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# The influence of fiscal policy on US aggregate merger activity

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## Abstract

In recent years, aggregate merger (M&A) activity has fluctuated substantially throughout the world. This paper contributes to the literature by examining the influence of fiscal policy on M&A activity. M&A activity is measured by three different variables namely, quarterly deal frequency, quarterly deal value and a relative measure which is defined by taking the ratio of the deal value to the S&P 500. A distinction is made between total M&A, inward M&A and outward M&A, since fiscal policy could have a different impact on different streams. Fiscal policy is utilized by two variables, namely government debt as a percentage of GDP and government expenditures. Before testing the hypothesized relationships, Augmented Dickey Fuller (ADF) tests and Engle Granger Co-integration tests are employed in order to examine whether the variables are stationary or co-integrated. The relationship between fiscal policy and M&A activity is measured by performing an Error Correction Model (ECM), since the tests clarify that some of the variables are non-stationary, though co-integrated. The regression results show that government debt has a significant negative effect on M&A activity, whereas government size has a positive influence on all M&A activity streams. Additional robustness tests also confirm these relationships.

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## I Introduction

Mergers and acquisitions (M&A) have been an important factor in the growth of various companies, in particular in developed countries (Hsueh et al., 2014). Firms enter M&A transactions in order to achieve certain goals, such as increasing the market position or generating economies of scale. M&A activity has shown a global upward trend, though in the last two decades the amount and value of M&A deals has fluctuated substantially. For instance, the number of US M&A deals has increased more than ten times in 2015 in comparison to 1997. On the other hand, total US aggregate M&A deal value has decreased from \$1195 billion in 2014 to \$692 billion in 2015 (Zephyr, 2016). According to Robin Johnson, corporate partner at Eversheds, the EMU sovereign debt crisis could be one of the factors for a decline in global deal making activity (Donfrancesco, 2011). This period is considered as one of the biggest crises faced by a majority of developed countries after gaining political independence in 1945 (Ribeiro et al., 2012). Due to this crisis, global and US deal making activity in 2011 has fallen below the M&A level of 2004. It seems likely that companies with cash were still willing to pay a premium in order to take over firms since volume decreased by 11% whereas total deal value only decreased by 7% in the period between 2010 and 2011 (M&APortal, 2011). During the government debt crisis an increase in macroeconomic instability and policy uncertainty can be identified and as a consequence firms are more likely to postpone or cancel M&A transactions (Bonaime et al., 2016). Therefore, the question arises if fiscal policies by governments, which were an important factor in the EMU sovereign debt crisis, can be considered as a determinant of M&A activity.

Public borrowing is used to stimulate economic growth by injecting money in the economy from foreign investors (external debt) and by distributing resources (internal debt) in the country itself (Karazijiene & Saboniene, 2009). Public debt related policies can have a significant impact on the economic activity within a country, since firms move their capital to countries where there are opportunities to generate high returns (Sharifi-Renania & Mirfatah, 2012). The height of the public debt is considered as a major determinant how companies and investors perceive the economic stability of a country (Abbas & Christensen, 2010). High public debt will lead to negative investor expectations about the future economy. For instance, Berben & Brosens (2007) have shown that a rise in government debt decreases private consumption in high government debt countries while it remains stable in low government debt countries. In addition, firms and investors are likely to be less active in countries with big governments, since there is less room for innovation due to crowding out effects (Ostadi & Ashja, 2014). On the other hand, firms could be attracted by countries which increase their short-term public investment based on public borrowing, such as higher subsidies (Ribeiro et al., 2012). It becomes clear that countries should handle public finance with extreme care, since the cost of debt can become higher than the benefits when the public debt of a country becomes unstable.

In previous years, various studies have investigated M&A from a theoretical and empirical perspective. Important insights are provided about issues as post-merger performance of the merged company, agency issues and the characteristics of acquiring and target firms. Nevertheless, there are significant mixed results about the major causes of aggregate merger activity and the phenomenon of merger waves is still not fully understood (Komlenovic, 2008). The studies which have investigated the major causes of merger activity can roughly be divided into four categories, namely: a stock market analysis, an industry-level analysis, a firm-level analysis and a macro-economic analysis (Choi & Jeon, 2011). Prior studies (Agarwal & Ramaswami (1992); Brouthers et al. (1996); Roberto (2004); Somlev & Hoshino (2005); Harford (2005) and Jensen (2005)) have mainly focused on industry- and firm level indicators in order to explain movements in merger activity. For instance, Jensen (2005) found that managers make more aggressive merger decisions when there is an increase in free cash flows or reserves, whereas Harford (2005) examined that industry shocks regarding regulation or technology could have an impact on the amount of deals in a certain industry. However, recent studies show that the trends in aggregate merger activity also depend on common factors in an economy, such as stock markets and other macro-economic factors. For example, Nelson (1959) found a positive relationship between stock prices and overall merger activity, since high stock prices give an indication of higher expected future earnings. Moreover, Beckenstein (1979) examined a positive relationship between GDP and merger activity within a country, since countries with a high consumer demand will attract more foreign companies.

Next to factors as GDP and stock prices, various authors have examined the impact of governmental activities on M&A activity, though mainly from a monetary perspective. The cost of capital is expected to decline after an increase in the money supply of the economy (Clarke & Ioannidis, 1994). The lower cost of capital makes it easier for firms to attract capital for performing M&A activities (Uddin & Boateng, 2015). The interest rate is the second monetary policy factor which is highly examined. Lower interest rates in the home country will also reduce the cost of financing and as a result M&A activity is expected to increase (Tolentino, 2010). In comparison to monetary policy, there have only been a few studies which have investigated the impact of fiscal policy on M&A activity. Wijeweera et al. (2007) have investigated the effect of corporate taxes on US FDI and they showed that corporate income tax rates have a significantly negative influence on inbound American FDI. A country becomes less attractive for foreign investors if the corporate tax rate increases. Moreover, Ngelechey (2015) examined the influence of public debt on FDI in Kenya and has found a positive impact of public debt on FDI. Though, it must be stated that FDI consists of Greenfield (GF) investment and M&A activity. Before the 1990's, FDI flows were mainly based on M&A activity, however a growth in GF investment can be identified after 2000 (Davies et al., 2015). As a consequence, the studies of Wijeweera et al. (2007)

and Ngelechey (2015) do not seem to capture the influence of the fiscal policy on M&A activity. The article by Garkusha et al. (2015) on the impact of UK corporate taxes on merger activity is the only paper to my best knowledge, which has examined this relationship. Their article clarifies that a decrease of UK corporate taxes did not have a substantial positive impact on M&A activity, since the UK is not considered as a tax haven. Due to the limited studies on this subject, there is no full understanding how government policies affect M&A activity.

