is more favourable than a non-sin acquirer after an acquisition:

*H2: Following M&As, the long-term stock return of sin acquirers is more favourable than non-sin acquirers.*³⁵

One of the most important determinants of sin industries research is social norms. For example, due to social norms, institutional investors might have fewer holdings of sin stocks in their portfolios (Hong and Kacperczyk, 2009; Liu et al., 2014). Social norms are different across countries (Knack and Keefer, 1997; Fauver and McDonald, 2014). Accordingly, in this work, we classify countries into two groups, high- and low-social-norm levels, to investigate whether the difference in social norm levels across countries affects M&As of sin firms. We expect that in high-social-norm countries, where people criticize sin industries heavily, the changes in operating performance of sin acquirers after M&As will be significantly more favourable than those of non-sin acquirers. The BHAR of sin acquirers will also be significantly more favourable than non-sin acquirers after acquisitions. In low-social-norm countries, where people are not so critical of sin industries, we expect to see less difference in BHAR between sin and non-sin acquirers. However, if the social norm levels do not affect the sin firm M&As, we may observe the same effects of M&As on sin firms regardless of whether the sin firm is in a high- or low-social-norm country.

4.3. Data and methodologies

4.3.1. Sample selection

We collect data about M&A deals in G20 countries from 1993 to 2017 from Thomson One Banker (TOB) database. In addition, we collect accounting and trading data from Datastream. Following Fauver and McDonald (2014) and Liu et al. (2014), we use the World Values Survey database to evaluate the international variations in people and investors' attitudes towards sin industries. The World Values Survey database covers almost 100 countries, nearly 90% of the world's population, with a total of almost 400,000 respondents. For our G20 sample, the World Values Survey has data for 20 countries with more than 171,000 respondents.

³⁵ In other words, the difference between sin acquirers' and non-sin acquirers' long-term stock return is positive.

[Insert Table 4.1 about here]

Table 4.1 offers an overview of our sample. First, it presents the number of deals triggered by sin (panel A) and non-sin (panel B) acquirers for countries in the G20 sample; second, the classification and changes in the classification of social norm levels of G20 countries (panel C); finally, the distribution of deals by year and industry (panel D).

To be included in our sample, the following criteria must be satisfied. First, the deal was announced and succeeded between 1993 and 2017.³⁶ Similar to other research (e.g. Powell and Stark, 2005; Gao and Mohamed, 2018), we apply a second criterion that the acquirer owns at least 50% share after the deal and less than 50% before it.³⁷ Third, the acquirer is in sin industries (manufacturing and/or distributing tobacco, manufacturing and/or distributing alcohol, and casinos). Fourth, the acquirer's accounting data is available. Fifth, the acquirer's and its target's ultimate parent are different.³⁸ In robustness checks, to eliminate any potential effects of multiple deals (i.e. one deal is affected by another deal), we require that there is no other deal by the same acquirer within three financial years around the completion day of an examined deal. The results with this restriction are robust to those reported in this study.

The final sample includes 690 deals triggered by sin acquirers. For the control deals, we follow the procedure of Hong and Kacperczyk (2009) and Fauver and McDonald (2014). We include all deals in comparable industries. These industries are Fama and French (1997) industries group 2 (food) for tobacco, group 3 (soda) for alcohol, and group 7 (fun) for casinos. The other screening criteria are similar to the sin industry group. There are 1,647 deals triggered by non-sin acquirers. Moreover, to ensure our sample does not suffer selection bias in the long-term market return analyses, we also include deals that do not have information about operating performance. Thus, in the market reaction analyses, there are 1,428 deals triggered by sin acquirers and 4,192 deals triggered by non-sin acquirers.

³⁶ The year 1993 is the earliest for which DataStream has comprehensive data including trading and accounting data. The sample ends in 2017 as we need at least two years to examine the change in performance.

³⁷ The reason for this is that 50% ownership in the target is the threshold for the acquirer to control/decide on the target's important businesses. This threshold also allows the acquirer to consolidate the target business in their balance sheet.

³⁸ The reason is that if the acquirer's and target's parent is one organization, the parent can intervene in the deal's characteristics, for example by settling the offering price. The parent organization may also do some technique to transfer profits/tax cheating.

4.3.2. Methodology

4.3.2.1. Operating performance measurements and the methods to assess the change in operating performance

We adopt a range of operating performance measures to ensure the comparability of our research with previous studies. Moreover, we aim to check whether these results have consensus. However, given that other operating performance measures converge to a similar conclusion, for brevity, we choose to only report EBITDA (earnings before interest, taxes, depreciation, and amortization) adjusted for changes in working capital (EBITDA- Δ WC); this is known in some previous studies as a “pure” cash flow (Powell and Stark, 2005). This “pure” measure can guarantee that it is hardly manipulated by the firm’s manager (Erickson and Wang, 1999; Powell and Stark, 2005). As is standard in financial analysis, these operating performance measures are then deflated before and after the takeover to construct comparable terms across firms. Similar to Powell and Stark (2005), Hardford et al. (2012), and Gao and Mohamed (2018), we use the book value of the total assets for this purpose.³⁹

Moreover, the number of M&As might increase in a period when the industry has a superior performance. However, the industry might suffer a slowdown period after that. Because of this, the absolute change in performance after M&A could be worse; however, the relative change in performance compared with the industry might be improved. To isolate the firm performance from the industry trend, we adopt two methods of adjustment. The first method is an adjustment for the performance of the industry to which the acquirer belongs. This method was popular prior to Barber and Lyon (1996) (e.g. Healy et al., 1992). However, some evidence suggests that acquirers are different from non-acquirers which are the same in industry, size, and performance (e.g. Ghosh, 2001). Because of these differences, there might be a bias when we only adjust for the industry performance. To overcome this, the second method uses matched firms that are in the same country, industry, and year, and have the closest size and performance to the acquirer. Also, for brevity, we choose to report the results adjusted for the matched firm’s performance. These procedures are similar to those employed by Powell and Stark (2005).

To test and assess the change in operating performance, we use the two most popular methods in the literature to investigate the change in operating performance: the change model and the intercept model (e.g. Powell and Stark, 2005; Gao and Mohamed, 2018). Moreover, since each

³⁹ The other operating performance measure is EBITDA (earnings before interest, taxes, depreciation, and amortization).

method has pros and cons, we can also compare the results across methods for robustness. For example, compared with the change model, the intercept model allows control for the persistent cash flows pre- and post-acquisition (Healy et al., 1992). However, the change model is less likely to give biased estimates due to the firm-specific factors that make the acquirer outperform industry-median firms (see Ghosh, 2001). We discuss these two methods further below.

First, the change model aims to identify the change in profitability for each firm. Following Powell and Stark (2005) and Gao and Mohamed (2018), we compare the median profitability of the three years prior to the takeover and the median profitability over three years subsequent to the merger. The choice of the three-year median before and after the acquisition is to reduce the effect of abnormal performance or manipulation. We use the Wilcoxon signed-rank test to examine whether the median post-acquisition performance is significantly different from the median pre-acquisition performance.

Second, following Healy et al., 1992, we adopt the intercept model. The equation for this model is given below:

$$IAOP_i^{post} = \beta_0 + \beta_1 IAOP_i^{pre} + \varepsilon_i \quad (4.1)$$

Where $IAOP_i^{post}$ and $IAOP_i^{pre}$ are post- and pre-takeover industry-adjusted operating performance measures in median for takeover i . The intercept β_0 is an estimate of the average improvements in performance arising from takeovers. The adjustment of acquirer performance for industry performance allows for a separation of firm-specific from industry-specific effects. For example, if the tobacco industry in country A suffers a decline in operating performance in the period X, the absolute difference in operating performance between post- and pre-acquisition might be negative; but the firm's relative performance, compared with other firms in the industry, might actually increase. Moreover, by controlling for pre-takeover performance, the mean of post-takeover performance left unexplained (i.e. the intercept) is attributed to the takeover. Controlling for pre-takeover performance also helps to reduce the bias due to the temporary and permanent factors that dominate the acquiring firm's operating performance and the industry.

However, both the original change model and the Healy et al. (1992) model have some potential bias as they use the operating performance adjusted for industry-median performance. For example, if an acquirer outperforms industry-median firms before the merger, which usually happens (Martynova et al., 2007), the industry benchmark might not be suitable. To overcome this, we use a matched firm, based on criteria of the same industry, the same year, and similar

pre-merger characteristics (e.g. performance and size) (see Barber and Lyon, 1996; Loughran and Vijh, 1997; Powell and Stark, 2005; Gao and Mohamed, 2018).

4.3.2.2. Long-term market performance

For long-term stock return performance analysis, we use three-year stock return performance starting from the end of the effective month of a completed deal. This choice of time frame is common in the literature (e.g. Mitchell and Stafford, 2000; Li et al., 2018b) and allows the market to fully reflect the effect of M&A on the stock price. For robustness, we use two methods to calculate BHAR. In the first method, we calculate the three-year return of the acquirer after the acquisition, and then, minus the three-year return of the market index. This procedure is similar to the standard BHAR method as in Barber and Lyon (1997). However, this method could introduce some biases to the results, including a new listing bias, a skewness bias, and a rebalancing bias, as reported by Barber and Lyon (1985). To overcome that, we use a matched firm from the same primary industry, year, and country, with the closest size and performance to the acquirer. The matched firm selection procedure is similar to that used widely in the literature (e.g. Powell and Stark 2005). First, for each acquirer, we identify all potential matched firms that have a size defined by total assets in the range of 50% to 200% of that acquirer.⁴⁰ These potential matched firms are checked to ensure that they do not take part in any acquisition with controlling right (i.e. 50% target share or higher) within three years before or after the effective day of the investigated sin acquirer. Then we choose the matched firm that has the closest market value to book value ratio of the total assets to the investigated sin acquirer. Finally, we calculate the three-year return difference between the sin acquirer and the matched firm for the BHAR. For brevity, we report the results adjusted for the matched firm's performance.

4.3.2.3. Constructing the social norm levels in different countries

To classify countries into high and low social norm levels, following Knack and Keefer (1997) and Fauver and McDonald (2014), we use the World Values Survey database. People's moral, environmental, and religious views are utilized to reflect the attitude towards sin industries in each country. We say more about this procedure in section 3.3.2.2.

⁴⁰ Similar to other studies in the literature (e.g. Powell and Stark, 2005), the difference in size between acquirer and non-acquirer is 100%; in other words, the non-acquirer could be half or twice the size of the acquirer. This criterion allows comparability between acquirers and non-acquirers.

In panel C of Table 4.1, we present the classification of social norm levels of G20 countries in our sample. The numbers one and zero represent high and low social norm levels, respectively. We follow Knack and Keefer (1997) and Fauver and McDonald (2014) to construct this classification. We say more about this construction in section 3.3.2.2. Across the four year groupings, the social norm classification is stable for most countries, with the exceptions of India, Indonesia, South Africa, South Korea, Sweden, and Switzerland.

4.4. Results

4.4.1. The difference in operating performance change between sin acquirers and non-sin acquirers after acquisition

[Insert Table 4.2 about here]

In Table 4.2, we adopt the change model to investigate the difference in operating performance change between sin acquirers and non-sin acquirers after acquisition. We present the results initially for all acquirers (column I) and then split them into sin acquirers (column II) and non-sin acquirers (column III) to allow comparison across the two categories. Similarly, we present results initially for all the G20 sample (panel A). We then split them into high-social-norm countries (panel B) and low-social-norm countries (panel C). The purpose of this is to examine the effect of social norm levels on operating performance. In summary, the improvement in operating performance of either sin acquirers or non-sin acquirers does not have any economic meaning as the values are close to zero. Moreover, there is no significant difference in operating performance change between sin acquirers and non-sin acquirers in the whole G20 sample, or the high-social-norm or low-social-norm subsamples. At this point, we find no support for H1 (*Following M&A, the operating performance change of sin acquirers is more favourable than non-sin acquirers*).

[Insert Table 4.3 about here]

In Table 4.3, we adopt the intercept model to investigate the difference in operating performance change between sin acquirers and non-sin acquirers. We structure Table 4.3 similarly to Table 4.2. We present results initially for all acquirers (column I) and then split them into sin acquirers (column II) and non-sin acquirers (column III), to allow comparison across the two categories. We also split all-country results (panel A) into high-social-norm countries (panel B) and low-social-norm countries (panel C). In each column, we regress the post-performance against the pre-performance of the acquirer. We also add control variables to

control for deal characteristics (*diversifying deal, private target*), firm characteristics (*ln asset, Tobin-Q, leverage*) and other fixed effects (*country, year, industry*). The main focus is the intercept in the regression that is attributed to the takeover. There is no intercept in these columns that shows a significant improvement in operating performance after the acquisition. The results suggest that neither sin acquirers nor non-sin acquirers can improve their operating performance after an acquisition. To examine whether the relative change in operating performance of sin acquirers is higher than non-sin acquirers or not, we focus on the columns labelled (I). None of the three regressions across panels A, B, or C show a significant coefficient for the *sin acquirer* dummy. This suggests there is no difference between sin and non-sin acquirers. The result is consistent with our result using the change model in Table 4.2. Again, we find no support for H1.

4.4.2. Buy and hold abnormal return difference between sin acquirers and non-sin acquirers after acquisitions

[Insert Table 4.4 about here]

In Table 4.4, we present the long-term returns in the stock market of the acquirer after the acquisition. The return is measured three years after the acquisition, starting from the end of the effective month. We adjust for the matched-firm return in the same period of time. Matched firms are chosen from the same country, year, and industry, having the closest size and market to book value of the total assets (see 4.3.2). In column (I), we report on the whole database, irrespective of whether the criteria for accounting data are met. This is because we want to make sure the sample used in the previous analysis does not suffer from selection bias. In column (II), we report the deals with accounting data available (used earlier in the operating performance analysis). As in Tables 4.2, and 4.3, we present the whole sample in panel A; then we split it into the high-social-norm (panel B) and low-social-norm (panel C) countries to allow comparison across the two categories.

We first consider the deals with accounting data (column II). In Table 4.4, panel A (all G20 countries), using the median value, the three-year BHAR for sin acquirers is significantly positive at 4.66%, while the three-year BHAR for non-sin acquirers is negative but insignificant at -1.51%. Therefore, the BHAR of sin acquirers is significantly higher than non-sin acquirers, by about 6.17%. In panel B (high-social-norm countries), the three-year BHAR for sin acquirers rises to 5.63%, while for non-sin acquirers it is still negative but insignificant at -2.34%. The BHAR of sin acquirers is therefore significantly higher than non-sin acquirers, by about 7.97%.

Finally, in panel C (low-social-norm countries), the three-year BHAR for sin acquirers is positive but insignificant at 2.02%, while for non-sin acquirers it is still negative but insignificant at -1.48%. The BHAR of sin acquirers is higher than non-sin acquirers by about 3.50%, but the difference is insignificant. At this point, we find support for H2 (*Following M&A, the long-term stock return of sin acquirers is more favourable than non-sin acquirers*). This difference is most significant in high-social-norm countries.

Using mean values, the pattern of the results remains similar to the median values. In Table 4.4, column II, panel A, the three-year BHAR for sin acquirers is positive but insignificant at 7.38%, while for non-sin acquirers it is negative but insignificant at -0.83%. The BHAR of sin acquirers is about 8.21% higher than non-sin acquirers, but the difference is not significant. In panel B (high-social-norm countries), the three-year BHAR for sin acquirers rises to 16.27%, while for non-sin acquirers it is positive but insignificant at 5.84%. The BHAR of sin acquirers is significantly higher than non-sin acquirers, by about 10.43%. Finally, in panel C (low-social-norm countries), the three-year BHAR for sin acquirers is positive but insignificant at 1.24%, while for non-sin acquirers it is still negative but insignificant at -5.00%. The BHAR of sin acquirers is higher than non-sin acquirers by about 6.24%, but the difference is insignificant.

To check whether the results above are robust when including deals without accounting data, we consider column I. In all G20 countries, considering the median values, though the three-year BHAR of sin acquirers becomes insignificant, it remains significantly higher than non-sin acquirers, by about 4.3%. In high-social-norm countries, the three-year BHAR of sin acquirers becomes insignificant; it is higher than that for non-sin acquirers by about 0.87%, but the difference is insignificant. Finally, in low-social-norm countries, the results remain similar to column II. The results for mean values draw a similar conclusion to column II and offer strong support for H2.

Though it is not the focus of our study, Table 4.4 also reports the BHAR for non-sin acquirers. Qualitatively, the BHAR of non-sin acquirers is negative. The results for non-sin acquirers in this international study are consistent with the vast majority of studies in the literature: the long-term market performance is significantly negative, or at best insignificant. (For evidence in the European market see Croci (2007); for the Canadian market see Dutta and Jog (2009); for the US market see Bessembinder and Zhang (2013) and Bessembinder et al. (2018).) A few papers report positive returns, but they are in specific circumstances (e.g. Zhou et al., 2015: state-owned acquirers in China).

[Insert Table 4.5 about here]

To explore the pure difference in BHAR between sin and non-sin acquirers, in Table 4.5 we add more control variables for deal, firm, industry, and country characteristics. These controls are used popularly in the literature (see Netter et al., 2011; Alexandridis et al., 2017). They include *diversifying deal*, *ln (acquirer asset)*, *Tobin's Q*, *private target*, and *leverage*. In the whole G20, the BHAR of sin acquirers is more favourable than non-sin acquirers. Considering deals with accounting data (column 2), ceteris paribus, the BHAR of sin acquirers is 21.22% higher than non-sin acquirers. In high-social-norm countries (column 4), this dominance is greater: ceteris paribus, the BHAR of sin acquirers is 31.01% higher than non-sin acquirers. In low-social-norm countries (column 6), the difference in BHARs between sin and non-sin acquirers is insignificant.

Considering all deals (column 1), we have robust results. In the whole G20, ceteris paribus, the BHAR of sin acquirers is 35.76% higher than non-sin acquirers. In high-social-norm countries (column 3), this dominance increases to 62.33%. In low-social-norm countries (column 5), the difference in BHAR between sin and non-sin acquirers is insignificant. In this analysis, combined with the results for only the deals with accounting data, we find strong support for Hypothesis 2.

For the control variables used in this study, we also draw similar conclusions to prior M&A research. First, there is a negative relationship between acquirer size (*ln asset*) and long-term stock return (e.g. Moeller et al., 2004). Second, *Tobin's Q* has a negative effect on market performance (e.g. Bouwman et al., 2009; Duchin and Schmidt, 2013). Third, higher *leveraged* acquirers have higher market returns than their peers (e.g. Faccio and Masulis, 2005). However, there are mixed relationships between market performance and *diversifying deal*, as well as between market performance and *private target*. For robustness of the results, in untabulated work, we also control additional variables (e.g. *payment method*, *Herfindahl index*, *corruption index*); we find that the results are qualitatively unchanged. However, adding more variables will reduce the sample size and, sometimes, the explanatory power of the model. Therefore, we use the optimum number of control variables, selected based on the adjusted R-squared method.

4.5. Robustness checks

4.5.1. Propensity score matching to control for endogeneity of being a sin acquirer

Concerning the endogeneity problem, omitted correlated variable bias or sample selection bias may induce a spurious difference in performance between sin and non-sin acquirers. For example, the sin firms might be larger than the non-sin firms in our sample, as in the US (Beneish et al., 2008) or G20 (Fauver and McDonald, 2014). This raises a concern that a large proportion of “big” firms in our sample might be sin firms. Bigger means that they have more resources to acquire another firm. Through the acquisition, they can increase their size dramatically, gaining economies of scale and scope. Also, as sin firms are typically cash-rich (Beneish et al., 2008), they do not need to use much leverage. Note that this leads to an unbalanced sample. We address potential endogeneity concerns by employing the propensity score matching procedure (see Rosenbaum and Rubin, 1983). By this method, we can compare the performance of a sin firm with a similar non-sin firm in a more balanced and comparable sample. To perform the matching, first, we measure the propensity score, which is the conditional probability of receiving the treatment (i.e. being a sin firm), by estimating a probit regression for the likelihood of an acquirer being a sin firm. In the probit regression, we control for acquirer size (ln asset), diversifying, Tobin-Q, private target, leverage, country, year, and industry dummies. We then match each observation in the treated group with the nearest observation in the control group based on the propensity score (i.e. the predicted probability taken from the probit estimation). We use a calliper of 5%, which means the maximum distance of the probability of control from treatment is 5%. For robustness, we also use maximum distances of 1% and 10% and get similar results. We also adopt the non-replacement option, which means that each acquirer in the control group can only appear and match one acquirer in the treated group (see Ge and Lennox, 2011).

[Insert Table 4.6 about here]

[Insert Table 4.7 about here]

In Tables 4.6 and 4.7, we present the differences in the operating performance and long-term market return after M&A between sin acquirers and non-sin acquirers, controlling for the endogeneity of the acquirer being a sin firm using the propensity score matching approach. In Table 4.6, there is no significant difference in operating performance between sin acquirers and non-sin acquirers in the whole G20 or in high/low-social-norm subsamples. The results are robust with the results in Tables 4.2 and 4.3. In Table 4.7, the BHARs of sin acquirers are significantly higher than non-sin acquirers in the G20 sample. In high-social-norm countries, the differences are strengthened. In deals with accounting data available, in the whole G20, the BHAR of sin acquirers is 7.50% higher than non-sin acquirers, but the difference is

insignificant. In high-social-norm countries, the BHAR of sin acquirers is significantly higher than non-sin acquirers by 36.39%. In low-social-norm countries, the BHAR of sin acquirers is 4.74% less than non-sin acquirers, but the difference is insignificant. Considering all deals, the results are robust. In the whole G20, the BHAR of sin acquirers is 13.35% higher than non-sin acquirers, but the difference is insignificant. In high-social-norm countries, the BHAR of sin acquirers is significantly higher than non-sin acquirers by 26.55%. In low-social-norm countries, the BHAR of sin acquirers is 10.41% less than non-sin acquirers, but the difference is insignificant. The results are similar to those in Table 4.4.