Thus, this study examines the impact of fiscal policies on US aggregate merger activity trends in the period between 1997 and 2015. The main objective of this paper is to measure fiscal policy determinants of aggregate merger activity and the main research question this study tries to answer is:

To what extent do fiscal policies have an influence on US aggregate merger activity?

This study adds to the current M&A literature, since it is the first study which examines the relationship between government debt and government expenditures on the one hand and M&A activity on the other hand. Moreover, this study makes a contribution to the theory of government debt, by increasing the knowledge how government debt influences the economy (Martin, 2009). In the third place, it adds knowledge to the relationship between government size and economic activities, which is full of contradictory findings (Bergh & Henrekson, 2011). Next to the theoretical contributions this article also makes an important empirical contribution, since it improves the framework for investigating the determinants of aggregate merger activity. Choi & Jeon (2011) only make use of total M&A activity and Uddin & Boateng (2011) only measure the inward and outward M&A flows. In order to construct a full overview of the determinants of aggregate merger activity this paper will use all three indicators.

The impact of fiscal policy on M&A activity is measured by applying time-series econometric tools. Government debt as a percentage of GDP and total government expenditures are used as proxies of fiscal policy, whereas M&A activity is measured by total number of deals, total deal value and total deal value/ S&P 500. Since the impact of fiscal policies on various M&A streams can be different this study will divide merger activity in three categories, namely: total M&A activity, inward M&A activity and outward M&A activity. Augmented Dickey-Fuller (ADF) and Engle Granger Co-integration tests are carried out in order to test whether non-stationarity or co-integration plays a role. This study employs Error-Correction Models in order to examine the influence of fiscal policy on M&A activity, since some of the variables are non-stationary though co-integrated. Various control variables are integrated in the model, such as GDP and the foreign exchange rate. Furthermore, this study performs various robustness tests with a subsample, which consists only of deals with a deal value higher than \$10 million, in order to get a wider picture about the relationship. The performed tests show that government debt has a

negative impact on the three streams of M&A activity, whereas the streams of M&A activity are positively influenced by government expenditures. Path dependency for domestic firms could play a role for domestic firms, since in most models government expenditures and government debt have the smallest impact on outward M&A activity. These relationships are also found when conducting robustness checks.

The findings of this thesis will be practically relevant in two ways. In the first place, this paper adds to the understanding of the government, in particular the national treasury, why firms locate themselves in certain countries (Dunning, 2009). Governments can implement more effective policies, when they know how their fiscal policy could influence M&A activity and it can adjust their policies in order to attract the right amount of M&A. In the second place, foreign and domestic firms could make use of this study. The possibility to generate higher returns is an important determinant of aggregate merger activity (Green & Meyer, 1997). This article will improve the understanding of firms why a country becomes more attractive. As a consequence, firms can improve their business model in order to increase their profitability.

The remainder of the paper is structured as follows. In section 2, the current literature on aggregate merger activity and fiscal policy is discussed. Section 3 develops various hypotheses and section 4 describes the data and methodology framework of the paper. In section 5, the main results are presented and additional analyses are performed. Section 6 gives a brief conclusion and provides directions for further research.

## II Theoretical background

This section provides information about current literature on M&A's and its determinants. Then, the following section discusses the fiscal policy and its relationship with aggregate M&A activity.

### 2.1 Mergers and Acquisitions

In the broader sense, M&A include all transactions which lead to a change in ownership of an entity. Many authors interchangeably use the terms mergers and acquisitions, however there are differences between the two transactions. A merger takes place when two companies combine their assets and liabilities in one entity and it results in a transfer of the rights and liabilities of one or more undertakings to another firm. Mergers can roughly be divided into three categories, namely horizontal (a transaction between competing companies within the same industry), vertical (a transaction between firms which are related as a client vs. supplier or buyer vs. seller) and conglomerate (a transaction between companies which are not related). On the other hand, an acquisition refers to a transaction where one company purchases another firm and where the acquired firm is absorbed into the other firm. Acquisitions can be divided into asset acquisitions and share acquisitions. In a share acquisition the buyer purchases the shares of a target, which results in taking over control of the company, whereas in an asset acquisition the acquiring company buys certain assets of the target firm. In an asset acquisition there needs to be an agreement which assets and liabilities will be transferred (Jones & Sufrin, 2014).

There are various reasons why firms would like to be involved in M&A transactions. The motives can roughly be divided into value creation, managerial self-interest, environmental factors and firm characteristics. Firms are likely to engage in M&A if it has the idea that it could increase its market power or improve its efficiency. One of the main reasons of horizontal acquisitions is to generate economies of scope by redeploying various assets. Capron et al. (1998) have shown that horizontal acquisitions often result in resource realignment between acquirers and targets in order to strengthen and extend their resources. Where the previous motives of mergers can lead to value creation for the company, managerial self-interest often lead to value destruction for the firm. In the first place, Agrawal & Walking (1994) found that acquisition activity is higher in industries with higher CEO compensation. Moreover, acquiring CEO and director options have a positive influence on the amount of M&A deals (Sanders, 2011; Deutsh et al., 2007). Next to the compensation of managers, managerial hubris also seem to play an important role. Jensen (1986, 2005) and Harford (1999) have clarified that managers make more aggressive merger decisions if the free cash flows and cash reserves increase. This finding is also supported by Schleifer & Vishny (2003), who claim that a high level of cash flow and a low level of financial constraints influence positive merger trends during booms. In the third place, acquisition behavior is likely to be affected by environmental uncertainty and regulations. In comparison to less stable environments a stable economy provides firms better opportunities to enter M&A and



generate higher returns (Bergh & Lawless, 1998). Moreover, higher accounting standards and stronger shareholder protection have a positive effect on the M&A-environment, since it provides more trust in the transaction (Rossi & Volpin, 2004). In the last place, firm characteristics as acquisition experience and network ties are considered to have a positive impact. Halebian et al. (2006) have shown that there is an increased likelihood that firms will enter M&A, when they were recently engaged in a transaction, particularly when a strong acquisition performance can be identified. It seems to be the case that the type of a recent transaction (e.g. horizontal, vertical or conglomerate) increases the likelihood of engaging in the same type of transaction (Amburgey & Miner, 1992). With regard to network ties, managers seem to imitate the behavior of firms to which they have interlocking directorships with. As a result, there is an increased likelihood that a firm will enter into a transaction when an interlocked company has recently performed a transaction (Haunschild & Beckman, 1998).