4.5.2. Entropy balance controls for model dependency

We adopt an additional check for endogeneity using entropy balance. The entropy balance could also control for model dependency more efficiently. Hainmueller (2012) discusses this advantage over the popularly used propensity score matching method. In summary, if propensity score matching retains those control observations that are similar to treated observations, the entropy balance will retain all control observations and reweight them so that the interesting covariates used in our model will have identical values across the treated and control groups. In propensity score matching, we drop some observations and might lose some information; however, entropy balance can keep more information.

[Insert Table 4.8 about here]

[Insert Table 4.9 about here]

In Tables 4.8, and 4.9, we present the regression analyses for the operating performance improvement and long-term market return after M&A between sin acquirers and non-sin acquirers. We control for the endogeneity of the acquirer being a sin firm and model dependency using the entropy balanced approach to get a reweighted sample. In Table 4.8, again, across three regressions, the coefficients for sin acquirers are insignificant. The intercepts are also insignificant. The results are similar to our analyses in Table 4.3. Also, the long-term market return analyses in Table 4.9 offer consistent support for H2. Considering deals with accounting data available, in the whole G20, *ceteris paribus*, the BHAR of sin acquirers is significantly higher than non-sin acquirers by 21.82%. In high-social-norm countries, *ceteris paribus*, the BHAR of sin acquirers is significantly higher than non-sin acquirers by 39.97%. In low-social-norm countries, the BHAR of sin acquirers is 15.44% higher than non-sin acquirers, but the difference is insignificant. Moreover, considering all deals, the results are robust. In the G20, the BHAR of sin acquirers is 33.05% higher than non-sin acquirers. In high-social-norm

countries, the BHAR of sin acquirers is significantly higher than non-sin acquirers by 63.78%. In low-social-norm countries, the BHAR of sin acquirers is 16.48% higher than non-sin acquirers, but the difference is insignificant. In general, the results are robust with all the earlier analyses.

4.5.3. Robustness checks

We adopt additionally two major and common checks. First, we add a requirement on time between two deals by the same acquirer to ensure that the results are not influenced by other acquisitions (Megginson et al., 2004; Dutta and Jog, 2009). In general, the results are the same as the main text; however, we have a smaller number of observations. For example, if we require a time distance of three years between two deals by the same acquirer (see Tables 4.10 and 4.11), there are a total of 428 observations in the analysis. If we reduce this time requirement to two years, the results are robust with about 2,000 observations. The main advantage of this restriction is that we can isolate the effects of other deals; the main disadvantage is that we may get less information from the sample. In the second check, different to the intercept model, we treat the change in the operating performance as the dependent variable (see Table 4.12). Again, we get robust results.

[Insert Table 4.10 about here]

[Insert Table 4.11 about here]

[Insert Table 4.12 about here]

In Table 4.10, the intercepts in all three regressions are insignificant. There is no difference in operating performance change between sin acquirers and non-sin acquirers in either the whole G20 or either subsample. In Table 4.11, in the whole G20, *ceteris paribus*, the BHAR of sin acquirers is 14.08% higher than non-sin acquirers but the difference is insignificant. In high-social-norm countries, *ceteris paribus*, the BHAR of sin acquirers is significantly higher than non-sin acquirers by 36.57%. In low-social-norm countries, the BHAR of sin acquirers is 8.65% higher than non-sin acquirers but the difference is insignificant. Finally, in Table 4.12, the coefficients for sin acquirers in all three regressions are insignificant. There is no difference in operating performance change between sin acquirers and non-sin acquirers in either the G20 countries or either subsample.

4.6. The Conclusion of Chapter 4

Although much is known about the impact of M&As in general, especially in terms of improving operating performance and the long-term market returns of acquirers, much less is known about the impact of M&As in sin industries. Moreover, prior studies on M&As in sin industries have mainly explored short-term market performance (e.g. Beneish et al., 2008). We broaden this stream of literature by investigating acquirers' long-term performance in sin industries. We also include the variations in social norms across countries and investigate how acquirers' long-term performance differs across countries due to this variation.

Building on legitimacy theory and the theory of corporate social stigma, we predict that the operating performance and long-term market return of sin acquirers will be more favourable than non-sin acquirers after M&As. However, analysing 690 deals in sin industries and 1,647 deals in non-sin industries in the G20 from 1993 to 2017, we find no difference in operating performance change between sin acquirers and non-sin acquirers. Interestingly, the long-term BHAR of sin acquirers is more favourable than non-sin acquirers. Moreover, in high-social-norm countries, the difference is greater. The median BHAR of sin acquirers is significantly higher than non-sin acquirers, by about 6.17% for the whole sample; in high-social-norm countries, the difference rises to 7.97%.

For robustness, we use various operating performance measures (e.g. EBITDA, "pure" cash flow, and scaled by the book value of the total assets). We also extend the sample in the long-term market return analysis by including deals without accounting data (1,428 deals triggered by sin acquirers and 4,192 deals triggered by non-sin acquirers). Moreover, to control for potential endogeneity, we adopt the propensity score matching and entropy balance procedures. Finally, to ensure that our results are not influenced by other acquisitions, we exclude deals by the same acquirer within three years. The results remain robust throughout these procedures.

The contradiction between the lack of improvement in operating performance and the long-term gain in the stock market of sin acquirers in sin industries is not surprising. For sin industries, even if a deal does not have a positive net present value, there is a mechanism to turn that negative value into a value-increasing deal in a high-risk-of-expropriation environment (Stulz, 2005; Beneish et al., 2008). With a high risk of expropriation, holding a large amount of financial assets or cash is risky for a sin firm as that firm will attract the attention of politicians and private litigants. By doing M&As, even value-decreasing deals, the sin firm transfers the cash to a physical asset, creating shallower pockets that attract less attention.

Facing less risk of expropriation creates value for a sin firm. As the requirement for “legal expropriation” is that it is in the public interest (see UNCTAD, 2000), we expect that this effect is even more pronounced in high-social-norm countries since the expropriation of a sin acquirer is “in favour” of the public interest. However, there is no clear empirical evidence for a relationship between social norms and expropriation risk; this area requires further research. Moreover, in the next chapter, we find that the motives of sin acquirers are relatively better than those of non-sin acquirers; this could also explain the contradiction above.

In two ways, this research contributes to the literature. First, this is the first work to investigate operating performance change and long-term stock-market performance after M&As in sin industries in the global context. This study is also unique as we include the variations in social norms by country and time and investigate how long-term performance is different across countries. Second, this study reinforces the empirical research finding that there is no clear change in operating efficiency after an acquisition; and in sin M&As, the market responds positively. Moreover, this research demonstrates that the short-term findings in Chapter 3 extend to long-term stock-market performance.

Tables

Table 4.1: G20 sample

Country	(A) Sin acquirer deals		(B) Non-sin acquirer deals		(C) Social norm classification			
	Freq.	Percent	Freq.	Percent	1994-1998	1999-2004	2005-2009	2010-2014
Australia	36	5.22	32	1.94	0	0	0	0
Brazil	5	0.72	10	0.61	1	1	1	1
Canada	12	1.74	44	2.67	1	1	1	1
China	33	4.78	57	3.46	0	0	0	0
Croatia	4	0.58	14	0.85	1	1	1	1
France	35	5.07	13	0.79	1	1	1	1
Germany	8	1.16	20	1.21	0	0	0	0
India	11	1.59	40	2.43	0	1	1	1
Indonesia	2	0.29	15	0.91	0	0	1	1
Japan	70	10.14	367	22.28	0	0	0	0
Mexico	3	0.43	11	0.67	1	1	1	1
Netherlands	27	3.62	10	0.61	0	0	0	0
South Africa	2	0.29	13	0.79	0	1	1	1
South Korea	2	0.29	57	3.46	1	0	0	1
Spain	10	1.45	16	0.97	0	0	0	0
Sweden	13	1.88	13	0.79	1	0	0	0
Switzerland	51	7.39	13	0.79	1	1	0	0
Turkey	2	0.29	14	0.85	0	0	0	0
United Kingdom	152	22.03	225	13.66	0	0	0	0
United States	214	31.01	663	40.26	1	1	1	1
Total	690	100	1,647	100	9	9	9	10

(D) Distribution of deal by year and industry													
Year	Industry												
	Tobacco		Food		Alcohol		Soda		Casino		Entertainment		All
	Freq.	Percent	Freq.	Percent	Freq.	Percent	Freq.	Percent	Freq.	Percent	Freq.	Percent	
1993	2	2.38	2	0.31	1	0.33	4	1.54	0	0.00	2	0.27	11
1994	2	2.38	19	2.91	9	2.93	2	0.77	3	1.00	6	0.82	41
1995	4	4.76	20	3.06	8	2.61	7	2.69	3	1.00	13	1.77	55
1996	2	2.38	21	3.22	11	3.58	5	1.92	2	0.67	16	2.18	57
1997	2	2.38	33	5.05	6	1.95	12	4.62	6	2.01	28	3.81	87
1998	4	4.76	25	3.83	14	4.56	5	1.92	8	2.68	23	3.13	79
1999	2	2.38	26	3.98	6	1.95	6	2.31	23	7.69	32	4.36	95
2000	4	4.76	21	3.22	17	5.54	7	2.69	17	5.69	30	4.09	96
2001	1	1.19	29	4.44	27	8.79	12	4.62	13	4.35	35	4.77	117
2002	2	2.38	20	3.06	9	2.93	12	4.62	7	2.34	26	3.54	76
2003	4	4.76	13	1.99	10	3.26	12	4.62	15	5.02	20	2.72	74
2004	1	1.19	19	2.91	21	6.84	4	1.54	15	5.02	20	2.72	80
2005	4	4.76	20	3.06	15	4.89	14	5.38	21	7.02	30	4.09	104
2006	0	0.00	33	5.05	16	5.21	20	7.69	19	6.35	44	5.99	132
2007	3	3.57	27	4.13	13	4.23	18	6.92	10	3.34	61	8.31	132
2008	5	5.95	30	4.59	20	6.51	8	3.08	10	3.34	25	3.41	98
2009	3	3.57	36	5.51	14	4.56	11	4.23	5	1.67	36	4.90	105
2010	5	5.95	33	5.05	9	2.93	10	3.85	7	2.34	17	2.32	81
2011	6	7.14	35	5.36	8	2.61	18	6.92	17	5.69	39	5.31	123
2012	3	3.57	33	5.05	10	3.26	10	3.85	30	10.03	48	6.54	134
2013	6	7.14	25	3.83	23	7.49	13	5.00	13	4.35	44	5.99	124
2014	2	2.38	42	6.43	10	3.26	14	5.38	12	4.01	41	5.59	121
2015	7	8.33	28	4.29	6	1.95	14	5.38	14	4.68	39	5.31	108
2016	6	7.14	36	5.51	11	3.58	15	5.77	16	5.35	39	5.31	123
2017	4	4.76	27	4.13	13	4.23	7	2.69	13	4.35	20	2.72	84
Total	84	100	653	100	307	100	260	100	299	100	734	100	2337

This Table presents the number of deals those triggered by sin (panel A) and non-sin (panel B) acquirers in G20 sample. The classification and changes in the classification of the social norm levels of G20 countries are presented in panel C: the numbers one and zero represent high and low social norm levels, respectively. We begin with a set of six questions from the WVS covering three aspects (two questions from each) (moral, religious, environmental attitudes). Answers to the six WVS questions are converted into a 0-10 scale where 0 is least concerning and 10 is most concerning. Then we sum all marks for all questions from each respondent to get the total marks. For each country and year, we calculate the average marks of all respondents and use this as a proxy for the country's social norm score. We sort countries' social norm scores in each period. We identify countries above the median as high-social-norm countries and those below the median as low-social-norm countries. For the robustness of the proxy, we make changes in the set of questions and this does not make much change in this classification and the analyses later. The four year-grouping is based on WVS. The distribution of deal by year and industry is presented in (Panel D). Food, soda, and entertainment industries are comparable industries with Tobacco, alcohol, and casino respectively.

Table 4.2: Operating performance change and the difference in operating performance change between sin acquirer and non-sin acquirer after acquisition – Change model

Variable	(I) All acquirer	(II) Sin acquirer	(III) Non-sin acquirer	(II-III) Difference
Panel A: All G20 countries				
(a) 3-year-pre-M&A median	0.0000	0.0005	0.0000	0.0005
(b) 3-year-post-M&A median	0.0000	0.0009	0.0000	0.0009
(b)-(a) Post less pre	-0.0002***	-0.0013	0.0000***	-0.0013
Obs.	2,337	690	1,647	
Panel B: High-social-norm G20 countries				
(a) 3-year-pre-M&A median	0.0000	0.0000	0.0000	0.0000
(b) 3-year-post-M&A median	0.0000	0.0021	0.0000	0.0021
(b)-(a) Post less pre	0.0000***	-0.0048	-0.0006***	-0.0042
Obs.	1,047	299	755	
Panel C: Low-social-norm G20 countries				
(a) 3-year-pre-M&A median	0.0000	0.0017	0.0000	0.0017
(b) 3-year-post-M&A median	0.0000	0.0003	0.0000	0.0003
(b)-(a) Post less pre	-0.0006	-0.0006	-0.0006	0.0000
Obs.	1,290	391	892	

The Table shows the operating performance medians for 2,337 M&As completed over the period 1993 to 2017. Performance is measured as pre-depreciated profit, EBITDA adjusted for short-term accruals, EBITDA – Δ WC. The performance is adjusted for the similar non-acquirer's performance. It is calculated by the performance measure for each firm less the median performance of three control firms matched according to industry, size and pre-performance, measured as three-year median prior to takeover. In row (a), 3-year-pre-M&A median is the median value of 3 years before the effective year of the deal. Similarly, in row (b), 3-year-post-M&A median is the median value of 3 years after the effective year of the deal. In row (c), post less pre is the median of the differences between the median post-performance and median pre-performance for each combination. ***, **, * indicates a significant difference using a Wilcoxon signed ranks test at the 1%, 5% and 10% levels, respectively.

Table 4.3: The difference in operating performance change between sin acquirer and non-sin acquirer after acquisition– Intercept model

Variable	Panel A: All G20 countries			Panel B: High-social-norm G20 countries			Panel C: Low-social-norm G20 countries		
	(I) All acquirer	(II) Sin acquirer	(III) Non-sin acquirer	(I) All acquirer	(II) Sin acquirer	(III) Non-sin acquirer	(I) All acquirer	(II) Sin acquirer	(III) Non-sin acquirer
Intercept	0.0053 (0.11)	0.0603 (1.21)	0.0117 (0.23)	0.0020 (0.03)	-0.0951 (-1.24)	0.0283 (0.35)	-0.0280 (0.46)	-0.0117 (-0.17)	-0.0141 (-0.18)
Pre-performance	0.2461*** (7.44)	0.2479*** (4.05)	0.2582*** (6.20)	0.1156** (2.22)	-0.0392 (-0.39)	0.1527** (2.44)	0.3368*** (7.79)	0.3967*** (5.46)	0.3006*** (5.44)
<i>Control variables</i>									
Sin acquirer	0.0031 (0.52)			-0.0092 (-0.94)			0.0087 (1.04)		
Diversifying Deal	-0.0064 (-1.40)	-0.0353*** (-3.60)	0.0012 (0.23)	-0.0048 (-0.64)	-0.0368** (-2.25)	0.0064 (0.69)	-0.0035 (-0.61)	-0.0206 (-1.59)	-0.0003 (-0.04)
Ln asset	0.0042** (2.59)	0.0066* (1.80)	0.0043** (2.29)	0.0002 (0.09)	0.0067 (0.92)	-0.0002 (-0.08)	0.0043** (1.98)	0.0054 (1.27)	0.0060** (2.24)
Tobin Q	0.0033 (1.02)	0.0268*** (4.75)	-0.0027 (-0.67)	0.0030 (0.56)	0.0363*** (3.25)	-0.0040 (-0.69)	0.0051 (1.09)	0.0300*** (4.61)	-0.0023 (-0.41)
Private target	0.0120** (2.04)	0.0260** (2.18)	0.0059 (0.85)	0.0219** (2.23)	0.0645*** (3.01)	0.0145 (1.16)	0.0105* (1.70)	0.0083 (0.71)	0.0098 (1.43)
Leverage	0.0023* (1.81)	0.0083*** (3.23)	-0.0001 (-0.10)	0.0000 (0.02)	0.0096*** (2.69)	-0.0025 (-1.30)	0.0014 (0.84)	-0.0050 (-1.21)	0.0007 (0.35)
Country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Comparable industries dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.1492	0.2983	0.1704	0.1835	0.4256	0.2444	0.2866	0.5157	0.3027
Obs.	2,333	689	1,644	1,052	298	754	1,281	391	890

This Table reports the results of regressions of operating performance on pre-performance and other control variables for G20 sample over the period 1993-2017. Performance is measured as pre-depreciated profit, EBITDA adjusted for short-term accruals, $EBITDA - \Delta WC$. The performance is adjusted for the similar non-acquirer's performance. It is calculated by the performance measure for each firm less the median performance of three control firms matched according to industry, size and pre-performance, measured as three-year median prior to takeover. *Sin acquirer* takes a value of 1 if the acquirer in the sin industries (i.e., tobacco, alcohol, and casino), and 0 otherwise. Ln asset is calculated by taking the natural logarithm of acquirer's assets. The private target is a dummy variable and takes a value of 1 if target is private firm, and 0 otherwise. The diversifying deal is a dummy variable and takes a value of 1 if acquirer and target are from different industries (as measured by 2-digit SIC), and 0 otherwise. The t-statistics in parentheses are based on standard errors adjusted for heteroscedasticity. The dependent and control variables are winsorized at the 1st and 99th percentiles. * indicates significance at the 10% level; ** at the 5% level; and *** at the 1% level. Numbers are rounded up to the fourth decimal place.

Table 4.4: BHAR and BHAR difference between sin acquirer and non-sin acquirer after acquisition

Variable	(I) All deals			(II) Deals with accounting data available		
	Sin acquirer (a)	Non-sin acquirer (b)	Difference (a-b)	Sin acquirer (a)	Non-sin acquirer (b)	Difference (a-b)
Panel A: All G20 countries						
Mean	-0.0159	-0.1612***	0.1453***	0.0738	-0.0083	0.0821
Median	-0.0047	-0.0477	0.043*	0.0466*	-0.0151	0.0617**
Obs.	1,428	4,192		690	1647	
Panel B: High-social-norm G20 countries						
Mean	-0.0310	-0.2751***	0.2441***	0.1627*	0.0584	0.1043*
Median	-0.0801	-0.0888	0.0087	0.0563*	-0.0234	0.0797*
Obs.	632	1,908		299	755	
Panel C: Low-social-norm G20 countries						
Mean	-0.0040	-0.0661**	0.0621	0.0124	-0.0500	0.0624
Median	0.0081	-0.0313	0.0393	0.0202	-0.0148	0.0350
Obs.	796	2,284		391	892	

The Table shows the long-term market return and the difference in long-term market return after M&A between sin acquirer and non-sin acquirer. We use 3-year Buy and Hold Abnormal Return (BHAR) to measure the performance. There are 1,428 sin acquirers and 4,192 non-sin acquirers' M&As completed over the period 1993 to 2017. The BHAR is calculated by subtracting the matched non-acquirer firm three-year return from the acquirer three-year return. Three-year return starts from the end of the effective month of the acquisition. ***, **, * indicates a significant difference using t-test and Wilcoxon rank-sum for mean and median at the 1%, 5% and 10% levels, respectively.

Table 4.5: Regression analyses for BHAR difference between sin acquirer and non-sin acquirer with controls

Variable	(I)		(II)		(III)	
	All country		High-social-norm country		Low-social-norm country	
	(1) All deals	(2) Deals with Accounting data available	(3) All deals	(4) Deals with Accounting data available	(5) All deals	(6) Deals with Accounting data available
Sin acquirer	0.3576*** (4.46)	0.2122** (2.00)	0.6233*** (4.27)	0.3101* (1.85)	0.1619 (1.34)	0.2348 (1.58)
<i>Control variables</i>						
Diversifying Deal	0.0723 (1.14)	-0.0133 (-0.17)	0.0971 (0.87)	-0.0234 (-0.15)	0.0912 (1.29)	-0.0787 (-0.80)
Ln asset	-0.0317* (-1.80)	-0.0836*** (-4.14)	-0.0205 (-0.67)	-0.0287 (-0.64)	-0.0462* (-1.95)	-0.1276*** (-3.27)
Tobin Q	-0.1462*** (-4.78)	-0.2225*** (-6.53)	-0.1891*** (-3.37)	-0.1541* (-1.88)	-0.1200*** (-4.34)	-0.2565*** (-5.81)
Private target	-0.0692 (-0.62)	0.0808 (0.69)	-0.1640 (0.80)	0.2133 (0.75)	0.0438 (0.39)	-0.0012 (-0.01)
Leverage	0.0475*** (2.81)	0.1072*** (4.67)	0.0418 (1.64)	0.1163** (2.02)	0.0448** (2.16)	0.0972*** (3.17)
Constant	-1.9909*** (-4.54)	1.0719 (0.93)	-1.5406** (-2.19)	1.3347*** (2.65)	0.7566** (2.35)	1.7453*** (3.34)
Country dummies	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Industries dummies	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.0807	0.1191	0.1147	0.1858	0.1016	0.1722
Adj R-squared	0.0578	0.0696	0.0747	0.0960	0.0642	0.0974
Obs.	4,773	1,953	2,219	877	2,554	1,076

The Table shows the regression analysis for the difference in the long-term market return after M&A between sin acquirer and non-sin acquirer. We use Buy and Hold Abnormal Return (BHAR) to measure the performance. There are 4,773 observations completed over the period 1993 to 2017. We control for the deal and firm characteristics. *Sin acquirer* takes a value of 1 if the acquirer is in the sin industries (i.e., tobacco, alcohol, and casino), and 0 otherwise. Ln asset is calculated by taking the natural logarithm of acquirer's assets. The private target is a dummy variable and takes a value of 1 if target is private firm, and 0 otherwise. The diversifying deal is a dummy variable and takes a value of 1 if acquirer and target are from different industries (as measured by 2-digit SIC), and 0 otherwise. The t-statistics in parentheses are based on standard errors adjusted for heteroscedasticity. The variables are winsorized at the 1st and 99th percentiles. ***, **, * indicates a significant at the 1%, 5%, and 10% levels, respectively.