## 2.2 Merger waves

Since the 1950's, M&A activity has been investigated from various perspectives. In the literature there is agreement about the existence of various merger waves in specific countries, and as a consequence other factors next to the inside-firm factors (mentioned in section 2.1) play a significant role (Brealey & Myers, 2003). Between 1893 and 2007, there have been six M&A waves, and each merger wave is influenced by an event outside the M&A world. The first period from 1893-1904 is considered as the major horizontal merger wave where big manufacturing, telephone oil, mining and railroad companies were created. This period came to an end after the implementation of antitrust laws applicable to horizontal mergers in 1904. The second wave started in 1919 and ended in 1929 and is characterized by a significant increase in vertical integration. In this wave the major automobile manufacturers were established. The third wave was dominated by conglomerate mergers and lasted from 1955 to 1969. Big established firms entered into new industries in order to diversify their activities. The fourth period from 1974 to 1980 is identified as the takeover wave and hostile bids by investment banks on behalf of corporate raiders dominated the M&A-world. In the fifth merger wave from 1993 to 2000 many mega deals were settled. These deals benefited from globalization and the dot.com boom. The period ended after the bursting of the Millennium Bubble and massive scandals as Enron. After this period government paid more attention to the corporate governance within firms (Lipton, 2006). In 2003, the sixth merger wave emerged and the main driver was abundant liquidity. The beginning of the financial crisis in 2007 led to the end of sixth merger wave (Alexandridis et al., 2012).

### 2.3 Aggregate merger activity

At the moment, there is agreement about the existence of merger waves and numerous studies have made a contribution to define determinants of aggregate merger activity. However, the issue of the primary causes of M&A activity seems to be unresolved at the moment, since not all relationships have been examined (Choi & Jeon, 2011). The literature on the outside-firm determinants of merger activity can roughly be divided into three categories, namely: stock market-level, industry-level and macro-economic level.

The first studies trying to examine the relationship between the stock market and merger activity are performed by Weston (1953) and Nelson (1959), who found a positive relationship between changes in U.S. stock prices and aggregate merger activity. This positive relationship is also found by Gort (1969), Guerard (1989), Benzing (1991), Evenett (2003) and Shleifer & Vishny (2003). High stock prices indicate the expectation of higher economic growth and affect the economy via various channels (Melicher et al., 1983; Benzing, 1991). Firstly, the price of a share is equal to sum of all future dividend payments discounted to its present value and as a consequence high share prices give an indication for higher expected earnings in the future. Moreover, high stock prices have a positive influence on pension funds holding shares and as a result an increase in share prices will increase the capital of firms and individuals. In the last place, the confidence of households and firms in the state of the economy is increased and there is less skepticism about their future position (ECB, 2012). However, Vasconcellos & Kish (1998) have shown the opposite result, since they found that foreign acquisitions of US companies increases if the US stock market is considered to be depressed relative to foreign stock market exchanges. It is expected that companies are more likely to enter into M&A instead of another entry mode when the target share prices are underpriced (Oster, 1990).

The second stream of the outside-firm determinants focuses on industry-related characteristics. Aggregate merger waves can be caused by various technological, economic, or regulatory shocks in different industries, such as an implementation of a law or innovations in used technology. A shock could change the industry structure and could be a reason for firms to merge with or take-over other firms (Mitchell & Mulherin, 1996). For instance, Facebook acquired WhatsApp, since the technology and services of WhatsApp could improve the market position of Facebook (Huiskamp & De Valk, 2014). However, Harford (2005) has proven that whether an industry shock leads to a merger wave depends on the overall capital liquidity in a country. In addition, overall liquidity is considered to have a bigger influence on the various merger waves than an industry shock. Therefore, it seems to be the case that industry merger activity reacts in a collective manner on various economic variables, which have an impact on the whole economy. As a result, it is possible to examine merger activity by making use of overall market indicators (Choi & Jeon, 2011).

The third stream focuses on the impact of the macro-economic environment on merger activity. Various relations between macro-economic variables and merger activity have been examined such as the impact of GDP, interest rate, money supply and the foreign exchange rate. These factors can roughly be divided into inside factors related to monetary policy, other inside factors, and factors related to other countries. Variables which are related to monetary policy are the interest rate and the money supply. The influence of the interest rate on aggregate merger activity is investigated by various authors (Tolentino, 2010; Yagil, 1996; Uddin & Boateng, 2011). A decrease in the interest rate reduces the cost of financing in the home country. Since the cost of financing decreases it is easier for firms to attract capital and their profitability increases. As a result, a lower interest rate is likely to lead to higher M&A activities. In addition, Harford (2005), Resende (2008), Clarke & Ioannidis (1994) and Uddin & Boateng (2011) have examined the influence of money supply on the height of aggregate merger activity. Following the authors an increase in the liquidity position in the economy should have a positive influence on M&A activity, since it also leads to a lower cost of capital.

Other inside factors which could have an impact on merger activity are GDP, inflation rate and unemployment rate. According to Beckenstein (1979), Beckett (1986) and Guerard (1989) a positive relationship is found between merger activity and GDP. Anand & Kogut (1997) and Globerman & Shapiro (1997) have shown that a big country is more attractive to outside firms, since there is potentially a bigger demand for products in countries with a large GDP. This results in a higher inward flow of M&A activities. Following Uddin & Boateng (2011) high GDP could stimulate companies to invest abroad in order to diversify, which results in more outside M&A activities. By contrast, Caves (1989) has found that there is an increased likelihood that firms buy domestic companies rather than investing in unfamiliar markets when GDP is high. This is the case when firms believe that the domestic market is the best option to invest in due to a high GDP. As a result, GDP could have a different influence on outward and inward M&A activity. The impact of the inflation rate on aggregate merger activity has been examined by Black (2000) and Uddin & Boateng (2011). According to Black (2000) lower inflation rates lead to lower prices of targets and as a result a lower cost of debt. Therefore, it is expected that countries with low inflation rates will attract foreign M&A activity. On the other hand, high inflation in the home country will make firms more expensive and as a consequence this will lead to less foreign M&A activity. Moreover, Nelson (1966) and Benzing (1991) found a positive correlation between merger activity and business activity, which is measured by the unemployment rate. Unemployment is considered as an effective indicator to measure general economic conditions. Both authors found that merger activity is reduced when the unemployment rate is higher, since there is a lower level of production. In addition, the demand in countries with high unemployment rates is lower, because individuals have less spending capabilities.