Table 4.6: The difference in operating performance change between sin acquirer and non-sin acquirer after acquisition – Using propensity score matching to control for endogeneity

Operating performance difference between sin- and non-sin acquirer	
Panel A: All G20 countries	
Mean	0.0079 (1.11)
Paired Obs.	550
Panel B: High-social-norm G20 countries	
Mean	0.0082 (0.70)
Paired Obs.	229
Panel C: Low-social-norm G20 countries	
Mean	0.0008 (0.09)
Paired Obs.	321

The Table shows the difference in long-term operating performance after M&A between sin acquirer and non-sin acquirer, for 550 paired observations (i.e., sin acquirers versus non-sin acquirers' M&As) completed over the period 1993 to 2017. We control for the endogeneity of being sin firm of the acquirer using propensity score matching approach. By this approach, we could match and compare the performance between sin acquirer and non-sin acquirer whose have the similar characteristics. The variables used for matching include sin target dummy, private target dummy, diversifying deal dummy, Tobin-Q, ln(acquirer asset), year and country dummies. The change (Δ) is calculated by subtracting the selected operating performance three-year median after the effective year of acquisition from three-year median before the acquisition. The definitions for operating performance measures are discussed in Table A1. ***, **, * indicates a significant difference using t-test and Wilcoxon rank-sum for mean and median at the 1%, 5%, and 10% levels, respectively.

Table 4.7: BHAR difference between sin acquirer and non-sin acquirer after acquisition
– Using propensity score matching to control for endogeneity

	(I) All deals	(II) Deals with accounting data available
Panel A: All G20 countries		
Mean	0.1335**	0.0750
Paired Obs.	1205	532
Panel B: High-social-norm G20 countries		
Mean	0.2655***	0.3639***
Paired Obs.	526	223
Panel C: Low-social-norm G20 countries		
Mean	0.1041	-0.0474
Paired Obs.	679	309

The Table shows the difference in the long-term market return after M&A between sin acquirer and non-sin acquirer. We use Buy and Hold Abnormal Return (BHAR) to measure the performance. There are 1,205 paired observations (i.e., sin acquirers versus non-sin acquirers' M&As) completed over the period 1993 to 2017. We control for the endogeneity of being sin firm of the acquirer using propensity score matching approach. By this approach, we could match and compare the performance between sin acquirer and non-sin acquirer whose have the similar characteristics. The variables used for matching include sin target dummy, private target dummy, diversifying deal dummy, Tobin-Q, ln(acquirer asset), year and country dummies. The BHAR in market benchmark column is calculated by subtracting the three-year market index return from the acquirer three-year return. The BHAR in the matched-firm benchmark is calculated by subtracting the matched firm three-year return from the acquirer three-year return. Three-year return starts from the end of the effective month of the acquisition. ***, **, * indicates a significant difference using t-test and Wilcoxon rank-sum for mean and median at the 1%, 5%, and 10% levels, respectively.

Table 4.8: Regression analyses for the difference in operating performance change between sin acquirer and non-sin acquirer after acquisition with controls and entropy balanced to adjust for model dependency

Variable	(I) All G20 countries	(II) High-social-norm G20 countries	(III) Low-social-norm G20 countries
Intercept	-0.0230 (0.652)	-0.0012 (-0.02)	-0.0553 (-0.87)
Pre-performance	0.2906*** (7.94)	0.0537 (1.05)	0.4334*** (9.43)
<i>Control variables</i>			
Sin acquirer	0.0036 (0.57)	-0.0079 (-0.78)	0.0065 (0.79)
Diversifying Deal	-0.0143** (-2.55)	-0.0144 (-1.62)	-0.0084 (-1.19)
Ln asset	0.0052*** (2.61)	-0.0003 (-0.09)	0.0050** (2.14)
Tobin Q	0.0091** (2.41)	0.0150** (2.08)	0.0091** (1.97)
Private target	0.0107 (1.55)	0.0207* (1.87)	0.0075 (1.05)
Leverage	0.0027** (2.10)	0.0007 (0.32)	-0.0005 (-0.35)
Country dummies	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes
Industries dummies	Yes	Yes	Yes
R-squared	0.1905	0.1863	0.3815
Adj R-squared			
Obs.	2,333	1,052	1,281

The Table shows the regression analysis for the difference in long-term operating performance after M&A between sin acquirer and non-sin acquirer, for 2,333 observations completed over the period 1993 to 2017. We control for deal and firm characteristics. To address our concern about the model dependency problem, we use the entropy balance approach (see Hainmueller, J., 2012). We reweight the control group so that we can get the balance in covariates between the control group and the treatment group. The following variables are used in this approach: sin target dummy, private target dummy, diversifying deal dummy, Tobin-Q, ln(acquirer asset). The t-statistics in parentheses are based on standard errors adjusted for heteroscedasticity. The variables are winsorized at the 1st and 99th percentiles. ***, **, * indicates a significant at the 1%, 5%, and 10% levels, respectively.

Table 4.9: Regression analyses for BHAR difference between sin acquirer and non-sin acquirer after acquisition with controls and entropy balanced to adjust for model dependency

Variable	(I) All G20 countries		(II) High-social-norm G20 countries		(III) Low-social-norm G20 countries	
	(1) All deals	(2) Deals with Accounting data available	(3) All deals	(4) Deals with Accounting data available	(5) All deals	(6) Deals with Accounting data available
	Sin acquirer	0.3305*** (4.04)	0.2182* (1.82)	0.6378*** (4.20)	0.3997* (1.83)	0.1648 (1.19)
<i>Control variables</i>						
Diversifying Deal	0.1033 (1.48)	-0.0352 (-0.34)	0.1390 (1.12)	0.0728 (0.38)	0.1018 (1.30)	-0.0889 (-0.97)
Ln asset	-0.0094 (-0.45)	-0.0574* (-1.91)	0.0037 (0.10)	0.0009 (0.02)	-0.0186 (-0.70)	-0.0967** (-2.50)
Tobin Q	-0.1501*** (-4.66)	-0.1696*** (-4.17)	-0.2057*** (-3.49)	-0.0679 (-0.94)	-0.1066*** (-3.70)	-0.2237*** (-4.62)
Private target	-0.0045 (-0.03)	0.1816 (0.84)	-0.0691 (-0.24)	0.5154 (1.02)	0.0945 (0.75)	-0.0260 (-0.25)
Leverage	0.0403** (2.21)	0.0647* (1.95)	0.0412 (1.45)	0.1091 (1.46)	0.0286 (1.51)	0.0601** (2.43)
Constant	-2.2153*** (-4.72)	1.2083*** (4.00)	-2.0847** (-2.40)	1.1381** (2.02)	0.5530* (1.78)	1.7743*** (4.42)
Country dummies	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Industries dummies	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.0800	0.0992	0.1094	0.1788	0.1043	0.1665
Adj R-squared	0.0571	0.0485	0.0692	0.0882	0.0670	0.0912
Obs.	4,773	1,953	2,219	877	2,554	1,076

The Table shows the regression analysis for the difference in the long-term market return after M&A between sin acquirer and non-sin acquirer. We use Buy and Hold Abnormal Return (BHAR) to measure the performance. There are 4,773 observations completed over the period 1993 to 2017. We control for the deal and firm characteristics. *Sin acquirer* takes a value of 1 if the acquirer in the sin industries (i.e., tobacco, alcohol, and casino), and 0 otherwise. Ln asset is calculated by taking the natural logarithm of acquirer's assets. The private target is a dummy variable and takes a value of 1 if target is private firm, and 0 otherwise. The diversifying deal is a dummy variable and takes a value of 1 if acquirer and target are from different industries (as measured by 2-digit SIC), and 0 otherwise. To address our concern about the model dependency problem, we use the entropy balance approach (see Hainmueller, J., 2012). We reweight the control group so that we can get the balance in covariates between the control group and the treatment group. The following variables are used in this approach: sin target dummy, private target dummy, diversifying deal dummy, Tobin-Q, ln(acquirer asset). ***, **, * indicates a significant at the 1%, 5% and 10% levels, respectively.

Table 4.10: Regression analysis for the difference in operating performance change between sin acquirer and non-sin acquirer after acquisition with isolating other deal's effect

Variable	All G20 countries	High-social-norm G20 countries	Low-social-norm G20 countries
Intercept	-0.0429 (-0.44)	-0.0278 (-0.21)	-0.1168 (-0.69)
Pre-performance	0.5854*** (4.25)	0.6100** (2.04)	0.5995*** (3.53)
<i>Control variables</i>			
Sin acquirer	0.0234 (0.85)	0.1423 (1.67)	-0.0139 (-0.29)
Diversifying Deal	0.0435 (1.65)	0.0865 (1.42)	0.0179 (0.41)
Ln asset	0.0014 (0.007)	-0.0058 (-0.56)	0.0018 (0.10)
Tobin Q	-0.0043 (-0.29)	-0.0082 (-0.29)	0.0017 (0.09)
Private target	0.0243 (0.53)	0.0168 (0.21)	0.0259 (0.28)
Leverage	0.0019 (0.18)	-0.0029 (-0.17)	0.0135 (0.53)
Country dummies	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes
Comparable industries dummies	Yes	Yes	Yes
R-squared	0.5454	0.8193	0.6364
Adj R-squared	0.2522	0.4871	0.2543
Obs.	405	159	246

This Table reports the results of regressions of operating performance on pre-performance and other control variables for G20 sample over the period 1993-2017. We isolate the effect of other deal by requiring the distance between two deals of the same acquirer is about 3 years. Performance is measured as pre-depreciated profit, EBITDA adjusted for short-term accruals, $EBITDA - \Delta WC$. The performance is adjusted for the similar non-acquirer's performance. It is calculated by the performance measure for each firm less the median performance of three control firms matched according to industry, size and pre-performance, measured as three-year median prior to takeover. *Sin acquirer* takes a value of 1 if the acquirer in the sin industries (i.e., tobacco, alcohol, and casino), and 0 otherwise. Ln asset is calculated by taking the natural logarithm of acquirer's assets. The private target is a dummy variable and takes a value of 1 if target is private firm, and 0 otherwise. The diversifying deal is a dummy variable and takes a value of 1 if acquirer and target are from different industries (as measured by 2-digit SIC), and 0 otherwise. The t-statistics in parentheses are based on standard errors adjusted for heteroscedasticity. The dependent and control variables are winsorized at the 1st and 99th percentiles. * indicates significance at the 10% level; ** at the 5% level; and *** at the 1% level. Numbers are rounded up to the fourth decimal place. The deals which are announced in the period of three financial years before and after other deals' announcements of the same acquirer are excluded.

Table 4.11: BHAR difference between sin acquirer and non-sin acquirer after acquisition with isolating other deal's effect

Variable	All G20 countries	High-social-norm G20 countries	Low-social-norm G20 countries
Sin acquirer	0.1408 (0.49)	0.3657* (2.12)	0.0865 (0.29)
<i>Control variables</i>			
Diversifying Deal	0.0472 (0.22)	0.0021 (0.00)	0.1412 (0.57)
Ln asset	-0.0146 (-0.12)	0.0782 (0.99)	-0.0348 (-0.94)
Tobin Q	-0.1865* (-1.81)	-0.2033 (-1.19)	-0.0329 (-0.17)
Private target	0.1632 (-0.65)	-0.5952 (-0.76)	0.0736 (0.11)
Leverage	0.0413* (1.92)	0.1252** (2.21)	0.0547*** (3.34)
Constant	-2.0414*** (-2.71)	-2.1995* (-1.96)	-2.125*** (-4.27)
Country dummies	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes
Industries dummies	Yes	Yes	Yes
R-squared	0.2432	0.4721	0.2875
Adj R-squared	0.0632	0.1211	0.0571
Obs.	405	159	246

The Table shows the regression analysis for the difference in the long-term market return after M&A between sin acquirer and non-sin acquirer. We use Buy and Hold Abnormal Return (BHAR) to measure the performance. There are for 428 observations completed over the period 1993 to 2017. We control for the deal and firm characteristics. *Sin acquirer* takes a value of 1 if the acquirer in the sin industries (i.e., tobacco, alcohol, and casino), and 0 otherwise. Ln asset is calculated by taking the natural logarithm of acquirer's assets. The private target is a dummy variable and takes a value of 1 if target is private firm, and 0 otherwise. The diversifying deal is a dummy variable and takes a value of 1 if acquirer and target are from different industries (as measured by 2-digit SIC), and 0 otherwise. The t-statistics in parentheses are based on standard errors adjusted for heteroscedasticity. The variables are winsorized at the 1st and 99th percentiles. ***, **, * indicates a significant at the 1%, 5%, and 10% levels, respectively. The deals which are announced in the period of three financial years before and after other deals' announcements of the same acquirer are excluded.

Table 4.12: Regression analysis for the difference in operating performance change between sin acquirer and non-sin acquirer after acquisition with the dependent variable is the change in operating performance

Variable	All G20 countries	High-social-norm G20 countries	Low-social-norm G20 countries
Sin acquirer	0.0084 (1.04)	-0.0026 (-0.17)	0.0124 (1.23)
<i>Control variables</i>			
Diversifying Deal	0.0020 (0.33)	0.0030 (0.28)	0.0019 (0.25)
Ln asset	0.0008 (0.37)	-0.0019 (-0.50)	-0.0020 (-0.72)
Tobin Q	0.0012 (0.26)	-0.0028 (-0.37)	0.0042 (0.64)
Private target	0.0002 (0.03)	0.0053 (0.35)	0.0016 (0.18)
Leverage	0.0022 (1.33)	0.0042 (1.53)	-0.0021 (-1.03)
Constant	-0.0128 (-0.21)	-0.1326 (-1.26)	0.0307 (0.40)
Country dummies	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes
Comparable industries dummies	Yes	Yes	Yes
R-squared	0.0950	0.1843	0.1432
Adj R-squared	0.0485	0.1053	0.0708
Obs.	2,333	1,052	1,281

This Table reports the results of regressions for the difference in operating performance change between sin acquirer and non-sin acquirer after M&A for G20 sample over the period 1993-2017. The dependent variable is the change in operating performance. Performance is measured as pre-depreciated profit, EBITDA adjusted for short-term accruals, $EBITDA - \Delta WC$. The performance is adjusted for the similar non-acquirer's performance. It is calculated by the performance measure for each firm less the median performance of three control firms matched according to industry, size and pre-performance, measured as three-year median prior to takeover. Sin acquirer takes a value of 1 if the acquirer in the sin industries (i.e., tobacco, alcohol, and casino), and 0 otherwise. Ln asset is calculated by taking the natural logarithm of acquirer's assets. The private target is a dummy variable and takes a value of 1 if target is private firm, and 0 otherwise. The diversifying deal is a dummy variable and takes a value of 1 if acquirer and target are from different industries (as measured by 2-digit SIC), and 0 otherwise. The t-statistics in parentheses are based on standard errors adjusted for heteroscedasticity. The dependent and control variables are winsorized at the 1st and 99th percentiles. * indicates significance at the 10% level; ** at the 5% level; and *** at the 1% level. Numbers are rounded up to the fourth decimal place.

5. The motive difference between sin and non-sin acquirers

5.1.Introduction

Arguably, extensive research has been carried out to explain the motives behind the tremendous increase in merger and acquisition (M&A) transactions over time. In particular, M&A decisions may be driven by *value-increasing motives* (e.g. increased market power, economies of scale) or *value-decreasing motives* (e.g. market-timing, agency, hubris) (Jensen and Ruback, 1983; Jensen, 1986; Roll, 1986; Martynova and Renneboog, 2008; Renneboog and Vansteenkiste, 2019). With value-increasing motives, acquirers tend to benefit from the synergy of merging the target's physical operations (Bradley et al., 1988); with value-decreasing motives, managers of acquiring firms serve their own interests at the expense of shareholders' wealth (Nguyen et al., 2012).

While both value-enhancing and value-destructive motives are common in M&As (e.g. Seth et al., 2002; Alexandridis et al., 2017), sin acquirers' motives might be different due to social norms and stigmatizations. Specifically, sin firms (tobacco, alcohol, and casinos) are heavily criticized and stigmatized by society as their core businesses deviate from widely accepted organizational behaviour standards, and are severely harmful (Leventis et al., 2013).⁴¹ Tobacco, alcohol, and gambling firms have long been denounced for the addictive nature of their products and their devastating impact on families and communities (Hudson, 2008; Vergne, 2012). Thus, following the theory of organizational social stigma, sin firms live with a permanent *negative headline risk* and remain under the microscope of value judgements (Fabozzi et al., 2008, p. 86). In addition to negative social assessments, sin firms experience significant hostility (Hudson, 2008), which may take the form of legislative restrictions (Janofsky, 2005) and/or adverse social activism (Bansal and Clelland, 2004; Galvin et al., 2005; Haniffa and Cooke, 2005; Devers et al., 2009; Banerjee and Bonnefous, 2011). In addition, according to legitimacy theory, a corporation must act in line with society's values and norms to continue to exist (Dowling and Pfeffer, 1975). However, if a firm's operation deviates from social norms, as is generally perceived to be so for sin firms, it has three options: 1) stop operating in the sin industry; 2) improve society's opinion of the sin industry, which is challenging (Dowling and Pfeffer, 1975); or 3) try to be identified as a strong fit to social

⁴¹ According to the WHO (2019), tobacco-related diseases cause more than 8 million deaths per year, equivalent to 15 deaths per minute. The numbers for alcohol-related diseases are 3 million and 6 deaths. However, there is no exact estimate for deaths from gambling as this is a long-term effect that is difficult to detect.

legitimacy, for example by engaging in socially responsible activities. Accordingly, motivated by both stigmatization and legitimacy theories, this study investigates the main motives behind sin acquirers' decisions to undertake M&As and whether sin acquirers are more driven by value-increasing motives (e.g. synergy) and less by value-decreasing motives (e.g. market-timing) than non-sin acquirers. To this end we follow Rhodes-Kropf et al.'s (2005) decomposition procedure of the M/B ratio (market value/book value) to examine acquirers' motives as market-timing or synergy. Rhodes-Kropf et al. (2005) argue that the difference between acquirer and non-acquirer in M/B decomposition components can infer the motives. While the difference in the M/V (market value/true value) component represents market-timing, V/B (true value/book value) represents synergy motives.

Social norms have been shown to affect financial decisions, with norm-constrained institutional investors displaying a lower tendency to hold sin stock than non-sin stock and financial analysts providing less coverage of sin industries than non-sin industries (Hong and Kacperczyk, 2009). However, social norms differ across countries; thus disparate influences across financial markets are likely to arise. For example, Fauver and McDonald (2014) document that sin stocks are treated differently depending on the social norms present in the country, with sin firms shown to have lower Tobin's Q and higher abnormal returns than non-sin firms in sin countries.⁴² We investigate how the variety in social norms across countries affects the motives behind sin M&As. We expect that in high-social-norm countries, when facing public criticism, sin acquirers are more driven by value-increasing motives and less by value-decreasing motives. Using a global analysis, besides examining the M&A motives of sin acquirers, we see how these motives differ across countries with different social norms. We focus on the G20 countries, as they are economically significant and representative.

We collect 936 M&A deals by sin acquirers and 1,912 M&A deals by non-sin acquirers in the G20 from 1993 to 2017. To investigate the acquirers' motives, we adopt the Rhodes-Kropf et al. (2005) market-to-book (M/B) decomposition procedure. M/B is decomposed into two components: market-to-value (M/V, capturing overvaluation and the market-timing motive) and value-to-book (V/B, capturing the synergy motive). We document that both sin and non-sin acquirers are inspired by market-timing as well as synergy motives. However, sin acquirers are less driven by market-timing than non-sin acquirers. Economically, sin acquirers are

⁴² Fauver and McDonald (2014) classify countries based on their strength of disapproval for sin-related activities, using the terminology of sin (high disapproval) and non-sin (low disapproval) countries. These correspond to our high- and low-social-norm countries, respectively.

15.88% less overvalued than non-sin acquirers. The difference in market-timing motives between sin and non-sin acquirers is more pronounced in high-social-norm countries (23.85% in mean value). However, the difference in synergy motives between sin and non-sin acquirers is insignificant. We document consistent results with alternative proxies for motives (e.g. for market-timing, we use pre-acquisition three-year market return; for synergy motives, we use pre-acquisition three-year sale growth).

We examine other motives in further analysis. Besides market-timing and synergy, acquirers may be inspired by agency and hubris. We find that sin acquirers have less agency problem than non-sin acquirers. In high-social-norm countries, the difference in agency motives between sin and non-sin acquirers is greater. Moreover, in high-social-norm countries, acquirers in general are less hubristic than non-acquirers, while in low-social-norm countries, acquirers are more hubristic than non-acquirers. However, sin acquirers are more hubristic than non-sin acquirers in both high- and low-social-norm countries. The results are robust when we control for model dependency and endogeneity problems using entropy balance (Hainmueller, 2012).