The foreign exchange rate can be considered as an outside variable, which could have an influence on M&A activity. Froot & Stein (1991), Harris & Ravenscraft (1991) Kang (1993), Dewenter (1995) Goergen & Renneboog all have found an inverse relationship between the foreign exchange rate and additional FDI inflows. Following their reasoning, firms from countries with an appreciating currency should act as acquirers, since they can more easily buy foreign companies. On the other hand, companies in countries with depreciating currencies should rather be targets, since their acquisition price in relative terms will be reduced. It becomes clear that the foreign exchange rate will have a different impact on inward M&A activity in comparison to outward M&A activity. However, Kish & Vasconcellos (1993) have shown that this inverse relationship will not always hold. In line with McCulloch (1989) they argued that the nominal return an asset generates is considered as more important than the price of asset. As a result, the foreign exchange rate could have a minimal or no effect on aggregate merger activity.

The previous section makes clear that a lot of determinants of aggregate merger activity have been investigated. The effect of monetary policy on aggregate merger activity is heavily investigated by examining the role of variables as interest rates and money supply. However, the relationship between fiscal policy and aggregate merger activity has not been fully investigated.

## 2.4 Government policies

A government can influence the economy by making use of fiscal policies and federal monetary policies. Fiscal policy encompasses all government acts which are related to budget balance, tax and expenditure policies (Cottarelli & Keen, 2012; Tanzi & Zee, 1997). Taxation and spending are the main tools of a government to make an impact on the economy. In case of an economy running above or below its optimal level a government can increase or decrease the fiscal policy budget in order to influence the level of the output. For instance, when the economy is slowing down the government can increase its spending to create jobs, whereas in an overheating economy the government can choose to raise taxes or decrease spending. Therefore, the most general goals of fiscal policy is to speed up or slow down the entire economy. However, the government can also implement fiscal policies to stimulate specific groups or industries. Fiscal policy can lead to two major problems. In the first place, the credibility of a government can be damaged by excessive government deficits and governments will encounter difficulties to repay their debt if the debt has become too high. Secondly, fiscal government expansions can lead to indirect or direct damage to firms, which are trying to expand their business. There will be an increase in government issued bonds when a government is making use of loose fiscal policies. As a result private bonds will be crowded out due to an increase in availability of government bonds. In addition, fiscal government expansion could have a direct effect on firms. For example, private firms are discouraged to perform activities when a government would like to take over such activities (Northern Oak

Wealth Management, 2016). In comparison to most monetary policies economists do not agree about the precise influence of fiscal policy on the economy. On the one hand, it is widely expected that a 20% increase in the money supply will eventually lead to an increase in the price level. On the other hand, Keynesian and Neokeynesian economists predict that private consumption will improve after an increase in government consumption, whereas neoclassical models predict that higher government consumption will lead to lower private consumption (International Monetary Fund, 2015).

In comparison to fiscal policy, monetary policy is less direct in influencing the economy. Governments make use of monetary policy in order to control the access of money for individuals and firms. In the US, the Federal Reserve is responsible for the monetary policy and the Fed has to ability to alter the interest rate on US loans. By changing the interest rate the Fed can encourage people to spend or save more. The main problem related to monetary policy is the height of the inflation. A high inflation rate is the consequence of a loose fiscal policy, whereas a tightened monetary policy during a weak economy could lead to deflation. This could eventually lead to money hoarding and increasing economic contraction. Monetary policy is mainly used as a first tool to influence the economy, since it could take over a year to implement fiscal policy. However, monetary policy is considered to be less direct and precise than fiscal policy, since it is focused on the overall market climate. The government uses fiscal and monetary policies in order to achieve goals and create an effective economy (Northern Oak Wealth Management, 2016).

## 2.5 M&A activity and Greenfield investment

At the moment, the relationship between government policies and merger activity has not been fully investigated, since there has been a main focus on monetary policy and the most used dependent variable is FDI (Foreign Direct Investment). For instance, Globerman & Shapiro (1999) have investigated the relationship between government policies and FDI in Canada, whereas Ngelechey (2015) have investigated the relationship between government debt and FDI in Kenya. The FDI measured by both authors consists of Greenfield Investment (GF) and cross-border mergers and acquisitions (M&A). Before the 1990's, the origin of most FDI flows was mainly M&A (Globerman & Shapiro, 1999 Head & Ries, 2008), however after the 2000's there has been remarkable growth in GF FDI (Davies et al., 2015). As a result, both studies are not appropriate to capture the influence of fiscal policy on merger activity. There are various similarities between GF and M&A. In the first place, the goal of both streams is to seek out large markets with low international barriers. In addition, developed countries are the main sources of these streams and both are likely to be affected by variables as GDP and distance.

In contrast, there are also various differences between both modes of investment. The main distinction between the two modes is that M&A involves a transfer of ownership in order to integrate arbitrage opportunities, whereas in GF parent companies try to build its operations in

the foreign country by establishing a subsidiary. As a consequence, GF has a bigger focus on the own capacities of a firm in comparison to M&A. According to Davies et al. (2015) this implies that firms with high origin productivity focus more on GF, since a new entrepreneur is only beneficial if the productivity exceeds that of the origin-country. In my opinion this does not have to be the case, since there are a lot of other reasons why firms are involved in investments. For instance, economies of scale and interlocking relationships could also play a role in the decision whether to enter into investments. However, it seems reasonable to believe that M&A is more sensitive to short-run changes in market size, capital market depth and currency crisis, whereas GF is more sensitive to long-run factors such as low- tax locations, quality of institutions, technological developments and degree of comparative advantage. This is due the fact that the main objective of M&A is to exploit arbitrage opportunities, where the main goal of GF is to exploit the capacities of the firm. Though, it must be stated that both M&A and GF are expected to be influenced by all previously mentioned factors (Davies et al., 2015). Due to the extreme growth in GF investments FDI cannot be used as a variable to measure M&A activity.

## **2.6 Relationship government policy and M&A activity**

Fiscal policy and monetary policy can both have an influence on aggregate merger activity, however their impact is likely to be different. It seems to be the case that fiscal policy can have an impact on M&A activity via more channels. The two main channels of monetary policy to influence the height of aggregate merger activity are the interest rate and the money supply. A lower interest rate and a higher money supply lead to a lower cost of financing in the home country. As a consequence, it becomes easier for companies to enter M&A.