To the best of our knowledge, there is limited research on this area. In fact, sin industries are heavily criticized by society. As a result, investors and financial analysts often neglect sin firms (Hong and Kacperczyk, 2009). Sin stocks are less helped by non-constrained institutions such as pension plans, as compared to mutual or hedge funds which are natural arbitrageurs. Fabozzi et al. (2019) investigate whether there is undervaluation of sin stocks and document that sin bonds tend to be overvalued, resulting in sin bonds underperforming their non-sin counterparts. We expand their work by providing evidence on the M&A field. Colonnello et al. (2019) develop an ethical preference-based model that reproduces the average return and volatility spread between sin and non-sin stocks. We look at the importance of ethical preferences for investors' choices. Given that knowledge on sin industries is underdeveloped, our research could benefit both academics and sin industry stakeholders.

This research contributes to the extant literature by explaining how M&A motives differ across sin and non-sin acquirers. Furthermore, it examines the motives of sin acquirers across countries with varying social norms. Prior studies on M&As in sin industries have mostly explored short-term (e.g. Beneish et al., 2008) or long-term market performance. To the best of our knowledge, this is the first study to investigate sin acquirers' motives. The findings of this study could provide investors in sin industries with better understanding. We find that sin

acquirers are less motivated by market-timing than non-sin acquirers; as a result, investors should notice the potential for market correction after the acquisition, especially for non-sin acquirers. Similarly, policymakers could gain more knowledge of sin industries. Besides the greater potential for market correction with non-sin acquirers, they also have more agency problem than sin acquirers. Policymakers should pay more attention to non-sin acquirers to better protect investors.

This chapter is structured as follows. Section 5.2 formulates hypotheses. Section 5.3 outlines data sources, sample, and methodology. Section 5.4 reports empirical findings. Section 5.5 presents robustness checks. Section 5.6 is the discussion and conclusion.

5.2.Hypotheses development

Acquirer motives in M&As can be classified as either value-increasing or value-decreasing. With value-increasing motives (e.g. market power, response to industry shocks, economies of scale), the acquirer tends to benefit from synergy by merging with the physical operations of the target (Bradley et al., 1988). Healy et al. (1992) find that merged firms have a higher level of operating efficiency. Ghosh and Jain (2000) show that financial leverage increases significantly after a merger; as a result, the shareholders of merging firms gain benefits from deductibility of interest payments on corporate debt, or through an expropriation of wealth from bondholders. In contrast, value-decreasing motives (e.g. agency, hubris, and market-timing) serve the managers (Nguyen et al., 2012) at the cost of the acquirer's shareholders.

We review further three main value-decreasing motives: market-timing, agency, and hubris. First, Shleifer and Vishny (2003) document that acquisitions are basically stock market driven, as overvalued acquirers use stock to buy relatively undervalued targets even though both firms might be overvalued. In line with Shleifer and Vishny (2003), Rhodes-Kropf et al. (2005) and Dong et al. (2006) note that acquirers are on average more highly overvalued than their targets; and high-valuation acquirers are more likely to use stock as the payment method. If the acquirers are motivated by market-timing, they tend to use their overvalued stock to pay for M&As. According to Myers and Majluf (1984), this signals the market that the acquiring firm is overvalued, causing a subsequent drop in stock price.

Second, agency problems arise when managers pursue excessive growth to serve their personal interests at the expense of shareholders (Morck et al., 1990). In another form, managers diversify to reduce risk to managerial human capital (Amihud and Lev, 1981). Managers tend

to avoid activities that may reduce discretionary cash flows (Jensen, 1986; Stulz, 1990). There is evidence of agency problems in M&As. For example, some acquisitions are made to enhance the dependence of the firm on the skills of the acquiring managers (Shleifer and Vishny, 1989), or the acquirer is more interested in maximizing firm size than firm value (Morck et al., 1990). As a result, deals motivated by agency problems are value-decreasing transactions (Malatesta, 1983). Third, there is strong evidence of hubris in M&As (e.g. Berkovitch and Narayanan, 1993; Barnes, 1998). For example, hubristic managers tend to overpay for targets and engage in acquisitions even when there is no synergy (Roll, 1986). Moeller et al. (2004) document that larger-firm managers are more hubristic; they tend to offer higher takeover premiums. Consequently, they are more likely to complete a takeover than smaller firms. Hayward and Hambrick (1997) report that the acquisition premium is positively correlated with CEO hubris.

Before we continue to discuss motives in sin M&As, it is important to define two concepts. First, a firm operating in a sin industry (e.g. tobacco, gambling, and alcohol; see Hong and Kacperczyk, 2009) is considered a sin firm. It is largely accepted that casinos, tobacco, and alcohol are sin stocks. These industries are considered sinful due to their addictive properties and undesirable consequences for society when consumed excessively. Second, social norms are the rules and standards that members of a society understand. Social norms guide and constrain social behaviour (Liu et al., 2014). In the economics field, the impacts of social norms on economic behaviour and market outcomes have been well studied (Becker, 1957; Akerlof, 1980). Variations in social norms across countries lead to variations in attitudes towards sin stocks. Differences in attitudes explain differences in institutional ownership and financial analyst coverage of the sin industry across countries (Liu et al., 2014). Sin stocks have significantly lower pricing in high-social-norm countries. In high-social-norm countries, stock returns of sin investments are higher than non-sin investments (Fauver and McDonald, 2014).

Motives in sin M&As are strongly influenced by legitimacy theory and the theory of organizational stigma. We discuss these two theories in 2.3. In brief, they explain why we could expect potential value-increasing motives from sin acquirers. While the theory of organizational stigma suggests that keeping disapproval at a minimum level or mitigating the negative consequences of social stigmatization are crucial for sin firms, legitimacy theory suggests that sin firms should polish their tarnished image, for example by engaging in socially responsible activities, so they can be identified as having a strong fit to social legitimacy.

While there are few studies directly examining the motives driving sin M&As, there is evidence to suggest that firms might engage in strategies to enhance their reputations or attenuate the organizational stigma associated with their activities. While not specifically focused on sin firms, Deng et al. (2013) find that acquiring firms with higher levels of corporate social responsibility experience higher M&A announcement returns. In the context of corporate social responsibility, empirical research on sin industries has proven the intention of sin firms to conduct socially responsible activities (Ahrens, 2004). Also, Grougiou et al. (2016) document a higher tendency for sin firms to issue standalone CSR reports; this, they argue, carries a strategic intent to distract from their activities, reducing organizational stigma and litigation proceedings. In addition, to polish their image and attract more investors, sin firms produce higher quality financial information than non-sin firms (Kim and Venkatachalam, 2011). Boone and Uysal (2020) find that acquisition announcement returns are sensitive to differences in the environmental reputation of the acquirer and target. Further, their findings support the view that firms take reputation into account in M&A decisions, with environmental reputation an important consideration in the market for corporate control as either an acquirer or target. It seems, therefore, that sin firms may strategically engage in M&A activity for the purpose of enhancing reputation or legitimizing their activities so as to reduce organizational stigmatization.

Moreover, most research on sin M&As focuses on the short-term market reaction and supports a positive abnormal return for sin acquirer M&A announcements. Beneish et al. (2008) investigate 88 acquisitions of tobacco firms in the US from 1952 to 2002. Contrary to findings for non-sin M&As, they document a positive return for tobacco acquirers, even when such firms are big and cash-rich. The abnormal positive returns for tobacco acquirers derive from lowering the expected cost of expropriation and increasing the ability to influence politicians. Exploratory analysis supports a positive return for acquirers in the alcohol and gambling sectors also, though the evidence is preliminary. In addition, in Chapter 3, we explore the short-term abnormal returns in M&A announcements of sin acquirers in G20 countries and report significant positive abnormal returns. One of the mechanisms that could explain this is that a sin acquirer with a good motive will consider M&As more carefully, so they will have more chance to gain synergy from the target.

It is also important to note that, as sin firms face the neglect and stigmatization of society, they suffer from higher regulatory scrutiny and litigation risk than non-sin firms (Beneish et al.,

2008; Kim and Venkatachalam, 2011). They are also at risk of facing customer boycotts. These factors lead to higher costs of capital for sin firms (Hong and Kacperczyk, 2009). To overcome those disadvantages, sin firms need to improve their image and reputation. With this incentive, we expect that sin firms will be driven by a value-increasing motive (i.e. synergy) in M&As. This leads us to our first hypothesis, stated in an alternative form as follows:

H1: The sin acquirer is purely motivated by synergy in M&As

In practice, directly measuring a value-increasing motive is difficult as mergers involve multiple motives. Amihud and Lev (1981) suggest that M&As allow firms to achieve more stable operating performance, helping the acquirer's manager to reduce risk to his human capital. Donaldson and Lorsch (1983) suggest that acquirers conduct M&As to enhance their firms' long-run survival chances and protect managers from outside monitoring. Shleifer and Vishny (1989) provide evidence that some acquirers simultaneously seek long-term growth and better job security for the acquiring manager. Berkovitch and Narayanan (1993) conclude that synergy, hubris, and agency exist together in some takeovers. Hodgkinson and Partington (2008) and Arnold and Parker (2009) examine UK acquisitions and conclude that mergers may have multiple motives. Specifically, both studies report that UK mergers are probably related to synergy and market-timing. Mehrotra et al. (2011) indicate that the lack of wealth gains during merger announcements in Japan is consistent with the implication that multiple and conflicting motivations may be involved.

Hence, we compare sin and non-sin acquirers to generate a relative measure for sin acquirers' value-increasing motives. If both sin and non-sin acquirers are motivated by market-timing (a value-destroying motive), sin acquirers are expected to be less motivated by this than non-sin acquirers, because they wish to avoid damage to organizational reputation or legitimacy. Using the M/B ratio as a proxy for overvaluation, we can investigate whether sin acquirers are less motivated by market-timing via the interaction between the sin acquirer and the M/B ratio. Similarly, if both sin and non-sin acquirers are motivated by synergy (a value-increasing motive), sin acquirers are expected to be more motivated by this than non-sin acquirers, because they wish to enhance organizational reputation or legitimacy to offset organizational stigma. Using long-term operating performance as a proxy for value-enhancing motives, we can investigate whether sin acquirers are more motivated by synergy via the interaction between the sin acquirer and long-term operating performance. For ease of exposition, we split the second hypothesis into two:

H2a: The sin acquirer is more motivated by synergy than the non-sin acquirer in M&As

H2b: The sin acquirer is less motivated by market-timing than the non-sin acquirer in M&As

There is variation in social norms across countries (Knack and Keefer, 1997; Fauver and McDonald, 2014), and social norms are among the most important determinants of sin industries (e.g. Hong and Kacperczyk, 2009; Fauver and McDonald, 2014; Liu et al., 2014). In this section, we categorize countries into high- and low-social-norm groups to investigate whether across-country differences in social norm levels affect motives in sin M&As. We expect that in high-social-norm countries, where people denounce sin industries, sin firms need to consider their decisions more carefully. As a result, the difference in M&A motives between sin and non-sin acquirers will be wider. In low-social-norm countries, people are less critical of sin industries, so that the difference in motives between sin and non-sin acquirers will be less. Our third alternative hypotheses are:

H3a: In high-social-norm countries, the sin acquirer is more motivated by synergy than the non-sin acquirer in M&As

H3b: In high-social-norm countries, the sin acquirer is less motivated by market-timing than the non-sin acquirer in M&As

5.3.Data and methodologies

5.3.1. Sample selection

[Insert Table 5.1 about here]

We collect data about M&A deals from 1993 to 2017 in G20 countries from Thomson One Banker (TOB) database. In addition, we collect accounting and stock trading data from Datastream. For the North American countries, the accounting data are calibrated with Compustat North America. We use the World Values Survey database to evaluate the international variation in people's attitudes towards sin industries (e.g. Fauver and McDonald, 2014; Liu et al., 2014)). It covers almost 100 countries, around 90% of the world population, with a total of 400,000 respondents. For our G20 sample, the World Values Survey has data for 16 countries with more than 100,000 respondents. Table 5.1 offers an overview of our G20 16-country sample. First, it presents the number of deals triggered by sin (panel A) and non-

sin (panel B) acquirers by country in the G20 sample. Panel C presents the classification and change in the classification of social norm levels of G20 countries. Panel D reports the distribution of M&A deals by year and industry.

To be included in our sample, the following criteria must be satisfied (Harford et al., 2009; Barbopoulos et al., 2012; Ahmed and Elshandidy, 2020). First, the deal is announced and completed between 1993 and 2017.⁴³ Second, the acquirer has to own at least 50% share after the deal and less than 50% before the deal.⁴⁴ Third, the acquirer is in sin industries (i.e. manufacturing and/or distributing tobacco, manufacturing and/or distributing alcohol, and casinos). Fourth, the acquirer's trading and accounting data are available. Fifth, the ultimate parents of acquirer and target are different.⁴⁵ The final sample includes 936 M&A deals undertaken by sin acquirers. For the control deals, we follow the procedure of Hong and Kacperczyk (2009) and Fauver and McDonald (2014) and include all deals in comparable industries. These industries are Fama and French (1997) industries group 2 (food) for tobacco, group 3 (soda) for alcohol, and group 7 (fun) for casinos. The other screening criteria are similar to the sin industry group. As a result, we have 1,912 non-sin deals completed by non-sin acquirers.

To identify the motives of sin and non-sin acquirers, we also need non-acquirers as benchmarks. The difference between acquirers and non-acquirers is what motivates a firm to become an acquirer. The non-acquirers are all firms in the same industry, country, and year as each acquirer in our sample. For example, if in our sample there is an acquirer in the tobacco industry, in the US, in the year 2015, we also gather all non-acquirers in the US tobacco industry in 2015. We collect 4,817 non-acquirers in sin industries and 10,915 non-acquirers in non-sin industries.

5.3.2. Methodology

5.3.2.1. Sin acquirers' motives

⁴³ The year 1993 is the earliest for which DataStream has comprehensive data including trading and accounting. The sample ends in 2017 as we need at least two years to examine the change in performance.

⁴⁴ The reason for this is that 50% ownership in the target is the threshold for the acquirer to control/decide on the target's important businesses. This threshold also allows the acquirer to consolidate the target business in their balance sheet.

⁴⁵ The reason is that if the acquirer's and target's parent is one organization, the parent can intervene in the deal's characteristics, for example by settling the offering price. The parent organization may also perform some technique to transfer profits/ tax cheating.

To identify sin acquirers' motives, we adopt the Rhodes-Kropf et al. (2005) market-to-book (M/B) decomposition procedure. M/B is decomposed into two components: market-to-value and value-to-book.

$$\text{Ln}(M/B) = \text{Ln}(M/V) + \text{Ln}(V/B) \quad (5.1)$$

We use lowercase letters to denote values expressed in logs and uppercase letters to denote the same values expressed in standard units. (5.1) can be rewritten as:

$$m - b = (m - v) + (v - b) \quad (5.2)$$

Where M is the market value of equity, B is the book value of equity, and V is the intrinsic value of equity. Following Rhodes-Kropf et al. (2005), the intrinsic value (V) can be calculated as a linear function of book value of equity, net income, and leverage. To capture the variation in investment opportunities across times and industries, the parameters are allowed to vary. To get the parameters of the linear function, we follow these steps as in Rhodes-Kropf et al. (2005):

$$m_{it} = \alpha_{0jt} + \alpha_{1jt}b_{it} + \alpha_{2jt}ni_{it}^+ + \alpha_{3jt}(I_{(<0)})_{it}ni_{it}^+ + \alpha_{4jt}Lev_{it} + \varepsilon_i \quad (5.3)$$

We run cross-sectional regressions of (5.3) for each industry and year to estimate the parameters α_{jt} , where ni_{it} is the absolute value of net income of firm i at time t . I is an indicator function for negative net income observations. Lev is the market leverage ratio. The subscript j stands for industry. ε_{it} is a natural proxy for misvaluation, capturing the deviation of intrinsic value from the observed market value of equity. Following Rhodes-Kropf et al. (2005), we then take the time series average of α_{jt} , to compute the long-run parameters. Finally, the intrinsic value (V) can be calculated as:

$$v_{it} = \bar{\alpha}_{0jt} + \bar{\alpha}_{1jt}b_{it} + \bar{\alpha}_{2jt}ni_{it}^+ + \bar{\alpha}_{3jt}(I_{(<0)})_{it}ni_{it}^+ + \bar{\alpha}_{4jt}Lev_{it} + \varepsilon_i \quad (5.4)$$

To test H₁, we compare the two components between sin acquirers and sin non-acquirers. To examine H₂, we compare each component between sin acquirers and non-sin acquirers. To investigate H₃, we split the sample into high- and low-social-norm subsamples and compare the results. Then, to control for country, year, and industry fixed effects and evaluate the two components' effect on merger acquisitiveness (Yim, 2013), we run the probit model with the

dependent variable as a dummy variable having a value of 1 if the firm is an acquirer in that year, and 0 otherwise. The independent variables are two components of M/B.⁴⁶

We also use alternative motive proxies to check whether the results from the decomposition procedure are robust. We use the M/B ratio and three-year-before-acquisition market return as proxies for market-timing motives (Nguyen et al., 2012). We use growth in sales and net income as proxies for synergy motives (Nguyen et al., 2012). In addition, we investigate whether acquirers are motivated by agency via the natural logarithm of assets (free cash flow/total assets) (Jensen, 1986; Moeller et al., 2004). We investigate the hubris motive via Tobin's Q (Nguyen et al., 2012). For robustness of the results, we control for endogeneity problems and model dependency using entropy balance.

5.3.2.2. Social norm levels

To classify countries into high and low social norm levels, we employ the World Values Survey database. We use the moral, environmental, and religious attitudes of people in each country to reflect their attitudes towards sin industries. We say more about the construction of the social norm classification in section 3.3.2.2, in which we follow Knack and Keefer (1997), and Fauver and McDonald (2014).

In panel C of Table 5.1, we present the social norm levels of the G20 countries in our sample, with 1 and 0 depicting high- and low-social-norm countries, respectively. Across the four year-groupings, the social norm classification is stable for most countries (with the exceptions of India, Indonesia, and South Korea).

5.4. Results

5.4.1. Decomposing market to book

We start with some comparative results in mean value for market-timing and synergy motive indicators between acquirers and non-acquirers, as well as between sin acquirers and non-sin acquirers (Table 5.2). We present results initially for all the G20 sample (panel A). We then split them into high-social-norm countries (panel B) and low-social-norm countries (panel C) to examine the effect of social norm levels on acquirers' motives across the two categories.

⁴⁶ See Table A1 in the appendix for definitions of all variables used in the study.

[Insert Table 5.2 about here]

In Table 5.2, panel A, considering all G20 countries, on the sin firm side, sin acquirers are motivated by market-timing. Specifically, sin acquirers are 9.13% more overvalued than non-acquirers. We take the difference between intrinsic value and book value as a measure for the synergy motive. The insignificant difference between columns (1) and (2) shows that sin acquirers are not statistically different from sin non-acquirers. Hence, it is unlikely that they are motivated by synergy. On the non-sin firm side, acquirers are motivated by both market-timing and synergy (difference between columns (3) and (4)). Acquirers are 30.74% more overvalued than non-acquirers, and their V/B is 6.44% higher. This is consistent with the view in the literature that there are multiple motives in merger decisions (Rhodes-Kropf et al., 2005; Nguyen et al., 2012). Therefore, we reject H_1 as sin acquirers are motivated by market-timing rather than synergy. However, we have evidence to support H_{2a} and H_{2b} as sin acquirers are more motivated by synergy and less by market-timing than non-sin acquirers (difference between columns (2) and (4)). Sin acquirers are 15.88% less overvalued than non-sin acquirers. Also, their synergy motives are 5.59% higher.

In panel B, in high-social-norm countries, sin acquirers are motivated by synergy. The difference between their intrinsic value and book value is 13.96% higher than for non-acquirers. In addition, there is insignificant evidence that sin acquirers are motivated by market-timing (see columns (2)-(1)). On the non-sin firm side, acquirers are motivated by both market-timing and synergy (columns (4)-(3)). They are 30.22% more overvalued than non-acquirers, and their synergy motives are 15.84% higher. At this point, we find evidence to support H_{3b} as sin acquirers are less motivated by market-timing than non-sin acquirers (column (2)-(4)) in high-social-norm countries. Sin acquirers are 23.85% less overvalued than non-sin acquirers. However, the difference in synergy motivation is insignificant between sin and non-sin acquirers.

In Panel C, in low-social-norm countries, again, sin acquirers are motivated by market-timing. They are 11.01% more overvalued than non-acquirers. In addition, there is no evidence that sin acquirers are motivated by synergy (see column (2)-(1)). The difference between the true and book values of sin acquirers is even 2.18% less than non-acquirers; however, this difference is not statistically significant. On the non-sin firm side, acquirers are motivated by market-timing and not by synergy (column (4)-(3)). They are 31.20% more overvalued than non-acquirers, and the difference between their true value and book value is even 5.24% less than non-

acquirers. As expected, in low-social-norm countries, the difference in motives between sin and non-sin acquirers is not as strong as in high-social-norm countries. Sin acquirers are 9.79% less overvalued than non-sin acquirers. Moreover, we should note that neither sin or non-sin acquirers are motivated by synergy.