Fiscal policy can influence M&A activity via three main ways, namely: corporate taxes, government spending and government debt. In recent years, intense global rivalry with regard to international corporate tax competition can be identified. For example, none of OECD countries increased their corporate income taxes in 2001, however 21 members decreased their tax rates (Wijeweera et al., 2007). One of the main reason of tax-cutting is to attract capital and provide an incentive to domestic investors not to invest abroad (Gropp & Kostial, 2011). According to De Mooij (2011) high corporate tax rates could have a negative effect on innovative firms. In addition, high tax rates will encourage domestic enterprises to seek investment opportunities in countries with lower tax rates (Becker & Fuest, 2011). As a result, an increase in corporate income taxes will have a negative influence on the attractiveness of the country. The influence of the corporate tax rate on aggregate M&A activity has already been investigated by Garkusha et al. (2015). In the UK, the tax rate moved from 28% in 2009 to 21% in 2014, whereas it has been flat at 30% the decade before. The objective of the UK government by lowering corporate taxes during the financial crisis was to improve the economic and financial environment and attract more foreign capital. The authors examined the influence of substantial corporate tax policy changes on

inbound and outbound M&A in the UK. However, the UK inward and outward acquisition flows have not been significantly influenced by the decrease in corporate taxes. It can be expected that outside investors do not consider the UK as a tax haven and from the theory it is expected that M&A activity is only to a small extent affected by long-term factors as corporate taxes (Davies et al., 2015). By contrast, Wijeweera et al. (2007) have found a negative relationship between corporate taxes and FDI inflows, since their study revealed that a 1% increase in US corporate taxes will reduce US FDI inflows with 1.1%.

It becomes clear that the impact of fiscal policy on merger activity has only been investigated from one channel, namely corporate taxes. In order to increase the understanding how fiscal policy affects merger activity the following chapter will state hypotheses with regard to the influence of government debt and government expenditures on M&A activity.

### III Hypothesis development

In order to get a full understanding of the relationship between government policies and M&A activity a distinction needs to be made between total M&A activity, outward M&A activity and inward M&A activity (Uddin & Boateng, 2011).

#### 3.1 Government debt

Government debt can be described as the total nation's debt of the local, state and the national government. It is an indicator of the economic health of a country and provides information on the sustainability of government finance (OECD, 2016). Martin (2009) has investigated that taxes can be delayed by increasing public debt and as a consequence current distortions can be reduced. This could have a positive influence on the attractiveness of a country. However the countries' image on international markets is heavily influenced by the height of government debt (Abbas & Christensen, 2010). Large government debts or fiscal deficits could lead to policy uncertainty and macroeconomic instability, since the ability of countries to absorb shocks decreases when government debt is high (Krugman, 1988). Policy uncertainty can be an important source of risk, since the standalone value of the target firm or the height of synergies related to the deal can become uncertain. Exposure to policy shocks can hardly be hedged since it lies outside the control of the firm in comparison to contracting uncertainty or output-price uncertainty. According to the real options theory uncertainty increases the value of the option to delay. Similarly, firms could postpone acquisitions or completely cancel the deal if policy uncertainty is involved. Bonaime et al. (2016) have found that policy uncertainty significantly declines aggregate deal volume, deal value and merger waves. The acquisition likelihood during the following years is likely to decrease by 8.9% after a one standard deviation increase in policy uncertainty. In addition, there is a higher likelihood of misallocation of resources since price signals are distorted and it will lead to a larger volatility of returns on investments (Fisher, 1993; Fatas & Mihov, 2013).

Next to policy uncertainty and macroeconomic instability a high government debt could lead to other negative effects for the economy. High debt will decrease growth in economy since consumers and firms expect to pay more taxes in the upcoming years and private investors are crowded out by the increasing government (Sutherland, 1997). In addition, the overall cost of debt financing is expected to increase, which will decrease the current and future state of enterprises, institutions and households. Firms and households will take this increase in the cost of debt financing into consideration, which will decrease their investment and spending capabilities (Ngelechey, 2015). Cecchetti et al. (2011) have shown that a public debt exceeding 85 percent of GDP could lead to a drag on growth and the marginal effect of additional debt becomes negative when the net present value of debt becomes 20-25 percent of GDP (Pantillo et al. 2011). It is expected that government debt will have a negative influence on M&A activity since the country



becomes less attractive to foreigners due to more policy uncertainty, lower macro-economic stability, higher future taxes and less growth. Therefore I hypothesize the following:

H1: The relationship between government debt and total M&A activity is negative.

The government debt could have a different impact on M&A inflows and M&A outflows. Firms are less likely to locate itself in a country with a high government debt, since they expect that the taxes will increase in the future, consumers will have less consumption capacity and there is an increase in political uncertainty and macro-economic instability (Sutherland, 1997). As a result I expect that government debt will have a negative impact on inflows. However, it can be expected that firms in countries with high government debt are willing to move to countries with low government debt, since companies would like to minimize their operations in the domestic country. Therefore, there is an increased likelihood that government debt will have a positive impact on M&A outflows.

H1a: The relationship between government debt and M&A inflows is negative.

H1b: The relationship between government debt and M&A outflows is positive.

### 3.2 Government spending

Countries with a larger government size will have a higher public expenditure relative to their GDP. Government spending can have an effect on the long-term growth via the labor supply, physical capital, and human capital. Employment can be stimulated by strengthening work incentives via social benefits. Government spending which leads to less unemployment can make a country more attractive for outside firms, since a bigger demand for products can be the consequence of a lower unemployment rate. Moreover, efficient public investments in physical capital will improve the infrastructure of economy. Expenditure policies in areas as health education could also have an important effect on human capital accumulation and as a consequence on economic growth. An increase in education spending will improve the ability of the economy to absorb new technologies, since the education level of a country is higher (International Monetary Fund, 2015). Yuan et al. (2010) have examined a positive relationship between government size and FDI inflows, due to an increased attractiveness. In addition, it is expected that merger activity will increase by policies which stimulate faster economic growth and exchange rate stability (Globerman & Shapiro, 1999).