We end these comparative results with some interesting remarks. In the whole G20, sin acquirers are not purely motivated by synergy; they are motivated by market-timing instead. Compared with non-sin acquirers, however, sin acquirers are more motivated by synergy and less by market-timing. This is in favour of our prediction about the effect of social norms and stigmatization on sin acquisitions. In high-social-norm countries, we expect this effect to be stronger. In fact, in those countries, sin acquirers are purely motivated by synergy. Though the relative difference between sin and non-sin acquirers is in favour of our expectation that sin acquirers are less motivated by market-timing than non-sin acquirers, the difference in the synergy motive is not. This is important to note that in high-social-norm countries, both sin and non-sin acquirers are motivated by synergy. The results in general are in line with our expectations, though they are not optimal. This could be attributed to other factors; for example, country-specific factors. To overcome this, we employ merger acquisitiveness regressions below.

5.4.2. Merger acquisitiveness regressions

We run probit regressions to test which motive plays the more important role in sin and non-sin firms' M&A decisions. The dependent variable is a dummy that equals 1 if the firm is an acquirer in a financial year and 0 otherwise. The independent variables are market-timing and synergy motives from the M/B decompositions. We control for country, industry, and year fixed effects. We present results initially for all the G20 sample (Table 5.3, column A) and then split them into high-social-norm countries (column B) and low-social-norm countries (column C) to examine the effect of social norm levels.

[Insert Table 5.3 about here]

In panels A, B, and C, we first report estimation results based on a subsample of sin and non-sin firms. We then report the results for the whole sample using the interaction between sin acquirers and the two motives. In Table 5.3 Panel A, considering all the G20 countries, all the coefficients for market-timing and synergy of both sin and non-sin firms are positive and significant. The marginal effect of market-timing on merger acquisitiveness of sin firms is

lower than for non-sin firms.⁴⁷ In particular, a 10% (30%) increase in the overvaluation of a sin firm increases the merger acquisitiveness by 1.94% (5.83%), compared with 2.65% (7.96%) for non-sin firms. Moreover, the coefficient of market-timing remains significantly positive in column (3), and the interaction between sin firms and market-timing is significantly negative. This suggests that sin acquirers are less motivated by market-timing than non-sin acquirers. Next, the marginal effect of synergy on merger acquisitiveness of sin firms is higher than for non-sin firms. A 10% (30%) increase in the synergy of a sin firm increases the merger acquisitiveness by 2.10% (6.30%), compared with 1.23% (3.70%) for non-sin firms. This could suggest that sin acquirers are more motivated by synergy than non-sin acquirers. However, the interaction in column (3) between sin firms and synergy is insignificant. Therefore, we again reject H_1 as sin acquirers are not purely motivated by synergy. Again, we find evidence to support H_{2b} as sin acquirers are less motivated by market-timing than non-sin acquirers. However, we do not find support for H_{2a} , as sin acquirers are not significantly more motivated by synergy than non-sin acquirers.

In high-social-norm countries (Panel B), we find similar results as in the whole G20 sample; we observe that the motives of sin acquirers are relatively better than non-sin acquirers. Interestingly, the motives of both sin and non-sin acquirers in this subsample are relatively better compared with sin and non-sin acquirers in the whole G20 sample. When we compare all the marginal effects in the high-social-norm subsample with the whole G20, acquirers in high-social-norm countries are less motivated by market-timing and more by synergy. Specifically, in high-social-norm countries, a 10% increase in overvaluation of a sin firm (non-sin firm) increases the merger acquisitiveness by 1.58% (2.06%). These numbers for the whole G20 are 1.94% (2.65%). Similarly, in high-social-norm countries, a 10% increase in the synergy of a sin firm (non-sin firm) increases the merger acquisitiveness by 2.98% (1.25%) compared with 2.10% (1.23%) for the whole G20.

In the low-social-norm subsample, we find results in the reverse direction: we observe that the motives of both sin and non-sin acquirers are relatively worse than sin and non-sin acquirers in

⁴⁷ We interpret the economic significance of the probit regression by the marginal effect. The marginal effect is calculated by the following steps: keeping all other variables at mean value, calculate the change (in percentage) in the dependent variable (i.e. the probability of being an acquirer) when the investigating variable changes by a certain amount. In this work, 10% and 30% changes in the independent variable are selected to calculate the marginal effect as representative, since the differences between acquirers and non-acquirers in M/B components range from about 10% to 30%. Moreover, there is no marginal effect of the interaction term, as technically, we cannot keep other variables at fixed values while changing the value of the interaction term. To analyse the interaction term, we rely on the sign of the interaction in the combined column (e.g. Column 3, Table 3).

the whole G20. When we compare all the marginal effects in the low-social-norm subsample with the whole G20, acquirers in low-social-norm countries are highly driven by market-timing. For example, in low-social-norm countries, a 10% increase in overvaluation of a sin firm (non-sin firm) increases the merger acquisitiveness by 2.35% (3.51%). These numbers for the whole G20 are 1.94% (2.65%).

To sum up, we provide further evidence supporting the prediction that in high-social-norm countries, sin acquirers are less motivated by market-timing than non-sin acquirers. In low-social-norm countries, the difference in motives is smaller. To enhance the comparison between high-social-norm and low-social-norm countries, in untabulated work, for brevity, we also include the interactions of a high-social-norm country dummy variable and the independent variables in the all-country regressions of Table 5.3. We document significant negative interaction for market-timing and high-social-norm countries.

5.4.3. Alternative proxies for motives

[Insert Table 5.4 about here]

In Table 5.4, we run probit merger acquisitiveness regressions with a dependent variable that equals 1 if the firm is an acquirer in that year and 0 otherwise. The independent variables are grouped into motives, including market-timing, agency, synergy, and hubris. Also, we want to check whether the market-timing and synergy motives are robust with the previous findings without using M/B decomposition. In the first group, to test the market-timing motive, we first use the acquirer's market return in the three years before the acquisition (Nguyen et al., 2012). If an acquirer has enjoyed a superior return to other firms, it is more likely to be overvalued. As a result, the sin acquirer is more likely to use its overvalued stock as currency in M&As. We would then observe a significantly positive relationship between the past return and the possibility that the firm becomes an acquirer. Second, we use the M/B ratio as a measure for overvaluation (Rhodes-Kropf et al., 2005; Nguyen et al., 2012). Note that M/B could be decomposed into M/V, indicating overvaluation, and V/B as long-term growth opportunity. We also use other growth opportunity variables in the model so that the M/B ratio will be distributed to overvaluation only.

The second group of independent variables, used as proxies for agency problems, includes *ln asset* and *FCF/asset*. These variables are commonly used in the literature (e.g. Jensen, 1986; Moeller et al., 2004). The third group of independent variables are designed to test the synergy

motive or long-term growth opportunity. A growing firm will have more intention to engage in M&A as the marginal capability of assets to generate revenue and profit will be lower when the firm increases its usage of the assets. To keep growing, the firm acquires more assets to overcome this diminishing marginal effect. We expect that higher-growth firms will have higher probability of becoming acquirers. Finally, we use *Tobin's Q* to identify the hubris motive.

In Table 5.4, the results for all G20 countries are consistent with the market-timing and synergy motives in previous analyses. The coefficient for pre-three-year market return is significantly positive, as is the coefficient for sale growth. We also observe agency motives as the *ln asset* is significantly positive. The presence of agency motivation is consistent with Yang et al. (2019). They argue that a firm with agency motives is more likely to conduct acquisitions, especially value-destroying acquisitions. Interestingly, the interaction between *ln asset* and sin firm is significantly negative, suggesting that sin acquirers have less agency problem than non-sin acquirers. Thus, we reject H₁, that the acquirers are purely motivated by synergy. We find support for H_{2b} in that sin acquirers are less motivated by market-timing than non-sin acquirers.

In high-social-norm countries, motives are similar to all G20 countries; the interaction between M/B and sin firm is significantly negative, suggesting that sin acquirers are less driven by market-timing than non-sin acquirers. Another interesting difference in high-social-norm countries is that acquirers are less hubristic than non-acquirers; in low-social-norm countries, the opposite is true. However, in both subsamples, the interactions between *Tobin's Q* and sin firm are significantly positive, which suggests that sin acquirers are more hubristic than non-sin acquirers in general. This is consistent with the literature (e.g. Berkovitch and Narayanan, 1993; and Barnes, 1998; and Nguyen et al., 2012). The relatively better motives of sin acquirer than non-sin acquirers are more pronounced in high-social-norm countries. Using this alternative proxy analyses, we find strong support for H₃.

To finalize this alternative proxy analyses, we compare the differences between low-social-norm countries and the whole G20. The main difference is the significantly positive coefficients for *Tobin's Q* and the interaction between *Tobin's Q* and sin firm in low-social-norm countries. This suggests that acquirers in low-social-norm countries are more hubristic than non-acquirers; in particular, sin acquirers are more hubristic than non-sin acquirers. We might conclude that in low-social-norm countries, the effects of social norms and stigmatization on sin acquirers are weaker. This is consistent with our analyses above.

5.5. Robustness checks

There might be unobservable factors that are potentially correlated with our regression covariates. We control for the endogeneity problem and model dependency by using entropy balance (Hainmueller, 2012; Jacob et al., 2018; Chapman et al., 2019) – a nonparametric balancing procedure and “a generalization of the conventional propensity score weighting approach” (Hainmueller, 2012, p. 31). Hainmueller (2012) states that this procedure “exactly adjusts inequalities in representation with respect to first, second, and possibly higher moments of the covariate distribution.” This procedure uses maximum entropy to balance covariates between control (non-sin firms) and treatment (sin firms) groups. We balance the mean and variance of the firm-level variables used in the regressions: M/V, V/B, acquirer size (ln asset), diversifying, Tobin-Q, private target, and leverage. Our use of entropy balancing rather than the commonly used propensity score matching (PSM) approach is motivated by two main considerations. First, as entropy balancing retains and reweights all observations, the number of observations in PSM is less than half that of entropy balance. Second, as entropy balancing “exactly” balances covariates between control and treatment groups, it is better than PSM with moderate balance due to differences between treatment and control observations along several determinants.

[Insert Table 5.5 about here]

[Insert Table 5.6 about here]

After re-weighting the control observations (non-sin firms) so that the interesting covariates used in our model will have identical mean values across the treatment and control groups, we run the same regressions as in Tables 5.3 and 5.4. Tables 5.5 and 5.6 offer robust results using the above analyses. Sin acquirers are similar to non-sin acquirers as they are both motivated by market-timing and synergy incentives; however, sin acquirers are less overvalued. This difference is more pronounced in high-social-norm countries. Both sin acquirers and non-sin acquirers are also motivated by agency and hubris incentives. Sin acquirers have less agency problem than non-sin acquirers; acquirers in high-social-norm countries are less hubristic. However, sin acquirers are more hubristic than non-sin acquirers in general. The similarity of these results suggests that unobserved differences between sin and non-sin firms cannot explain our results.

5.6. The Conclusion of Chapter 5

Using 2,848 M&A deals and 18,590 firm-year observations, we investigate the motives behind M&A decisions by sin acquirers relative to non-sin acquirers in G20 countries from 1993 to 2017. Using Nguyen et al.'s (2012) extension to Rhodes-Kropf et al.'s (2005) M/B decomposition, we find that like non-sin acquirers, sin acquirers are inspired by both market-timing and synergy motives. However, sin acquirers are less motivated by market-timing than non-sin acquirers, and this difference is more pronounced for M&As in high-social-norm countries.

Besides market-timing and synergy motives generated from M/B decomposition, we investigate other motives for acquisition. We document that sin acquirers and non-sin acquirers are also motivated by agency and hubris. Although both sin and non-sin acquirers exhibit agency problems, sin acquisitions are less motivated by agency. In high-social-norm countries, the difference in agency problem between sin and non-sin acquirers is wider still. In high-social-norm countries, acquirers in general are less hubristic than non-acquirers; in low-social-norm countries, the situation is reversed. However, sin acquirers are more hubristic than non-sin acquirers in both high- and low-social-norm countries. The results are robust when we control for model dependency and endogeneity problems using entropy balancing (see Hainmueller, 2012).

This study contributes to the literature in two ways. First, this is the first work to investigate the motives of sin acquirers in M&As in the global context. This study extends the literature by investigating how motives in sin M&A decisions are moderated by social norms across countries. Second, our empirical findings help market participants (e.g. investors and policymakers) understand the sin industries better so that they can make better decisions in the market.

Perhaps the investors, analysts, and other market participants could predict the motives behind the acquisitions. With the current help of machine learning and artificial intelligence (e.g. Wolohan et al., 2018; Jurgens et al., 2019, Van et al., 2019, 2021a), we can also gather information from social media to evaluate the motive of acquirer. This could offer potential future research to strengthen the results from this chapter.

Tables

Table 5. 1: Sin and non-sin M&A deals by sample country and year, with country social norm

Country	(A) Sin acquirer deals		(B) Non-sin acquirer deals		(C) Social norm classification			
	Freq.	Percent	Freq.	Percent	1994-1998	1999-2004	2005-2009	2010-2014
Australia	53	5.66	67	3.50	0	0	0	0
Canada	11	1.18	58	3.03	1	1	1	1
China	28	2.99	82	4.29	0	0	0	0
France	86	9.19	133	6.96	1	1	1	1
Germany	8	0.85	52	2.72	0	0	0	0
India	38	4.06	57	2.98	0	1	1	1
Indonesia	4	0.43	11	0.58	0	0	1	1
Japan	150	16.03	395	20.66	0	0	0	0
Mexico	8	0.85	31	1.62	1	1	1	1
South Korea	26	2.78	99	5.18	1	0	0	1
United Kingdom	263	28.10	245	12.81	0	0	0	0
United States	261	27.88	681	35.62	1	1	1	1
Total	936	100	1,912	100	5	5	6	7

(D) Distribution of deal by year and industry

Year	Industry												All
	Tobacco		Food		Alcohol		Soda		Casino		Entertainment		
	Freq.	Percent	Freq.	Percent	Freq.	Percent	Freq.	Percent	Freq.	Percent	Freq.	Percent	
1993	8	4.55	21	3.01	16	2.68	16	3.30	10	3.42	15	2.50	86
1994	5	2.84	25	3.58	13	2.18	12	2.47	12	4.11	13	2.16	80
1995	6	3.41	21	3.01	19	3.19	16	3.30	12	4.11	16	2.66	90
1996	5	2.84	23	3.30	24	4.03	15	3.09	12	4.11	20	3.33	99
1997	6	3.41	23	3.30	30	5.03	12	2.47	10	3.42	27	4.49	108
1998	6	3.41	30	4.30	36	6.04	20	4.12	14	4.79	25	4.16	131
1999	7	3.98	38	5.44	38	6.38	26	5.36	15	5.14	33	5.49	157
2000	7	3.98	28	4.01	28	4.70	19	3.92	12	4.11	39	6.49	133
2001	6	3.41	26	3.72	31	5.20	18	3.71	12	4.11	19	3.16	112
2002	5	2.84	32	4.58	27	4.53	21	4.33	9	3.08	22	3.66	116
2003	6	3.41	25	3.58	26	4.36	22	4.54	11	3.77	29	4.83	119
2004	6	3.41	28	4.01	34	5.70	27	5.57	11	3.77	42	6.99	148
2005	7	3.98	32	4.58	31	5.20	23	4.74	15	5.14	44	7.32	152
2006	5	2.84	31	4.44	35	5.87	26	5.36	17	5.82	35	5.82	149
2007	8	4.55	39	5.59	30	5.03	22	4.54	10	3.42	30	4.99	139
2008	13	7.39	21	3.01	24	4.03	14	2.89	11	3.77	23	3.83	106
2009	7	3.98	30	4.30	21	3.52	21	4.33	12	4.11	22	3.66	113
2010	10	5.68	24	3.44	25	4.19	20	4.12	14	4.79	20	3.33	113
2011	9	5.11	29	4.15	19	3.19	23	4.74	16	5.48	17	2.83	113
2012	6	3.41	31	4.44	18	3.02	21	4.33	10	3.42	19	3.16	105
2013	10	5.68	34	4.87	17	2.85	21	4.33	8	2.74	21	3.49	111
2014	8	4.55	41	5.87	16	2.68	26	5.36	14	4.79	27	4.49	132
2015	7	3.98	29	4.15	17	2.85	21	4.33	11	3.77	20	3.33	105
2016	5	2.84	27	3.87	15	2.52	15	3.09	8	2.74	14	2.33	84
2017	8	4.55	10	1.43	6	1.01	8	1.65	6	2.05	9	1.50	47
Total	176	100	698	100	596	100	485	100	292	100	601	100	2,848

Note: Our G20 sample comprises the twelve G20 countries included in the World Values Survey.

This table presents the number of deals those triggered by sin (panel A) and non-sin (panel B) acquirers in our G20 sample. The classification and changes in the classification of the social norm levels of G20 countries are presented in panel C: the numbers one and zero represent high and low social norm levels, respectively. We begin with a set of six questions from the WVS covering three aspects (two questions from each) (moral, religious, environmental attitudes). Answers to the six WVS questions are converted into a 0-10 scale where 0 is least concerning and 10 is most concerning. Then we sum all marks for all questions from each respondent to get the total marks. For each country and year, we calculate the average marks of all respondents and use this as a proxy for the country's social norm score. We sort countries' social norm scores in each period. We identify countries above the median as high-social-norm countries and those below the median as low-social-norm countries. The four year-grouping is based on WVS. For the robustness of the proxy, we make changes in the set of questions and this does not make much change in this classification and the analyses later. The distribution of deal by year and industry is presented in (Panel D). Food, soda, and entertainment industries are comparable industries with Tobacco, alcohol, and casino respectively.

Table 5.2: Decomposing market to book

Valuation component	Sin firm			Non-sin firm			Difference (Sin acquirer) – (non-sin acquirer) (2)-(4)
	Non-acquirer (1)	Acquirer (2)	Difference (2)-(1)	Non-acquirer (3)	Acquirer (4)	Difference (4)-(3)	
Panel A: All country							
Market-timing	-0.0050	0.0864	0.0913** (-2.33)	-0.0623	0.2451	0.3074*** (10.50)	-0.1588*** (4.02)
Synergy	0.4885	0.5367	0.0483 (1.26)	0.4165	0.4808	0.0644*** (2.68)	0.0559* (1.44)
N	4,827	936		10,915	1,912		
Panel B: High-social-norm country							
Market-timing	-0.0626	0.0037	0.0662 (1.10)	-0.0601	0.2422	0.3022*** (7.56)	-0.2385*** (4.30)
Synergy	0.5350	0.6747	0.1396*** (2.63)	0.4728	0.6312	0.1584*** (6.05)	0.0435 (1.00)
N	2,122	408		4,458	972		
Panel C: Low-social-norm country							
Market-timing	0.0402	0.1503	0.1101** (2.13)	-0.0638	0.2482	0.3120*** (7.34)	-0.0979** (1.74)
Synergy	0.4519	0.4302	-0.0218 (-0.40)	0.3776	0.3252	-0.0524* (-1.36)	0.1050** (1.70)
N	2,705	528		6,457	940		

This table shows and compares the mean value of decomposed M/B ratio components of 936 sin acquirers, 1,912 non-sin acquirer, and 15,742 non-acquirers. The M/B ratio in logarithmic form is decomposed into two components: Market-timing (M/V), and synergy (V/B). The detailed explanation for each component is in table A1. T-statistics are in parentheses. ***, **, and * denote significance of t-test at the 1%, 5%, and 10% levels, respectively.

Table 5.3: Merger acquisitiveness regressions

Valuation component	(A) All country			(B) High-social-norm country			(C) Low-social-norm country		
	Sin firm (1)	Non-sin firm (2)	All (3)	Sin firm (4)	Non-sin firm (5)	All (6)	Sin firm (7)	Non-sin firm (8)	All (9)
Market-timing	0.1467*** (5.99)	0.1988*** (11.86)	0.2115*** (12.52)	0.1164*** (3.64)	0.1744*** (7.98)	0.1773*** (8.51)	0.1876*** (4.87)	0.2380*** (8.78)	0.2553*** (8.90)
(Marginal effect 10% → 30%)	<i>[1.94% → 5.83%]</i>	<i>[2.65% → 7.96%]</i>	<i>[2.44% → 7.31%]</i>	<i>[1.58% → 4.74%]</i>	<i>[2.06% → 6.17%]</i>	<i>[1.91% → 5.72%]</i>	<i>[2.35% → 7.06%]</i>	<i>[3.51% → 0.52%]</i>	<i>[3.08% → 9.25%]</i>
Sin firm			0.0310 (0.86)			-0.1520*** (-2.61)			0.1866*** (3.85)
(Marginal effect)			<i>[2.43%]</i>			<i>[-17.59%]</i>			<i>[26.2%]</i>
Market-timing * sin firm			-0.0998*** (-3.58)			-0.0757* (-1.91)			-0.1263*** (-3.11)
Synergy	0.1584*** (4.77)	0.0929*** (4.12)	0.1275*** (4.80)	0.2200*** (3.63)	0.1075*** (2.91)	0.1393*** (3.85)	0.1731*** (4.09)	0.0937*** (3.44)	0.1250*** (3.77)
(Marginal effect 10% → 30%)	<i>[2.10% → 6.30%]</i>	<i>[1.23% → 3.7%]</i>	<i>[1.57% → 4.71%]</i>	<i>[2.98% → 8.95%]</i>	<i>[1.25% → 3.76%]</i>	<i>[1.79% → 5.37%]</i>	<i>[2.17% → 6.52%]</i>	<i>[1.38% → 4.15%]</i>	<i>[1.65% → 4.94%]</i>
Synergy* sin firm			-0.0359 (-1.03)			0.0118 (0.18)			-0.0306 (-0.71)
Constant	-1.1609*** (-7.34)	-1.0532*** (-9.52)	-1.0557*** (-11.72)	-1.7964*** (-6.74)	-0.9604*** (-6.33)	-1.1572*** (-8.88)	-1.1131*** (-5.91)	-1.1237*** (-8.77)	-1.1774*** (-11.04)
Country, year, industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Log likelihood	-2,207	-4,575	-6,907	-994	-2032	-3070	-1,174	-2,508	-3762
LR chi ²	380	866	1047	144	549	669	285	284	472
Obs.	5,107	10,995	16,102	2,284	4,669	6,953	2,823	6,326	9,149

This table presents results of probit regressions on motives of corporate mergers using M/B decomposition components (i.e., M/V, and V/B). The dependent variable is a dummy with a value of 1 if the firm is an acquiring firm. The independent variables are named market-timing (this is M/V component) and synergy (this is V/B component). Z-statistics are in parentheses. The marginal effect in italic and parentheses is calculated by keeping other M/B component at its mean value, then multiplying 10% or 30% with the marginal effect of the investigated M/B component, then dividing by sample proportion of acquiring firm. The 10% and 30% are selected as representative since the differences between acquirer and non-acquirer in M/B components ranging from about 10% to 30%. For instance, in column 1, when the sin firm is 10% (30%) more overvalued than others, the intention of that firm becomes acquirer increases 1.94% (5.83%). The detailed explanation for each component is in table A1. ***,**and* denote significance at the 1%, 5%, and 10% levels, respectively.