By contrast, Ostadi & Ashja (2004) Amal et al. (2009), Biglaiser & Derouen (2006) and Pablo (2009) have found a negative relationship between government size and FDI inflows. These studies are in line with the current theory which predicts that a higher government size lead to a reduction in economic growth. It is expected that bigger governments could crowd out the presence of private investors and there could be less room for innovation (Bergh & Henrekson,

2011). As a result, it could be possible that foreign firms would not like to enter countries with big governments and domestic firms are more willing to leave the country, since there is less room for private companies. In addition, a big government could have a negative impact on the economy via increasing taxes, borrowing or printing money (Asimakopoulos, 2016). Following Barro (1990) and Scully (1995) the influence of government size on aggregate merger activity could be 'U-Shaped'. This means that an increase in government spending is beneficial up to a certain point, whereas it is negative after that level. Since the US government is relatively small in comparison to other developed countries I hypothesize that an increase in government spending will have a positive influence on aggregate merger activity.

H2: The relationship between government size and total M&A activity is positive.

Higher government spending, such as subsidies and investments, can attract foreign companies since it increases the attractiveness of the country. As a result, it can be expected that firms will move to the US with increasing government expenditures, since the influence of the US government is relatively small. In the second place, high government expenditures gives domestic firms more opportunities. Therefore, there is an increased likelihood that domestic firms have more possibilities to enter M&A. Moreover high government expenditures could also crowd out private firms, and as a consequence they are encouraged to enter foreign M&A. Therefore, it can be expected that government size has a positive influence on M&A inflows and outflows.

H2a: The relationship between government size and M&A inflows is positive.

H2b: The relationship between government size and M&A outflows is positive.

## IV Data and methodology

This study has collected data from the Zephyr Database, which provides comprehensive data on all M&A deals from 1997 till present on a daily, monthly, quarterly and yearly basis. The following criteria are used in order to construct a dataset.

- (a) The transactions are completed between January 1997 and December 2015
- (b) The firm level data on US mergers and acquisitions is aggregated into quarterly observations.
- (c) The acquirers or targets are public firms, private firms and subsidiaries located in the United States.
- (d) The transaction has to be a merger or an acquisition

The following table will present an overview of the number of deals and total deal value of total M&A activity, inward M&A activity and outward M&A activity. The deal values are presented in billion US dollars. The overall number of transactions included in the sample is 97,459 and the table makes clear that the number of deals and the deal value fluctuates substantially. For instance, there is a significant increase in the total number of deals, total deal value, total inward number of deals and total inward deal value from 1997 to 2000. However, a significant decline in these variables can be identified after 2000. The period before 2000 reflects the fifth merger wave, where firms benefited from the dot.com boom and globalization. Moreover, all variables decreased after 2007, which can be considered as the starting point of the financial crisis. In the period between 2009 and 2015 the variables increased again.

**Table 1:** Overview of aggregate deal-making activity

|       | Total number of deals | Total deal value | Total inward number of deals | Total inward deal value | Total outward number of deals | Total outward deal value |
|-------|-----------------------|------------------|------------------------------|-------------------------|-------------------------------|--------------------------|
| 1997  | 675                   | 82               | 211                          | 27                      | 366                           | 25                       |
| 1998  | 1,236                 | 242              | 408                          | 177                     | 660                           | 44                       |
| 1999  | 1,691                 | 410              | 462                          | 118                     | 813                           | 100                      |
| 2000  | 6,440                 | 1,516            | 838                          | 327                     | 957                           | 84                       |
| 2001  | 5,247                 | 716              | 658                          | 104                     | 772                           | 85                       |
| 2002  | 4,126                 | 374              | 475                          | 50                      | 641                           | 57                       |
| 2003  | 4,511                 | 395              | 446                          | 32                      | 678                           | 61                       |
| 2004  | 6,039                 | 634              | 556                          | 61                      | 981                           | 59                       |
| 2005  | 6,851                 | 850              | 649                          | 91                      | 971                           | 70                       |
| 2006  | 7,078                 | 931              | 691                          | 140                     | 1,075                         | 107                      |
| 2007  | 7,182                 | 944              | 741                          | 228                     | 1,007                         | 138                      |
| 2008  | 6,055                 | 704              | 614                          | 143                     | 945                           | 45                       |
| 2009  | 4,534                 | 684              | 399                          | 83                      | 640                           | 47                       |
| 2010  | 5,058                 | 499              | 476                          | 102                     | 828                           | 76                       |
| 2011  | 5,815                 | 742              | 585                          | 91                      | 1,005                         | 121                      |
| 2012  | 6,104                 | 531              | 596                          | 90                      | 947                           | 74                       |
| 2013  | 5,740                 | 805              | 525                          | 125                     | 934                           | 57                       |
| 2014  | 6,908                 | 1,195            | 711                          | 353                     | 1,182                         | 115                      |
| 2015  | 6,169                 | 692              | 670                          | 117                     | 1,055                         | 69                       |
| Total | 97,459                | 12,950           | 10,711                       | 2,460                   | 16,459                        | 1,435                    |

Source: Zephyr Database

#### 4.1 Dependent variables

The dependent variable, aggregate merger activity, is measured by using three different indicators, namely (1) number of completed M&A deals (Benzing, 1991; Uddin & Boateng (2011); Choi & Jeon, 2011), transaction value of M&A (Choi & Jeon, 2011) and the transaction value/S&P 500 (Choi & Jeon, 2011). The number of completed M&A deals is the sum of all completed and confirmed mergers or acquisitions within a certain quarter. The transaction value is measured by taking the value paid by the acquirer, excluding fees and expenses. This includes the price paid for common stock, options and warrants, debt, preferred stock and common stock equivalents (Choi & Jeon, 2011). Following Choi and Jeon (2011) the relative measure of the transaction value/ S&P 500 is used, since it provides a normalization effect for a boom or a crash in a market. For instance, the transaction value can be high due to high stock prices in a boom market, since transaction value is calculated by adding cash to equity. The same transaction in a crash market would have a lower transaction value, since stock prices are lower. As a consequence the indicator of transaction value/ S&P 500 could give more effective information on the value of deals.

These three measures will be used in order to measure total M&A activity, inward M&A activity and outward M&A activity. Outward M&A activity can be considered as all cross-border mergers and acquisitions where the initiating party is an U.S. firm. All M&A's initiated by a foreign firm where an American firm was a target sum up to inward M&A activity. Total M&A activity can be considered as all inward and outward M&A activities including all domestic M&A activities.

## 4.2 Independent variables

Fiscal policy is measured by making use of two indicators: namely US government debt and US government spending. Following Checherita-Westphal & Rother (2012) and Kumar & Baldacci (2010) government debt as a percentage of GDP will be used as a proxy for government debt. It is defined as the gross total US government debt as a percentage of its GDP. The health of the economy and the sustainability of government finance can be measured by making use of this variable. Debt is obtained by taking the sum of various government liabilities such as currency and deposits, loans, other accounts payable and various financial derivatives (OECD, 2016).

Following Marlow (1986), Saunders (1986), Saunders (1988), Folster & Henrekson (2001), Dar & Amirkhalkhali, Agell et al. (2006) and Colombier (2009) total government expenditures will be used as a proxy for government spending. Total government expenditures is calculated by taking the sum of components such as state subsidies, social security funds and investments in various industries. It is measured in billion US dollars (Datastream, 2017). The following table will present the values of the government debt as percentage of GDP and government spending in billion US dollars in the period between 1997 and 2015. The table makes clear that the government debt as percentage of GDP has increased over time with a major increase after 2009. By contrast, the height of government expenditures can be considered as rather stable.

**Table 2:** Overview of fiscal policy

|      | Government debt as percentage of GDP | Government expenditures (USD Billion) |
|------|--------------------------------------|---------------------------------------|
| 1997 | 77%                                  | 2,322                                 |
| 1998 | 73%                                  | 2,371                                 |
| 1999 | 68%                                  | 2,452                                 |
| 2000 | 62%                                  | 2,498                                 |
| 2001 | 63%                                  | 2,592                                 |
| 2002 | 68%                                  | 2,706                                 |
| 2003 | 72%                                  | 2,764                                 |
| 2004 | 79%                                  | 2,808                                 |
| 2005 | 80%                                  | 2,826                                 |
| 2006 | 78%                                  | 2,869                                 |
| 2007 | 77%                                  | 2,914                                 |
| 2008 | 85%                                  | 2,995                                 |
| 2009 | 103%                                 | 3,089                                 |
| 2010 | 114%                                 | 3,091                                 |
| 2011 | 120%                                 | 2,997                                 |
| 2012 | 124%                                 | 2,942                                 |
| 2013 | 125%                                 | 2,858                                 |
| 2014 | 125%                                 | 2,833                                 |
| 2015 | 125%                                 | 2,884                                 |

Source: Datastream

### 4.3 Control variables

This study uses several control variables (i.e. unemployment rate as a control variable for business activity, S&P 500 aggregate market value as a control variable for the stock market, GDP as control variable for the market size, interest rate as a control variable for the monetary policy and the foreign exchange rate as a control variable for outside factors) by following various other studies (Uddin & Boateng, 2011; Choi and Jeon, 2011). Section 2.3 shows that these variables have been investigated extensively in relation to merger activity.

Table 3 presents the descriptive statistics of the dependent variables, independent variables and control variables. The table includes the mean value, the median, the standard deviation, minimum value and maximum value of all used variables. The timespan of the data is from the first quarter of 1997 till the last quarter of 2015. It becomes clear the US inward cross-border deal value is higher than the US outward cross-border deal value, however the mean value of the number of outward deals is higher than the amount of inward deals. The deal values, governmental expenditures and GDP are presented in billion US dollars whereas the relative measure of total transaction value/S&P 500 is stated in million US dollars.

In comparison to the study by Choi & Jeon (2011) the mean values of total number deals per quarter and total deal value per quarter are significantly higher. The mean of total number of

deals per quarter reported by Choi and Jeon (2011) was 158.74 whereas the mean value of total number of deals per quarter found by this article is 1,282. In addition, Choi and Jeon (2011) measured a mean total deal value per quarter of 42 million US dollar, where this study found a mean total deal value per quarter of 170 billion US dollar. There are two causes for these differences. In the first place, Choi and Jeon (2011) added various criteria such as a minimum deal value of \$1million, a minimum holding of 100% of the shares of the target by the acquirer and the target should be an US firm, whereas this study did not make use of such criteria. In addition, the study by Choi and Jeon (2011) investigated a period with an extremely low deal making activity, namely the period between 1980 and 1990. Between 1980 and 2000 the transaction value increased by more than 100 times (Choi and Jeon, 2011). The low deal-making activity in the period before the 2000's is also found by Linn & Zhu (1997) since they report a mean of 1,932 for the annual number of deals in the period between 1965 and 1994.

The number of quarterly observations of 76 is roughly similar to the number of observations used by Choi & Jeon (2011) and Uddin & Boateng (2011). Choi & Jeon made use of 96 quarterly observations between 1980 and 2004, whereas the data sample of Uddin & Boateng (2011) consists of 70 quarterly observations between 1987 and 2006.

**Table 3:** Descriptive statistics

| Variables                               | Mean   | Median | Standard deviation | Min.  | Max.   |
|---|--------|--------|--------------------|-------|--------|
| Total deal value                        | 170    | 172    | 97.56              | 10    | 586    |
| Total number of deals                   | 1,282  | 1,422  | 487.99             | 75    | 2,006  |
| Total transaction value/S&P 500         | 130    | 120    | 65.84              | 13    | 418    |
| Total inward deal value                 | 32     | 26     | 27.19              | 3     | 139    |
| Total inward number of deals            | 141    | 141    | 39.88              | 28    | 222    |
| Total inward transaction value/ S&P 500 | 24     | 19     | 17.81              | 1.50  | 96.43  |
| Total outward deal value                | 19     | 17     | 10.19              | 4     | 51     |
| Total outward number of deals           | 217    | 223    | 53.67              | 31    | 316    |
| Total outward transaction value/S&P 500 | 15     | 14     | 6.98               | 2.49  | 32.87  |
| Government debt as % of GDP             | 90%    | 85%    | 23.54              | 61%   | 126%   |
| Government expenditures                 | 2,780  | 2,835  | 227.9              | 2,301 | 3,113  |
| Unemployment rate as % of GDP           | 6%     | 5.45%  | 1.76               | 3.90  | 9.90   |
| Stock                                   | 1,287  | 1,254  | 313.80             | 159   | 237    |
| GDP                                     | 13,282 | 13,854 | 2,837              | 8,402 | 18,222 |
| Interest rate                           | 2.46%  | 1.75%  | 2.26               | 0.25  | 6.5    |
| Exchange rate                           | 86.61  | 84.13  | 11.74              | 69.56 | 111.59 |

Number of quarters N=76 (Q1 1997 to Q4 2015)