Table 5.4: Merger acquisitiveness regressions - Alternative proxies for motives.

	All country	High-social-norm country	Low-social-norm country
Pre-3-year market return	0.0362*** (3.17)	0.0334* (1.89)	0.0342** (2.13)
(Marginal effect 10% → 30%) Sin firm	<i>[0.47%→1.47%]</i> 1.5095*** (5.85)	<i>[0.46%→1.38%]</i> -2.2666*** (6.06)	<i>[0.57%→1.72%]</i> 0.9230** (2.44)
(Marginal effect 10% → 30%) [Pre -3-year market return] * sin firm	<i>[8.19%]</i> 0.0108 (0.55)	<i>[-15.73%]</i> 0.0285 (1.05)	<i>[1.52%]</i> 0.0264 (0.79)
M/B	0.0040 (0.38)	0.0119 (0.90)	-0.0064 (-0.30)
(Marginal effect 10% → 30%) M/B* sin firm	<i>[-0.02%→-0.06%]</i> -0.0177 (-1.01)	<i>[-0.03%→-0.10%]</i> -0.0436* (1.79)	<i>[0.01%→0.03%]</i> 0.0235 (0.79)
Ln asset	0.3217*** (23.54)	0.0385*** (18.63)	0.2810*** (14.33)
(Marginal effect 10% → 30%) Ln asset * sin firm	<i>[3.44%→10.32%]</i> -0.1340*** (-6.82)	<i>[3.26%→9.77%]</i> -0.2245*** (-7.74)	<i>[3.56%→10.69%]</i> -0.0641** (-2.26)
FCF/asset	-0.0955 (-0.39)	0.9900** (2.34)	-0.5051 (-1.61)
(Marginal effect 10% → 30%) FCF/asset* sin firm	<i>[0.68%→2.03%]</i> 0.451 (1.02)	<i>[12.09%→36.26%]</i> 0.4322 (0.61)	<i>[-7.17%→-21.51%]</i> -0.0709 (-0.12)
Pre-3-year sale growth	0.0641*** (3.77)	0.0754*** (2.60)	0.0590*** (2.73)
(Marginal effect 10% → 30%) Pre-3-year sale growth * sin firm	<i>[0.93%→2.78%]</i> 0.0287 (1.04)	<i>[0.75%→2.25%]</i> -0.0137 (-0.31)	<i>[1.06%→3.19%]</i> 0.0625 (1.49)
Pre-3-year Net income growth	0.0007 (0.21)	0.0065 (1.13)	-0.0024 (-0.56)
(Marginal effect 10% → 30%) Pre-3-year Net income growth * sin firm	<i>[-0.01%→-0.03%]</i> -0.0057 (-0.94)	<i>[0.04%→0.11%]</i> -0.0083 (-0.89)	<i>[-0.05%→-0.15%]</i> -0.0024 (-0.56)
Tobin's Q	0.0046 (0.24)	-0.1118*** (-3.61)	0.1094*** (3.24)
(Marginal effect 10% → 30%) Tobin's Q * sin firm	<i>[0.11%→0.32%]</i> 0.0097 (0.29)	<i>[-0.68%→-2.04%]</i> +0.1364*** (2.67)	<i>[1.00%→2.99%]</i> 0.1094*** (3.24)
Leverage	-0.1234 (-1.26)	-0.1019 (-0.61)	-0.1966 (-1.54)
Leverage * sin firm	0.2563 (1.56)	0.4219 (1.61)	0.2940 (1.31)
Constant	-4.4168*** (-20.28)	-4.8308*** (-19.04)	-4.4691 (-14.42)
Country, year, industry fixed effects	Yes	Yes	Yes
Log likelihood	-3572	-1427.74	-2052.61
LR chi ²	1483.71	1064.76	588.08
Obs.	9,368	4,031	5,337

This table presents results of probit regressions on motives of corporate mergers. The dependent variable is a dummy with a value of 1 if the firm is an acquiring firm. Pre-3-year market return is calculated by dividing the stock price at year end before the announcement year by the stock price at year end which is three year before the year in the numerator. Sin firm is dummy variable if the firm is in sin industry, 0 otherwise. M/B equals market value/book value of equity. Ln asset is natural logarithm of total assets. FCF/asset equals Free cash flow/assets. Pre-3-year sale growth is calculated by dividing the sale of year before the announcement year by the sale of year which is three year before the year in the numerator. Pre-3-year Net income growth is calculated by dividing the net income of year before the announcement year by the net income of year which is three year before the year in the numerator. Tobin's Q equals (the market value of equity plus the book value of liabilities) divided by (the book value of equity plus the book value of liabilities). Leverage equals debt/equity. Z-statistics are in parentheses. The marginal effect in italic and parentheses is calculated by keeping other variables at its mean value, then multiplying 10% or 30% with the marginal effect of the investigated M/B component, then dividing by sample proportion of acquiring firm. The 10% and 30% are selected as representative since the differences between acquirer and non-acquirer in M/B components ranging from about 10% to 30%. For instance, in column 1, when increase the sin firm pre-3-year return by 10% (30%), the intention of that firm becomes acquirer increases 0.47% (1.47%). ***,**and* denote significance at the 1%, 5%, and 10% levels, respectively.

Table 5.5: Merger acquisitiveness regressions – entropy balanced

Valuation component	(A) All country	(B) High-social-norm country	(C) Low-social-norm country
Market-timing	0.2014*** (11.92)	0.1829*** (8.83)	0.2571*** (9.81)
(Marginal effect 10% - 30%)	<i>[2.55% → 7.64%]</i>	<i>[2.05% → 6.14%]</i>	<i>[3.41% → 10.24%]</i>
Sin firm	0.0787** (2.14)	-0.1288** (-2.21)	0.2377*** (4.77)
(Marginal effect 10% - 30%)	<i>[5.94%]</i>	<i>[-19.20%]</i>	<i>[33.48%]</i>
Market-timing * sin firm	-0.0815*** (-2.92)	-0.0789** (-2.04)	-0.1138*** (-2.84)
Synergy	0.1950*** (6.97)	0.1796*** (4.75)	0.2002*** (5.27)
(Marginal effect 10% - 30%)	<i>[2.43% → 7.29%]</i>	<i>[2.46% → 7.37%]</i>	<i>[2.70% → 8.11%]</i>
Synergy* sin firm	-0.0840 (-1.23)	-0.0170 (-0.26)	-0.0830* (-1.76)
Constant	-1.1102*** (-11.55)	-1.2892*** (-9.39)	-1.2488*** (-10.99)
Country, year, industry fixed effects	Yes	Yes	Yes
Log likelihood	-4,382	-1981	-2346
LR chi ²	931	562	502
Obs.	16,102	6,953	9,149

This table presents results of probit regressions on motives of corporate mergers using M/B decomposition components (i.e., M/V, and V/B). The dependent variable is a dummy with a value of 1 if the firm is an acquiring firm. The independent variables are named market-timing (this is M/V component) and synergy (this is V/B component). Z-statistics are in parentheses. The marginal effect in italic and parentheses is calculated by keeping other M/B component at its mean value, then multiplying 10% or 30% with the marginal effect of the investigated M/B component, then dividing by sample proportion of acquiring firm. The 10% and 30% are selected as representative since the differences between acquirer and non-acquirer in M/B components ranging from about 10% to 30%. For instance, in column 1, when the sin firm is 10% (30%) more overvalued than others, the intention of that firm becomes acquirer increases 1.94% (5.83%). We control for the endogeneity problem and model dependency by using entropy balance (see Hainmueller, 2012). We reweight the control observations (i.e., non-sin firm) so that the interesting covariates used in our model will have identical mean value across the treated and control groups. By this method, we could retain all information in our sample. The detailed explanation for each component is in Table A1. ***,**and* denote significance at the 1%, 5%, and 10% levels, respectively.

Table 5.6: Merger acquisitiveness regressions - Alternative proxies for motives – entropy balanced

	All country	High-social-norm country	Low-social-norm country
Pre-3-year market return	0.0408** (2.38)	0.0410** (2.29)	0.0479** (2.19)
<i>[marginal effect 10%-30%]</i>	<i>[0.57% → 1.72%]</i>	<i>[0.50% → 1.50%]</i>	<i>[0.59% → 1.77%]</i>
Sin firm	1.9237*** (6.82)	-2.5985*** (6.32)	1.4254*** (3.45)
<i>[marginal effect]</i>	<i>[10.14%]</i>	<i>[-17.11%]</i>	<i>[15.71%]</i>
[Pre -3-year market return] * sin firm	0.0166 (0.76)	0.0288 (1.06)	0.0370 (0.97)
M/B	0.0134 (1.29)	0.0197 (1.50)	-0.0096 (-0.50)
<i>[marginal effect 10%-30%]</i>	<i>[0.01% → 0.03%]</i>	<i>[0.04% → 0.11%]</i>	<i>[-0.04% → -1.35%]</i>
M/B* sin firm	-0.0276 (-1.46)	-0.0500* (-1.75)	0.0262 (1.07)
Ln asset	0.3495*** (22.62)	0.4077*** (16.92)	0.3141*** (13.88)
<i>[marginal effect]</i>	<i>[3.71% → 11.13%]</i>	<i>[3.54% → 10.63%]</i>	<i>[3.68% → 11.03%]</i>
Ln asset * sin firm	-0.1683*** (-7.77)	-0.2514*** (-7.99)	-0.1034*** (-3.30)
FCF/asset	0.0024 (-0.01)	0.9919** (2.26)	-0.6299* (-1.72)
<i>[marginal effect 10%-30%]</i>	<i>[3.14% → 9.43%]</i>	<i>[13.15% → 39.44%]</i>	<i>[-7.40% → -22.19%]</i>
FCF/asset* sin firm	0.4447 (0.88)	0.5167 (0.68)	0.1230 (0.19)
Pre-3-year sale growth	0.0777*** (4.20)	0.0895*** (3.19)	0.0501* (1.85)
<i>[marginal effect 10%-30%]</i>	<i>[1.22% → 3.65%]</i>	<i>[0.82% → 2.45%]</i>	<i>[1.10% → 3.29%]</i>
Pre-3-year sale growth * sin firm	0.0172 (0.58)	-0.0297 (-0.69)	0.0740 (1.49)
Pre-3-year Net income growth	0.0013 (0.34)	0.0084 (1.39)	-0.0021 (0.44)
<i>[marginal effect 10%-30%]</i>	<i>[-0.02% → -0.07%]</i>	<i>[0.04% → 0.13%]</i>	<i>[-0.05% → -1.52%]</i>
Pre-3-year Net income growth * sin firm	-0.0060 (-0.98)	-0.0102 (-1.23)	-0.0040 (-0.44)
Tobin's Q	-0.0229 (-1.13)	-0.1244*** (-4.54)	0.1062*** (3.11)
<i>[marginal effect 10%-30%]</i>	<i>[-0.03% → -0.10%]</i>	<i>[-0.74% → -2.22%]</i>	<i>[0.01% → 0.03%]</i>
Tobin Q's * sin firm	0.0403 (1.12)	0.1436*** (2.64)	0.1077** (-2.14)
Leverage	-0.2026** (-2.07)	-0.2430 (-1.48)	-0.2779** (-2.11)
Leverage * sin firm	0.3497** (2.17)	0.5537** (2.23)	0.3527 (1.58)
Constant	-4.8230*** (-19.49)	-5.5409*** (-15.74)	-5.1005*** (-14.18)
Country, year, industry fixed effects	Yes	Yes	Yes
Log likelihood	-2,394.13	-1,022.72	-1295.81
LR chi ²	1088.29	713	490.15
Obs.	9,368	4,031	5,337

This Table presents results of probit regressions on motives of corporate mergers. The dependent variable is a dummy with a value of 1 if the firm is an acquiring firm. Pre-3-year market return is calculated by dividing the stock price at year end before the announcement year by the stock price at year end which is three years before the year in the numerator. Sin firm is dummy variable equals 1 if the firm is in sin industry, 0 otherwise. M/B equals market value/book value of equity. Ln asset is natural logarithm of total assets. FCF/asset equals Free cash flow/assets. Pre-3-year sale growth is calculated by dividing the sale of year before the announcement year by the sale of year which is three years before the year in the numerator. Pre-3-year Net income growth is calculated by dividing the net income of year before the announcement year by the net income of year which is three years before the year in the numerator. Tobin's Q equals (the market value of equity plus the book value of liabilities) divided by (the book value of equity plus the book value of liabilities). Leverage equals debt/equity. Z-statistics are in parentheses. The marginal effect in italic and parentheses is calculated by keeping other variables at its mean value, then multiplying 10% or 30% with the marginal effect of the investigated M/B component, then dividing by sample proportion of acquiring firm. The 10% and 30% are selected as representative since the differences between acquirer and non-acquirer in M/B components ranging from about 10% to 30%. For instance, in column 1, when increase the sin firm pre-3-year return by 10% (30%), the intention of that firm becomes acquirer increases 0.47% (1.47%). We control for the endogeneity problem and model dependency by using entropy balance (see Hainmueller, 2012). We reweight the control observations (i.e., non-sin firm) so that the interesting covariates used in our model will have identical mean value across the treated and control groups. By this method, we could retain all information in our sample. ***,**and* denote significance at the 1%, 5%, and 10% levels, respectively.

6. Conclusion

6.1. Background

M&As may create value and improve operating performance through synergy. Therefore, we expect acquisitions to generate positive short- and long-term market returns. However, empirical studies spanning the last five decades suggest that there is no clear evidence for improved operating performance or increased shareholder value in the short or long term following M&A announcements (Jensen and Ruback, 1983; Martynova and Renneboog, 2008; Netter et al., 2011; Renneboog and Vansteenkiste, 2019). Nevertheless, acquisitions in the sin industries (tobacco, alcohol, and gambling) might trigger different outcomes. This is because sin acquirers' motivations may differ from other acquirers since their businesses and operations are stigmatized by society.

Due to social stigmatization, there is limited research on sin industries, especially sin acquisitions. Consequently, when deciding whether to invest in sin industries, the investor might base their action on research on non-sin acquisitions to infer the sin acquisition.⁴⁸ For example, as non-sin M&As are usually identified to be value destroying, the investor might rely on this and infer that sin M&As are the same. This thesis challenges the widely held belief that M&As destroy value. We provide more directly relevant and new evidence about the performance of sin M&As, which can help investors to evaluate sin industries more accurately.

This thesis has answered the following main research questions: 1) How are sin acquirers' market performance different from non-sin acquirers in M&A announcements? 2) How are sin acquirers' long-term market and operating performance different from non-sin acquirers in M&As? and 3) What are the differences in motives between sin and non-sin acquirers in M&As? Moreover, prior literature shows evidence that societal attitudes towards sin industries differ across countries. We also show how sin and non-sin M&As differ across countries by classifying the G20 sample into high- and low-social-norm countries.

⁴⁸ Hong and Kacperczyk (2009) suggest some similarities (e.g. production and distribution) between the following Fama and French (1997) industry groups: tobacco (smoking) and food, alcohol (beer) and soda, casinos and entertainment (fun). Moreover, in some industry classification schemes, these industries are often lumped together. After Hong and Kacperczyk, other authors also utilize these natural comparables to highlight sin firm characteristics (e.g. Fauver and McDonald, 2014). Since there is not much research on sin industries, investors might refer to these natural comparables to enhance their decisions.

6.2. Summary of findings

In the first empirical chapter, Chapter 3, we investigate the short-term market reaction to sin M&A announcements. By comparing with non-sin M&As, we show the difference in market reaction between sin and non-sin industries. With a sample of 11,923 acquisitions from 1993 to 2017 in G20 countries, we find that the M&A announcement cumulative abnormal returns (CAR) of sin acquirers are more positive than those of non-sin acquirers. In countries with high social norm levels, the discrepancy is even more pronounced. While investing in sin industries could generate more returns for investors (e.g. Fabozzi et al., 2008), it is expected that a non-sin acquirer would benefit from the undervaluation of the sin target through a positive CAR in M&As. However, this is not the case: the non-sin acquirer announcement return is even more negative when the target is from a sin industry. This detrimental effect is more pronounced in high-social-norm countries. The results are robust with varying event window lengths and endogeneity concerns.

In the second empirical chapter, Chapter 4, we investigate the change in operating performance and long-term market performance after sin M&As. The sample includes 2,337 acquisitions from 1993 to 2017 in G20 countries. We find that after M&A, neither the sin acquirers' nor the non-sin acquirers' operating performance improves. Furthermore, no difference in operating performance change exists between sin and non-sin acquirers. However, three years after the effective date, sin acquirers' stock market performance, as evaluated by BHAR, is considerably favourable. The improvement in BHAR is more pronounced in countries with high social norm levels. The results are robust with a variety of performance measures and endogeneity tests.

In the last empirical chapter, Chapter 5, we investigate the M&A motives in a sample of 2,848 acquisitions from 1993 to 2017 in G20 countries. To this purpose, we use the decomposition technique of the M/B ratio proposed by Rhodes-Kropf et al. (2005) to examine acquirers' motives as market-timing or synergy. They claim that the difference in M/B decomposition components between acquirers and non-acquirers can be used to infer the motives. While the difference in the M/V component indicates market-timing, V/B represents the synergy motive. We show that sin acquirers have better motives than non-sin acquirers. Though both sin and non-sin acquirers are motivated by market-timing and synergy, sin acquirers are less influenced by market-timing than non-sin acquirers. In high-social-norm countries, the difference in market-timing motivation between sin and non-sin acquirers is more pronounced. However, there is no substantial difference in synergy incentive between sin and non-sin acquirers. Moreover, we find evidence that sin acquirers have less agency problem than non-sin acquirers.

However, sin acquirers are more hubristic than non-sin acquirers. In high-social-norm countries, the difference in agency problem is more pronounced, and acquirers in general are less hubristic than non-acquirers. The results are robust with a variety of benchmarks for motives and endogeneity concerns.

6.3. Contributions

This thesis looks at M&As in sin industries in several aspects on a worldwide basis. We not only look at the short- (Chapter 3) and long-term (Chapter 4) performance, but also examine the motives (Chapter 5) behind M&A decisions. There are noticeable advantages of this thesis compared with prior research on sin M&As. First, as with other M&A research, prior studies mainly examine sin M&As from one perspective only (e.g. market performance or operating performance). By viewing sin M&As from multiple angles, we have identified the source of value increase in acquisitions. We conclude that rather than coming from enhanced operating performance, the more favourable returns of sin acquirers derive from their better motives (e.g. less market-timing) than non-sin acquirers. Second, with a worldwide sample, we can generalize our findings for a wider scope than many other studies on sin M&As, which focus on a single country. Third, rather than assuming that societal attitudes towards sin industries are constant, we allow for variation in social norms and examine how sin M&As differ across countries with respect to market reaction, operating performance, and motives. Below, we discuss briefly the contributions of our three empirical studies.

The first study (Chapter 3) contributes to the existing literature in several ways. First, rather than focusing on one sin industry or a single country, as with prior research (e.g. Beneish et al., 2008), Chapter 3 expands on prior studies to examine M&As from multiple sin industries and countries to provide a more nuanced and global perspective. We find that sin acquirers benefit more in M&A announcements, as measured by short-term market reaction, than non-sin acquirers. Second, previous research has shown that differences in social norms have an impact on market participants' behaviour (e.g. Hong and Kacperczyk, 2009; Fauver and McDonald, 2014). Our research adds to this effect by presenting evidence in the realm of M&As. We discover that in high-social-norm countries, the gain of sin acquirers over non-sin acquirers in response to M&A announcements is substantial. Third, for individual investors, prior research suggests that investing in sin firms may provide a higher return than investing in non-sin firms (e.g. Fabozzi et al., 2008). Our research extends this effect to corporate finance and shows that investing in (i.e. acquiring) sin firms yields lower M&A announcement returns than investing in (i.e. acquiring) non-sin firms.

The second empirical study, Chapter 4 contributes to the existing literature on M&As in sin industries in numerous ways. This chapter is one of the first to investigate acquirers' long-term performance in sin industries. The contribution is also unique as we investigate how acquirers' long-term performance differs across countries due to variations in social norms. Furthermore, this chapter supports the favourable short-term return of sin acquirers (e.g. Beneish et al., 2008). The long-term performance of sin acquirers is more favourable than non-sin acquirers. Finally, Chapter 4 partly answer Chapter 3's suggestions for the source of short-term returns; we find that it is less likely that sin acquirers gain synergy. The more favourable abnormal return of shareholders in sin industries should be attributed to the better motive of sin acquirers.

The last empirical study, Chapter 5, explains how M&A motives differ across sin and non-sin acquirers. This chapter gives the last piece of the puzzle to explain the more favourable short-term market return in Chapter 3. While we might expect the more favourable short-term market returns of sin acquirers to derive from acquisition synergy gains, in Chapter 4 we find no support for this expectation. There is no operating performance improvement after sin acquisitions. If the more favourable market return of sin acquirers does not come from an improvement in operating performance, it might be from the improvement of firm image via better M&A motives. Chapter 5 finds the better motives of sin acquirers than non-sin acquirers (e.g. less market-timing).

6.4. Implications

The findings of the three empirical studies (Chapters 3–5) have important implications for investors, policymakers, and managers. In recent decades, owing to their profitability, sin industries have risen to prominence as attractive investments (Fabozzi et al. 2008; Fauver and McDonald, 2014). Despite this, investors must exercise caution. According to our findings, investors in sin acquirers may expect higher returns in M&A announcements than investors in non-sin acquirers. Sin acquirers also outperform non-sin acquirers in terms of long-term market returns. However, sin investors need to note that there is no clear improvement in operating performance after acquisitions. Furthermore, investors in non-sin acquirers must pay closer attention when their firms acquire sin targets, as these transactions may reduce their wealth. This is more likely if the buyer comes from a high-social-norm country.

Next, given their role of protecting investors by scrutinizing acquirers, especially when misbehaviour is more likely, policymakers should pay more attention to acquisitions between non-sin acquirers and sin targets, particularly in countries with high social norm levels, because this sort of deal is extremely likely to deplete shareholder value. Policymakers should also pay

more attention to non-sin acquirers as they are more motivated by value-decreasing motives (e.g. market-timing). As a result, non-sin acquirers are more likely to destroy shareholder value in acquisitions.

Finally, the managers of non-sin acquirers must carefully weigh the benefits and costs of acquiring sin targets, as our results show that such acquisitions often underperform in terms of market performance, particularly in high-social-norm countries. Moreover, while non-sin acquirers might expect to improve their operating performance by acquiring profitable sin targets, the improvement here is not clear. This thesis is the first work to examine operating performance in sin acquisitions. We can confirm that as with non-sin acquisitions, there is no significant improvement in sin acquisitions' operating performance.

6.5. Limitations and future research

In terms of limitations, in this thesis, we have used the broadest methodologies to capture M&A outcomes and motives. However, there are some methods we have not employed. For example, operating performance could be measured via productivity and market share evolution. Maksimovic et al. (2011) and Li (2013) use total factor productivity and find that value could be created in acquisitions by increasing targets' productivity. Ghosh (2004) examines acquirer market share and finds that there is a significant increase in acquirer market share after acquisitions. Meanwhile, to capture the motives for acquisitions, Berkovitch and Narayanan (1993), and Hodgkinson and Partington (2008) look at the correlation between acquirers and targets' market reactions. If there is a positive correlation and the market reactions of both acquirers and targets are positive, the acquirer is motivated by synergy. However, this method requires targets to be public firms, so in our research context it would lead to a very small sample size.

Although this thesis considers the broadest international scope possible, it would be interesting to conduct future research for the rest of the world. As our sample consists of the G20 countries, which are the biggest economies, the results might not be generalizable for smaller and poorer countries, which might have unobserved factors that influence the results. For example, people in poorer countries may be more tolerant of sin industries because of their revenue.

Moreover, due to data availability, we start our research time frame from 1993. It would also be interesting to extend the research prior to 1993, when the evidence for harmful effects of sin industries was preliminary. For example, the negative consequences of tobacco were gradually discovered after the inaugural report of the Surgeon General of the United States Public Health

Service on Smoking and Health (1964).⁴⁹ From the 1990s, the harmfulness of tobacco was clear, and many regulations had already been applied in this industry.

Furthermore, our sample includes multiple countries and industries, this nature of the sample allows multilevel structure analysis (see Bamiatzi et al., 2015). Sin firms are nested inside their industry and nations. The further investigation into a single sin industry and a country could show how variation the sin acquisitions in specific industry and country. This also allows examining the interaction between country and industry effects.

Last but not least, developments in methods to examine performance and motives in acquisitions offer potential directions for further research. For example, Bessembinder et al. (2018) present a novel methodology that takes into account both market-wide characteristics and those that differentiate event from non-event firms. In this method, first, they measure expected benchmark returns by regressing firm returns on a set of firm variables. Second, they regress the difference between the expected and realized returns on a set of indicator variables that allow firm characteristics to vary over time. With the current help of machine learning and artificial intelligence (e.g. Jurgens et al., 2019, Van et al., 2021b), we can also gather information from social media to evaluate the motives of acquirer. However, there is not much evidence for these techniques in the empirical literature.

⁴⁹ The report is available at <https://profiles.nlm.nih.gov/spotlight/nn/feature/smoking>

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Appendices

Appendix 1: Variable definitions

Table A1: Variable definitions

Variable	Definition
CAR	Cumulative abnormal return in M&A announcement
Operating performance	Industry adjusted operating performance measured by (EBITDA-change in working capital)/total assets minus the matched non-acquirer firm. The matched firm is selected in the same country, primary industry, year, with the closest size and performance one year before the acquisition.
BHAR	The BHAR is calculated by subtracting the matched firm three-year return from the acquirer three-year return. Three-year return starts from the end of the effective month of the acquisition. The matched firm is selected in the same country, primary industry, year, with the closest size and performance one year before the acquisition.
Sin acquirer	Dummy variable equals 1 if the acquirer has a product segment among its 10 largest segments by revenue in the tobacco, alcohol, or casino industry. The tobacco and alcohol industry including manufacturing and distributing firm.
Sin target	Dummy variable equals 1 if the target has a product segment among its 10 largest segments by revenue in the tobacco, alcohol, or casino industry. The tobacco and alcohol industry including manufacturing and distributing firm.
Majority	Majority is the dummy variable and takes a value of 1 if the acquirer owns from 50% share of the target after the deal, and 0 otherwise.
Tobin-Q	Tobin-Q equals (the market value of equity plus the book value of liabilities) divided by (the book value of equity plus the book value of liabilities).
Ln asset	The natural logarithm of acquirer's total assets.
Leverage	(Long-term debt + Debt in current liabilities)/total assets.
Private target	Dummy variable equals 1 if the target is a private firm
Diversifying deal	Dummy variable equals 1 if the acquirer and target have the same 2 first digits in primary SIC code
BHAR	The BHAR is calculated by subtracting the matched firm three-year return from the acquirer three-year return. Three-year return starts from the end of the effective month of the acquisition. The matched firm is selected in the same country, primary industry, year, with the closest size and performance one year before the acquisition.
Market-timing	This is M/V (market value / true value) component in Rhodes-Kropf et al. (2005) M/B decomposition procedure that indicate the misvaluation, or market-timing motive
Synergy	This is V/B (true value / book value) component in Rhodes-Kropf et al. (2005) M/B decomposition procedure that indicate the growth opportunity or synergy motive
Pre-3-year market return	Calculated by dividing the stock price at year end before the announcement year by the stock price at year end which is three years before the year in the numerator.
M/B	Market to book ratio calculated by dividing the market value by book value of equity
Pre-3-year sale growth	Calculated by dividing the sale of year before the announcement year by the sale of year which is three years before the year in the numerator.
Pre-3-year net income growth	Calculated by dividing the net income of year before the announcement year by the net income of year which is three years before the year in the numerator.
FCF	Free cash flow

Appendix 2: Additional tests – Alternative WVS questions

In this session, we do some additional tests to show the robustness of the results in this thesis. First, we change the set of 6 questions in WVS. Then, we re-run all regressions in the first empirical chapter (Chapter 3). The results are reported in A.3.1 to A.3.6 below.

The first set of questions include:

- 1) Do you agree with increasing in taxes if used to prevent environmental pollution?
- 2) Choosing between Protecting environment vs. Economic growth
- 3) How often do you attend religious services?
- 4) Do you believe in God?
- 5) Is this be justified: Claiming government benefits to which you are not entitled?
- 6) Is this be justified: Avoiding a fare on public transport?

The 2nd set of questions include:

- 1) Would you give part of your income for the environment?
- 2) Do you think the Government should reduce environmental pollution?
- 3) How important is God in your life?
- 4) Do you believe in Hell?
- 5) Is this be justified: Someone accepting a bribe?
- 6) Is this be justified: Cheating on taxes?

Table A.3.1: G20 sample

Country	Sin acquirers		No sin acquirers		Social norm classification			
	Freq.	Percent	Freq.	Percent	1994-1998	1999-2004	2005-2009	2010-2014
Argentina	10	0.36	31	0.34	1	1	1	0
Australia	169	6.02	318	3.46	0	0	1	0
Brazil	18	0.64	54	0.59	1	1	1	1
Canada	65	2.32	378	4.12	1	1	1	1
China	82	2.92	240	2.61	0	0	0	0
Croatia	2	0.07	12	0.13	1	1	0	1
Estonia	6	0.21	25	0.27	0	0	0	0
Finland	6	0.21	30	0.33	0	0	0	1
France	262	9.34	432	4.71	1	1	1	1
Germany	33	1.18	137	1.49	0	0	0	0
Hungary	6	0.21	12	0.13	0	0	0	1
India	59	2.1	179	1.95	1	1	1	1
Indonesia	7	0.25	37	0.40	1	1	1	1
Italy	39	1.39	52	0.57	1	1	1	1
Japan	292	10.41	1,587	17.29	0	0	0	0
Mexico	43	1.53	115	1.25	1	1	1	1
Netherlands	74	2.64	241	2.62	0	0	0	0
Poland	37	1.32	30	0.33	1	1	1	1
Russian Fed	5	0.18	39	0.42	0	1	0	1
Slovenia	1	0.04	10	0.11	1	0	1	0
South Africa	28	1	68	0.74	1	1	1	1
South Korea	36	1.28	396	4.31	1	0	0	0
Spain	55	1.96	102	1.11	0	1	1	0
Sweden	54	1.93	76	0.83	0	0	0	0
Switzerland	68	2.42	196	2.13	0	0	0	0
Turkey	14	0.5	36	0.39	0	0	0	0
United Kingdom	503	17.93	1,047	11.40	0	0	0	0
United States	831	29.63	3,301	35.95	1	1	1	1
Total	2,805	100	9,181	100	14	14	14	14

This table presents the number of deals those triggered by sin (panel A) and non-sin (panel B) acquirers in G20 sample. The classification and change in the classification of social norm level of G20 countries are also presented (panel C). In (panel C), the number one and zero represent the high and low-social-norm levels, respectively. We begin with a set of 6 questions in WVS in 3 aspects (2 questions each) (i.e., moral, religious, environmental attitudes). The answers in the survey are translated into 0-10 scale where 0 is least concerning and 10 is most concerning to the asked aspects. Then we sum all points in all questions of each respondent to get the overall points. By country and year of survey, we calculate the average points of all respondents. Based on these average values, we rank the country's social norm level in each period according to that country's average point is higher or below the all countries median in that period. For the robustness of the proxy, we make changes in the set of questions, and this does not make much change in this classification and the Cumulative abnormal return analysis later.

Table A.3.2: Regression analysis for two-day [0,1] and five-day [-2,2] window CAR (cumulative abnormal return) around M&A announcement.

Variable	(I)		(II)		(III)	
	All countries		High-social-norm countries		Low-social-norm countries	
	(1) Window [0,1]	(2) Window [-2,2]	(3) Window [0,1]	(4) Window [-2,2]	(5) Window [0,1]	(6) Window [-2,2]
Sin acquirer	0.0034* (1.65)	0.0064** (2.38)	0.0009 (0.24)	0.0097* (1.92)	0.0033 (0.98)	0.0012 (0.29)
Sin target	-0.0053*** (-2.79)	-0.0069*** (-2.64)	0.0004 (0.10)	-0.0025 (-0.47)	-0.0052 (-1.56)	-0.0048 (-1.04)
Other control variables	Yes	Yes	Yes	Yes	Yes	Yes
(Intercept)	0.0231** (2.82)	0.0556*** (3.58)	0.0142 (0.30)	-0.0353 (-0.98)	0.1454** (1.97)	0.2372*** (2.90)
Country, year, industry fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.0426	0.0433	0.0717	0.0649	0.0657	0.0796
Adj R-squared	0.0327	0.0335	0.0319	0.0246	0.0328	0.0472
Obs.	6,107	6,107	2,728	2,728	3,379	3,379

This table reports the results of regressions of Cumulative abnormal return (CAR) (dependent variable) for two windows [0,1] and [-2,2] on a Sin acquirer, sin target dummy variables and other control variables for G20 sample over the period 1993-2017. *Sin acquirer* (*sin target*) takes a value of 1 if the acquirer (target) in the sin industries (i.e., tobacco, alcohol, and casino), and 0 otherwise. Majority is the dummy variable and takes a value of 1 if the acquirer owns from 50% share of the target after the deal, and 0 otherwise. Ln asset is calculated by taking the natural logarithm of acquirer's assets. The private target is a dummy variable and takes a value of 1 if target is private firm, and 0 otherwise. The diversifying deal is a dummy variable and takes a value of 1 if acquirer and target are from different industries (as measured by 2-digit SIC), and 0 otherwise. In column II and III, we split the sample into high and low-social-norm sub-samples to allow comparison across two categories. The t-statistics in parentheses are based on standard errors adjusted for heteroscedasticity. The dependent and control variables are winsorized at the 1st and 99th percentiles. * indicates significance at the 10% level; ** at the 5% level; and *** at the 1% level. Numbers are rounded up to the fourth decimal place. The deals which are announced in the period of five days before and after other deals' announcements of the same acquirer are excluded.

Table A.3.3.: Sin target effect on sin/non-sin acquirer's CAR around M&A announcement

Variable	(I)		(II)		(III)		
	All countries		High-social-norm countries		Low-social-norm countries		
	(1) Window [0,1]	(2) Window [-2,2]	(3) Window [0,1]	(4) Window [-2,2]	(5) Window [0,1]	(6) Window [-2,2]	
(Panel A) Sin acquirer	Sin target	-0.0055 (-1.38)	-0.0054 (-1.09)	-0.0013 (-0.19)	0.0007 (0.08)	-0.0047 (-0.82)	-0.0014 (-0.20)
	(Intercept)	0.0395** (2.29)	0.0601** (2.16)	0.0140 (0.24)	0.0596 (0.90)	0.2334** (2.51)	0.2357** (2.33)
	Previous controls and fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
	R-squared	0.0749	0.0761	0.1108	0.1157	0.1443	0.1441
	Obs.	1,377	1,377	651	651	726	726
(Panel B) Non-Sin acquirer	Sin target	-0.0060*** (-2.46)	-0.0079** (-2.30)	-0.0075* (-1.84)	-0.0105* (-1.94)	-0.0013 (-0.36)	-0.0021 (-0.40)
	(Intercept)	0.0081 (0.75)	0.0386* (1.69)	0.0053 (0.40)	0.0017 (0.07)	0.0431* (1.77)	0.1022*** (3.30)
	Previous controls and fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
	R-squared	0.0462	0.0510	0.0513	0.0492	0.0447	0.0622
	Obs.	4,730	4,730	2,077	2,077	2,653	2,653

This table reports the results of regressions of Cumulative abnormal return (CAR) (dependent variable) for two windows [0,1] and [-2,2] on a Sin target dummy variable and other control variables for a G20 sample. We split the sample into sin (panel A) and non-sin (Panel B) acquirer subsamples over the period 1993-2017 to investigate the different effect of sin target to sin and non-sin acquirers. In column II and III, we split the sample into high and low-social-norm sub-samples to allow comparison across two categories. The t-statistics in parentheses are based on standard errors adjusted for heteroscedasticity. The dependent and control variables are winsorized at the 1st and 99th percentiles. All regressions include country, calendar year, and comparable industries dummies. * indicates significance at the 10% level; ** at the 5% level; and *** at the 1% level. Numbers are rounded up to the fourth decimal place. The deals which are announced in the period of five days before and after other deals' announcements of the same acquirer are excluded.

Table A.3.4: Regression analysis with control for endogeneity using Propensity score matched sample

Variable	(I) All countries				(II) High-social-norm countries				(III) Low-social-norm countries			
	Matching 1-1		Matching 1-3		Matching 1-1		Matching 1-3		Matching 1-1		Matching 1-3	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Window [0,1]	Window [-2,2]	Window [0,1]	Window [-2,2]	Window [0,1]	Window [-2,2]	Window [0,1]	Window [-2,2]	Window [0,1]	Window [-2,2]	Window [0,1]	Window [-2,2]
Sin acquirer	0.0061 (1.58)	0.0154*** (3.13)	0.0047 (1.39)	0.0125*** (2.98)	0.0049 (0.91)	0.0129* (1.79)	0.0032 (0.70)	0.1546** (2.56)	0.0007 (0.13)	0.0030 (0.39)	0.0033 (0.68)	0.0069 (1.10)
Sin target	-0.0047 (-1.31)	-0.0072 (-1.57)	-0.0049 (-1.61)	-0.0065* (-1.71)	-0.0062 (-1.18)	-0.0111 (-1.58)	-0.0055 (-1.28)	-0.0095 (-1.62)	-0.0018 (-0.36)	-0.0012 (-0.18)	-0.0028 (-0.63)	-0.0040 (0.70)
(Intercept)	-0.0040 (-0.25)	0.0008 (0.04)	-0.0014 (-0.09)	0.0083 (0.41)	0.0600** (2.17)	0.1436*** (4.06)	0.0585** (2.54)	0.1691*** (5.65)	0.0329 (0.90)	0.0081 (0.26)	0.0354 (1.29)	0.0236 (0.93)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country, year, industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.1025	0.0936	0.0698	0.0715	0.0831	0.0776	0.0780	0.0663	0.0802	0.0734	0.0584	0.0566
Obs.	1,454	1,454	2,133	2,133	705	705	1074	1074	749	749	1059	1059

This table reports the results of regressions of Cumulative abnormal return (CAR) (dependent variable) for two windows [0,1] and [-2,2] on a Sin acquirer, sin target dummy variables and other control variables for G20 matched sample over the period 1993-2017. *Sin acquirer* (*sin target*) takes a value of 1 if the acquirer (target) in the sin industries (i.e., tobacco, alcohol, and casino), and 0 otherwise. Majority is the dummy variable and takes a value of 1 if the acquirer owns from 50% share of the target after the deal, and 0 otherwise. Ln asset is calculated by taking the natural logarithm of acquirer's assets. The private target is a dummy variable and takes a value of 1 if target is private firm, and 0 otherwise. The diversifying deal is a dummy variable and takes a value of 1 if acquirer and target are from different industries (as measured by 2-digit SIC), and 0 otherwise. The t-statistics in parentheses are based on standard errors adjusted for heteroscedasticity. The dependent and control variables are winsorized at the 1st and 99th percentiles. All regressions include country, calendar year, and comparable industries dummies. * indicates significance at the 10% level; ** at the 5% level; and *** at the 1% level. Numbers are rounded up to the fourth decimal place. The deals which are announced in the period of five days before and after other deals' announcements of the same acquirer are excluded.

Table A.3.5: Regression analysis with control for endogeneity using entropy balance

Variable	(I)		(II)		(III)	
	All countries		High-social-norm countries		Low-social-norm countries	
	G20		G20		G20	
	(1)	(2)	(3)	(4)	(5)	(6)
	Window [0,1]	Window [-2,2]	Window [0,1]	Window [-2,2]	Window [0,1]	Window [-2,2]
Sin acquirer	0.0036 (1.50)	0.0087*** (2.85)	0.0061 (1.61)	0.0170*** (3.45)	0.0008 (0.22)	0.0002 (0.05)
Sin target	-0.0043* (-1.95)	-0.0062** (-2.15)	-0.0033 (-0.98)	-0.0077* (-1.76)	-0.0046 (-1.53)	-0.0039 (-0.99)
(Intercept)	0.0257** (2.37)	0.0693** (2.07)	0.0129 (0.87)	0.0196 (0.75)	0.1557** (2.19)	0.2818*** (3.08)
Previous controls and fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.0439	0.0412	0.0575	0.0506	0.0641	0.0610
Obs.	5,580	5,580	2,493	2,493	3,087	3,087

This table reports the results of regressions of Cumulative abnormal return (CAR) (dependent variable) for two windows [0,1] and [-2,2] on a Sin acquirer, sin target dummy variables and other control variables for G20 matched sample over the period 1993-2017. *Sin acquirer* (*sin target*) takes a value of 1 if the acquirer (target) in the sin industries (i.e., tobacco, alcohol, and casino), and 0 otherwise. Majority is the dummy variable and takes a value of 1 if the acquirer owns from 50% share of the target after the deal, and 0 otherwise. Ln asset is calculated by taking the natural logarithm of acquirer's assets. The private target is a dummy variable and takes a value of 1 if target is private firm, and 0 otherwise. The diversifying deal is a dummy variable and takes a value of 1 if acquirer and target are from different industries (as measured by 2-digit SIC), and 0 otherwise. The t-statistics in parentheses are based on standard errors adjusted for heteroscedasticity. The dependent and control variables are winsorized at the 1st and 99th percentiles. All regressions include country, calendar year, and comparable industries dummies. * indicates significance at the 10% level; ** at the 5% level; and *** at the 1% level. Numbers are rounded up to the fourth decimal place. The deals which are announced in the period of five days before and after other deals' announcements of the same acquirer are excluded.

Table A.3.6: Developed stock markets vs developing stock markets.

Variable		(I)		(II)		(III)	
		All countries		High-social-norm countries		Low-social-norm countries	
		(1)	(2)	(3)	(4)	(5)	(6)
		Window	Window	Window	Window	Window	Window
		[0,1]	[-2,2]	[0,1]	[-2,2]	[0,1]	[-2,2]
(Panel A)	Sin acquirer	0.0052** (2.39)	0.0099*** (3.56)	0.0071** (2.28)	0.0174*** (4.32)	0.0023 (0.079)	0.0014 (0.35)
	Sin target	-0.0053*** (2.73)	-0.0082*** (-3.15)	-0.0097*** (-3.34)	-0.0148*** (-3.75)	-0.0015 (-0.54)	-0.0025 (-0.66)
	(Intercept)	0.0259*** (3.80)	0.0448*** (4.69)	0.0446*** (3.48)	0.0353** (2.16)	0.0163** (2.06)	0.0415*** (4.06)
	Previous controls and fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
	R-squared	0.0479	0.0470	0.0633	0.0570	0.0589	0.0639
	Obs.	5,415	5,415	2,703	2,703	2,712	2,712
(Panel B)	Sin acquirer	-0.0048 (-1.07)	-0.0048 (-0.77)	-0.0068 (-1.28)	-0.0000 (-0.00)	-0.0029 (-0.38)	-0.0093 (-0.90)
	Sin target	-0.0045 (-1.05)	-0.0037 (-0.56)	0.0010 (0.19)	-0.0021 (-0.31)	-0.0104 (-1.36)	-0.0055 (-0.43)
	(Intercept)	0.0503 (1.33)	0.0845 (1.52)	0.0242 (0.64)	0.0416 (0.75)	0.0236 (1.18)	0.0228 (0.76)
	Previous controls and fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
	R-squared	0.0825	0.0883	0.0916	0.1025	0.1112	0.1212
	Obs.	1,443	1,443	706	706	737	737

This table reports the results of regressions of Cumulative abnormal return (CAR) (dependent variable) for two windows [0,1] and [-2,2] on a Sin target dummy variable and other control variables for a G20 sample with sin and non-sin acquirer subsamples over the period 1993-2017. In panel A and B, we split the sample into deal from developed and developing stock market to allow comparison across two categories. The t-statistics in parentheses are based on standard errors adjusted for heteroscedasticity. The dependent and control variables are winsorized at the 1st and 99th percentiles. All regressions include country, calendar year, and comparable industries dummies. * indicates significance at the 10% level; ** at the 5% level; and *** at the 1% level. Numbers are rounded up to the fourth decimal place. The deals which are announced in the period of five days before and after other deals' announcements of the same acquirer are excluded.

Table A.3.7: Developed countries vs underdeveloped countries.

Variable	(I) All countries		(II) High-social-norm countries		(III) Low-social-norm countries		
	(1) Window [0,1]	(2) Window [-2,2]	(3) Window [0,1]	(4) Window [-2,2]	(5) Window [0,1]	(6) Window [-2,2]	
(Panel A) Developed countries	Sin acquirer	0.0050** (2.38)	0.0091*** (3.33)	0.0052* (1.73)	0.0151*** (3.87)	0.0040 (1.36)	0.0012 (0.30)
	Sin target	-0.0049** (-2.58)	-0.0072*** (-2.74)	-0.0065** (-2.35)	-0.0114*** (-2.98)	-0.0036 (-1.25)	-0.0028 (-0.70)
	(Intercept)	0.0249*** (3.01)	0.0590*** (3.64)	0.0251*** (2.64)	0.0547*** (3.27)	0.0259** (2.44)	0.0480*** (3.07)
	Previous controls and fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
	R-squared	0.0451	0.0458	0.0560	0.0535	0.0538	0.0630
	Obs.	5,848	5,848	3,017	3,017	2,831	2,831
(Panel B) Underdeveloped countries	Sin acquirer	-0.0072 (-1.41)	-0.0030 (-0.42)	-0.0065 (-1.11)	0.0026 (0.34)	-0.0095 (-0.96)	-0.0094 (-0.72)
	Sin target	-0.0057 (-1.15)	-0.0075 (-1.10)	0.0050 (0.88)	-0.0011 (-0.14)	-0.0324*** (-3.28)	-0.0278** (-2.10)
	(Intercept)	0.0266 (0.72)	0.0297 (0.55)	0.0328 (0.86)	0.0299 (0.54)	-0.0391 (-0.74)	-0.0173 (-0.27)
	Previous controls and fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
	R-squared	0.1310	0.1312	0.0974	0.1000	0.2703	0.2768
	Obs.	1000	1000	635	635	365	365

This table reports the results of regressions of Cumulative abnormal return (CAR) (dependent variable) for two windows [0,1] and [-2,2] on a Sin target dummy variable and other control variables for a G20 sample with sin and non-sin acquirer subsamples over the period 1993-2017. In panel A and B, we split the sample into deal from developed and underdeveloped countries to allow comparison across two categories. The t-statistics in parentheses are based on standard errors adjusted for heteroscedasticity. The dependent and control variables are winsorized at the 1st and 99th percentiles. All regressions include country, calendar year, and comparable industries dummies. * indicates significance at the 10% level; ** at the 5% level; and *** at the 1% level. Numbers are rounded up to the fourth decimal place. The deals which are announced in the period of five days before and after other deals' announcements of the same acquirer are excluded.

Appendix 3: Additional tests – Alternative benchmarks for M&A performance and additional control variables

In this section, we adopt different benchmarks for operating performance (ROA, industry adjusted EBITDA, industry adjusted EBITDA – Δ WC). The results are reported in Table A.4.1. We also adopt different benchmark for long-term market return. The results are reported in Table A.4.2.

Table A.4.1: Regression analysis for the difference in operating performance change between sin acquirer and non-sin acquirer after acquisition with the dependent variable is the change in ROA, industry adjusted EBITDA, industry adjusted pure CF

Variable	All G20 countries			High-social-norm G20 countries			Low-social-norm G20 countries		
	ROA	Industry adjusted EBITDA	Industry adjusted EBITDA – Δ WC	ROA	Industry adjusted EBITDA	Industry adjusted pure CF	ROA	Industry adjusted EBITDA	Industry adjusted EBITDA – Δ WC
Sin acquirer	-0.1214 (-0.23)	-0.0045 (-0.73)	0.0061 (1.01)	1.3757 (1.45)	-0.0076 (-0.78)	-0.0020 (-0.19)	-0.0256 (-0.03)	-0.0045 (-0.56)	0.0206 (1.45)
Constant	2.3828 (1.00)	-0.0346 (-1.35)	-0.0479 (-1.35)	1.6904 (0.49)	0.0085 (0.37)	-0.1197*** (-3.10)	1.3714 (0.35)	0.0888** (2.50)	0.0440 (0.87)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country, year, industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.1329	0.1619	0.1304	0.2627	0.2894	0.1682	0.1235	0.2300	0.2469
Obs.	2,333	2,333	2,333	1,069	1,069	1,069	1,264	1,264	1,264

This Table reports the results of regressions for the difference in operating performance change between sin acquirer and non-sin acquirer after M&A for G20 sample over the period 1993-2017. The dependent variable is the change in operating performance: return on asset (ROA), Industry adjusted EBITDA, Industry adjusted pure CF. Change in performance is measured by subtracting the performance in financial year before acquisition from the performance in third financial year after acquisition. Industry adjusted EBITDA is calculated by subtracting the industry median EBITDA from acquirer EBITDA. Industry adjusted EBITDA – Δ WC is calculated by subtracting the industry median (EBITDA – Δ WC) from acquirer (EBITDA – Δ WC). Sin acquirer takes a value of 1 if the acquirer is in the sin industries (i.e., tobacco, alcohol, and casino), and 0 otherwise. The t-statistics in parentheses are based on standard errors adjusted for heteroscedasticity. The dependent and control variables are winsorized at the 1st and 99th percentiles. * indicates significance at the 10% level; ** at the 5% level; and *** at the 1% level. Numbers are rounded up to the fourth decimal place.

Table A.4.2: Industry adjusted BHAR difference between sin acquirer and non-sin acquirer

Variable	All G20 countries	High-social-norm G20 countries	Low-social-norm G20 countries
Sin acquirer	0.0269 (0.32)	0.2991** (2.15)	-0.2469 (-1.40)
<i>Control variables</i>			
Diversifying Deal	0.0397 (0.72)	-0.0641 (-0.65)	0.0825 (1.30)
Ln asset	-0.0392** (-2.42)	-0.0288 (-1.13)	-0.0299 (-1.34)
Tobin Q	0.0848*** (3.12)	0.1586 (0.85)	0.0394 (1.29)
Private target	-0.0371 (-0.47)	-0.1172 (-0.85)	-0.0189 (-0.23)
Leverage	0.0416** (2.08)	0.1137*** (2.97)	0.0050 (0.34)
Constant	0.6744*** (2.93)	1.36*** (2.78)	0.3249 (1.25)
Country dummies	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes
Industries dummies	Yes	Yes	Yes
R-squared	0.1683	0.2903	0.2148
Obs.	2,141	955	1,186

The table shows the regression analysis for the difference in the long-term market return after M&A between sin acquirer and non-sin acquirer. We use industry adjusted Buy and Hold Abnormal Return (BHAR) to measure the performance. There are 2,141 observations completed over the period 1993 to 2017. We control for the deal and firm characteristics. *Sin acquirer* takes a value of 1 if the acquirer in the sin industries (i.e., tobacco, alcohol, and casino), and 0 otherwise. Ln asset is calculated by taking the natural logarithm of acquirer's assets. The private target is a dummy variable and takes a value of 1 if target is private firm, and 0 otherwise. The diversifying deal is a dummy variable and takes a value of 1 if acquirer and target are from different industries (as measured by 2-digit SIC), and 0 otherwise. The t-statistics in parentheses are based on standard errors adjusted for heteroscedasticity. The variables are winsorized at the 1st and 99th percentiles. ***, **, * indicates a significant at the 1%, 5%, and 10% levels, respectively. The deals which are announced in the period of three financial years before and after other deals' announcements of the same acquirer are excluded.

Table A.4.12: Regression analysis for short term performance in M&A announcement.

Variable	(I)		(II)		(III)	
	All countries		High-social-norm countries		Low-social-norm countries	
Sin acquirer	0.0064** (2.35)	0.0081** (2.12)	0.0121*** (3.00)	0.0106* (1.77)	0.0004 (0.11)	0.0086* (1.69)
Sin target	-0.0067** (-2.58)	-0.0065* (-1.77)	-0.0084** (-2.11)	-0.0098 (-1.71)	-0.0048 (-1.34)	-0.0073 (-1.33)
<u>Control variables</u>						
Majority	-0.0022 (-0.75)	-0.0036 (-0.94)	-0.0007 (-0.14)	0.0005 (0.08)	-0.0024 (-0.62)	-0.0062 (-1.21)
Diversifying Deal	-0.0057*** (-2.69)	-0.0034 (-1.15)	-0.0075** (-2.31)	-0.0027 (-0.58)	-0.0047* (-1.68)	-0.0071* (-1.78)
Ln asset	-0.0033*** (-5.14)	-0.0038*** (-2.71)	-0.0046*** (-4.15)	-0.0031 (-1.42)	-0.0022*** (-2.78)	-0.0043*** (-2.33)
Deal value/ Acquirer asset	0.0139*** (2.93)	0.0294** (2.13)	0.0026 (0.37)	0.0308 (1.59)	0.0227*** (3.57)	0.0267** (2.28)
Tobin Q	-0.0007 (-0.55)	-0.0006 (-0.25)	-0.0013 (-0.82)	-0.0045* (-1.73)	0.0005 (0.26)	0.0036 (0.90)
Private target	0.0104*** (3.93)	0.0046 (1.31)	0.0068 (1.49)	0.0014 (0.23)	0.0113*** (3.44)	0.0080* (1.85)
<u>Additional control variables</u>						
Cross-border	0.0032 (1.35)	0.0023 (0.78)	0.0050 (1.40)	0.0034 (0.71)	0.0098*** (3.03)	0.0040 (0.93)
<u>Country level of development and the legal environment</u>						
Emerging country	-0.0317 (-0.82)	-0.1700*** (2.65)	-0.0460 (0.73)	-0.1799 (1.56)	-0.0694 (-0.86)	-0.1451 (1.26)
Corruption	0.0013 (0.14)	-0.0067 (-0.48)	-0.0145 (-1.03)	-0.0155 (-0.79)	0.0016 (0.10)	0.0038 (0.15)
Common law	-0.0187* (-1.81)	-0.0223 (-1.24)	-0.0093 (-0.60)	-0.0368 (-1.20)	-0.0060 (-0.46)	-0.0006 (-0.04)
Voice	-0.0071 (-0.50)	-0.0248 (-0.80)	0.0343 (1.17)	-0.0903* (-1.94)	-0.0095 (-0.31)	-0.0337 (-0.67)
Stability	-0.0109* (-1.70)	0.0061 (0.54)	-0.0056 (-0.59)	0.0204 (1.20)	-0.0233* (-1.85)	0.0187 (1.00)
Government effectiveness	0.0097 (1.02)	0.0012 (0.08)	0.0259 (1.23)	0.0187 (0.40)	-0.0095 (-0.68)	0.0027 (0.13)

Regulatory	-0.0072 (-0.83)	0.0170 (1.04)	-0.0191 (-1.22)	0.0670* (1.93)	0.0153 (1.23)	-0.0097 (-0.37)
Rule of law	-0.0113 (-0.71)	-0.0553 (-1.57)	-0.0248 (-1.06)	-0.0991* (-1.71)	-0.0059 (-0.22)	-0.0693 (-1.16)
<u>Corporate governance variables</u>						
CEO is chair of board		-0.0009 (-0.26)		0.0036 (0.67)		-0.0056 (-1.07)
Number of board members		-0.0002 (-0.34)		-0.0008 (-0.94)		0.0007 (1.05)
Proportion of independent board members		-0.0001 (-1.50)		-0.0001 (-0.95)		-0.0001 (-0.37)
Board structure		0.0062 (0.74)		-0.0014 (-0.15)		0.0341 (1.24)
(Intercept)	0.0422** (2.18)	0.0044 (0.13)	0.0138 (0.55)	0.0732 (1.59)	0.1772** (2.15)	0.0522 (0.88)
Country, year, industry dummies	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.0440	0.1064	0.0468	0.1359	0.0694	0.1349
Obs.	6,107	1,258	2,762	599	3,345	659

This table reports the results of regressions of Cumulative abnormal return (CAR) (dependent variable) for windows [-2,2] on a Sin acquirer, sin target dummy variables and other control variables for G20 sample over the period 1993-2017. *Sin acquirer* (*sin target*) takes a value of 1 if the acquirer (target) in the sin industries (i.e., tobacco, alcohol, and casino), and 0 otherwise. Majority is the dummy variable and takes a value of 1 if the acquirer owns from 50% share of the target after the deal, and 0 otherwise. Ln asset is calculated by taking the natural logarithm of acquirer's assets. The private target is a dummy variable and takes a value of 1 if the target is a private firm and 0 otherwise. The diversifying deal is a dummy variable and takes a value of 1 if acquirer and target are from different industries (as measured by 2-digit SIC) and 0 otherwise. Emerging market dummy variable takes a value of 1 if acquirer is from emerging country and 0 otherwise. English Common law dummy variable takes a value of 1 if acquirer is from country having the law system based on English Common law and 0 otherwise. Voice, stability, Government effectiveness, Regulatory, and Rule of law are legal variables proposed by Doidge et al. (2007). The corruption index (available at <https://www.transparency.org/cpi2018>). CEO is chair of board is dummy variable takes a value of 1 if acquirer's CEO is Chair of board and 0 otherwise. Board structure is dummy variable takes a value of 1 if acquirer's board structure is two-tier system and 0 otherwise. In columns II and III, we split the sample into high and low-social-norm sub-samples to allow comparison across two categories. The t-statistics in parentheses are based on standard errors adjusted for heteroscedasticity. The dependent and control variables are winsorized at the 1st and 99th percentiles. * indicates significance at the 10% level; ** at the 5% level; and *** at the 1% level. Numbers are rounded up to the fourth decimal place. The deals which are announced in the period of five days before and after other deals' announcements of the same acquirer are excluded.

Appendix 4: Additional tests – Continuous norm measure and G20 without the US

In this section, rather than using the binary social norm level variable, we adopt continuous norm measure for robustness of the result. Moreover, we exclude the United States from the G20 sample to ensure our results are not driven by one big country.

In table A.5.1, column I, though the sin acquirers' returns in M&A announcements are less than non-sin acquirers' returns, the sin acquirers in higher social norm level countries have higher returns than in lower social norm level countries. In column II, we exclude the US from the sample and the results are similar after rebalancing the sample.

Table A.5.1: Regression analysis for five-day [-2,2] window CAR (cumulative abnormal return) around M&A announcement.

Variable	(I)		(II)	
	G20 countries		G20 countries without the US	
	(1) Window [-2,2]	(2) Window [-2,2] Entropy balanced	(3) Window [-2,2]	(4) Window [-2,2] Entropy balanced
Sin acquirer	-0.0514** (-2.01)	-0.0888*** (-2.72)	-0.0303 (-1.26)	-0.0505* (-1.68)
Continuous social norm levels (CSNL)	-0.0012 (-1.04)	-0.0026 (-1.46)	-0.0015 (-0.94)	-0.0009 (-0.42)
Sin acquirer*(CSNL)	0.0022** (2.26)	0.0037*** (2.91)	0.0012 (1.32)	0.0021* (1.81)
Sin target	-0.0035 (-1.15)	-0.0029 (-0.86)	-0.0018 (-0.48)	-0.0018 (-0.47)
Other control variables	Yes	Yes	Yes	Yes
(Intercept)	0.0441 (1.18)	0.1077* (1.78)	0.0576 (1.25)	0.0743 (1.02)
Country, year, industry fixed effect	Yes	Yes	Yes	Yes
R-squared	0.0515	0.0622	0.0803	0.0816
Adj R-squared	0.0322	0.0431	0.0516	0.0530
Obs.	6,107	6,107	3,965	3,965

This table reports the results of regressions of Cumulative abnormal return (CAR) (dependent variable) for window [-2,2] on a Sin acquirer, sin target dummy variables, Continuous social norm level (CSNL) variable and other control variables for G20 sample over the period 1993-2017.

Sin acquirer (*sin target*) takes a value of 1 if the acquirer (target) in the sin industries (i.e., tobacco, alcohol, and casino), and 0 otherwise. In columns (2) and (4), we reweight the sample using entropy balance to control for endogeneity and model dependency problems. The t-statistics in parentheses are based on standard errors adjusted for heteroscedasticity. The dependent and control variables are winsorized at the 1st and 99th percentiles. * indicates significance at the 10% level; ** at the 5% level; and *** at the 1% level. Numbers are rounded up to the fourth decimal place. The deals which are announced in the period of five days before and after other deals' announcements of the same acquirer are excluded.

In table A.5.2, column A, in G20 countries without the US, the acquirers are motivated by market-timing and synergy motives. The sin acquirers are less motivated by market-timing than non-sin acquirers. In high social norm countries, the sin acquirers are more motivated by synergy than non-sin acquirers. However, in low social norm countries, the sin acquirers are less motivated by synergy than non-sin acquirers.

Table A.5.2: Merger acquisitiveness regressions – G20 without the US

Valuation component	(A) All G20 country		(B) High-social-norm country		(C) Low-social-norm country	
		Entropy balanced		Entropy balanced		Entropy balanced
Market-timing	0.2428*** (10.92)	0.2292*** (11.06)	0.2117*** (6.33)	0.1731*** (5.41)	0.2553*** (8.90)	0.2571*** (9.81)
Sin firm	0.1003** (2.39)	0.1517*** (3.50)	-0.2340** (2.40)	-0.2364** (-2.47)	0.1866*** (3.85)	0.2377*** (4.77)
Market-timing * sin firm	-0.1075** (-3.08)	-0.0838** (-2.43)	-0.0177 (-0.24)	0.0320 (0.45)	-0.1263*** (-3.11)	-0.1138*** (-2.84)
Synergy	0.1312*** (4.22)	0.2107*** (6.04)	0.2919*** (3.90)	0.2697*** (3.80)	0.1250*** (3.77)	0.2002*** (5.27)
Synergy* sin firm	0.0080 (0.18)	-0.0493 (-1.04)	0.3281** (2.49)	0.3484** (2.74)	-0.0306 (-0.71)	-0.0830* (-1.76)
Constant	-1.1746*** (-11.92)	-1.2447*** (-11.80)	-1.4377*** (-7.48)	-1.6401*** (-8.08)	-1.1774*** (-11.04)	-1.2488*** (-10.99)
Country, year, industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Log likelihood	-4949	3064	-1149	-694	-3762	-2346
LR chi ²	765	721	324	259	472	502
Obs.	12,802	12,802	3,677	3,677	9,125	9,125

This table presents results of probit regressions on motives of corporate mergers using M/B decomposition components (i.e., M/V, and V/B). The dependent variable is a dummy with a value of 1 if the firm is an acquiring firm. The independent variables are named market-timing (this is M/V component) and synergy (this is V/B component). Z-statistics are in parentheses. In columns marked “entropy balanced”, We control for the endogeneity problem and model dependency by using entropy balance (see Hainmueller, 2012). We reweight the control observations (i.e., non-sin firm) so that the interesting covariates used in our model will have identical mean value across the treated and control groups. By this method, we could retain all information in our sample. The detailed explanation for each component is in Table A1. ***,**and* denote significance at the 1%, 5%, and 10% levels, respectively.