#### 4.4 Empirical specification

The used data is a univariate time series in nature since the same variables are measured over time on a regular basis, namely per quarter. In addition, this article only examines the influence of macroeconomic variables on M&A activity measured in one country, namely the USA. Other types of econometric tools as panel data only would have been appropriate if there are more types of economic entities, for instance more countries (Pennstate Eberly College of Science, 2017). In order to get a wider overview of the relationship this study uses various independent variables for measuring US M&A activity. As a result this article, will apply time-series econometric tools in order to investigate the influence of macro-economic variables on aggregate merger activity between 1997 and 2015. Various characteristics of time series have to be taken into account when conducting time-series econometric tools. Firstly, Augmented Dickey-Fuller (ADF tests) will be employed in order to establish whether the used variables are stationary. It is necessary to define whether the variables are stationary or non-stationary by nature since this will have an effect on



the test this paper performs. Ordinary Least Squares (OLS) can be performed when the dataset contains only stationary variables, however an OLS regression can provide misleading results when some of the variables are non-stationary due to long-term relationships between the variables (Koop, 2009; Nielsen, 2005). However, regression models can be performed when the model produces stationary residuals, i.e co-integration. Possible co-integration between the variables can be identified by performing an Engle-Granger Co-integration (1987) test. The results of the ADF-tests and co-integration tests in the following chapter show that this study deals with non-stationary though co-integrated variables. There are two ways of dealing with this problem, namely transforming all non-stationary variables into stationary variables or performing an Error Correction Model (ECM) if the residuals are co-integrated (Rademakers, 2016; Nielsen, 2005). Following Uddin & Boateng (2011) performing an Error Correction Model (ECM) seems more plausible since we do not have to transform our variables by differencing. First-order differencing of variables could spur the regression results, since the changes in the variables rather than the levels are analyzed. Following Uddin & Boateng (2011), Johnson (1990) and Tan & Baharumshah (1999) this paper performs an ECM model where it adds an error correction term which consists of the one period lag of the residuals calculated from the performed regressions. In order to investigate the relationship between fiscal policy and M&A activity the following main model is used.

$$\begin{aligned} \text{MER}_t = & \alpha_0 + \beta_1 \text{FISPOL}_t + \beta_2 \text{UNEMP}_t + \beta_3 \text{STOCK}_t + \beta_4 \text{GDP}_t + \beta_5 \text{INRATE}_t + \beta_6 \text{EXRATE}_t \\ & + \beta_7 \text{ECM}(-1)_t + e_t \end{aligned}$$

The variable FISPOL represents the variables government debt as percentage of GDP and government expenditures.

In order to get a full understanding of the influence of fiscal policies on merger activity a distinction is made between total, inward and outward M&A activity (Uddin & Boateng, 2011). Therefore this study also tests the following relationships.

$$\begin{aligned} \text{CBMAOUT}_t = & \alpha_0 + \beta_1 \text{FISPOL}_t + \beta_2 \text{UNEMP}_t + \beta_3 \text{STOCK}_t + \beta_4 \text{GDP}_t + \beta_5 \text{INRATE}_t + \beta_6 \text{EXRATE}_t \\ & + \beta_7 \text{ECM}(-1)_t + e_t \end{aligned}$$

$$\begin{aligned} \text{CBMAIN}_t = & \alpha_0 + \beta_1 \text{FISPOL}_t + \beta_2 \text{UNEMP}_t + \beta_3 \text{STOCK}_t + \beta_4 \text{GDP}_t + \beta_5 \text{INRATE}_t + \beta_6 \text{EXRATE}_t + \\ & + \beta_7 \text{ECM}(-1)_t + e_t \end{aligned}$$

Where,

CBMAOUT = Cross-border mergers and acquisitions outflow. This is defined by all cross-border M&A deals where an American firm acts as an acquirer in a M&A deal.

CBMAIN = Cross-border mergers and acquisitions inflow. This is defined by all cross-border M&A deals where the American company acts as a target in a M&A deal.

Since the variables are measured in different units, such as percentages and billions of US dollars, this study will make use of standardized variables. This is performed by subtracting the mean and dividing it by its standard deviation. Table 4 gives an overview of the different variables used in this study.

**Table 4:** Data description

| Variable                     | Way of measuring  |
|------------------------------|---|
| <b>Dependent variable</b>    |   |
| <b>MER</b>                   | The US merger activity is measured by the previously mentioned nine indicators, namely: total deal value (DV) (which is the sum of all transaction values of concluded mergers and acquisitions, domestic as well as cross-border), total number of M&A deals (NUM) (which is the sum of all concluded mergers and acquisitions, domestic as well as cross-border) the deal value/S&P 500 (DV/S&P500) (which is the sum of all transaction values of all concluded mergers and acquisitions, domestic as well as cross-border, divided by the S&P 500), total inward deal value (INDV) (which is the sum of all transaction values of concluded mergers and acquisitions where an American firm has been a target for outside firms), total number of inward M&A deals (INNUM) (which is the sum of all concluded mergers and acquisitions where an American firm has been a target of a non-American firm), inward total deal value/ S&P500 (INDV/S&P500) (which is the sum of all transaction values of concluded mergers and acquisitions where an American firm has been a target for outside firms divided by the S&P500), total outward deal value (OUTDV) (which is the sum of the transaction values of all mergers and acquisitions where an American firm act as an acquirer in a cross-border deal), total outward number of deals (OUTNUM) (which is the sum of all mergers and acquisitions where an American firm acts as an acquirer in a cross-border deal), outward deal Value/S&P 500 (OUTDV/S&P500) (which is the sum of the transaction values of all mergers and acquisitions where an American firm acts as an acquirer in a cross-border deal divided by the S&P 500). |
| <b>Independent variables</b> |   |
| <b>GOVDEBT</b>               | Government debt as a percentage of GDP, where government debt includes all liabilities of the US government.  |
| <b>GOVEXP</b>                | Government expenditures: this includes all government consumption and investments by the US government such as subsidies, social security funds and infrastructure investments.   |
| <b>Control variables</b>     |   |
| <b>UNEMP</b>                 | The unemployment rate in the USA, which reflects the number of unemployed people as a percentage of the labor force.  |
| <b>STOCK</b>                 | The S&P 500 aggregate market value  |
| <b>GDP</b>                   | Gross domestic product in billion dollars   |
| <b>INRATE</b>                | The interest rate is measured by the percentage of the US federal funds target rate   |
| <b>EXRATE</b>                | The real exchange rate is measured by the value of the US traded weighted value against major currencies. 1973 is taken as the base year  |

## V Empirical results

Before running a time series regression, this article has to take several issues into account, such as multicollinearity, stationarity and co-integration. Multicollinearity is tested by performing a VIF test between one of the independent variables and control variables. Multicollinearity could spur coefficient results in time series, since it is hard to examine the effect of two or more variables if they are correlated. The following table presents an overview of the VIF results.

**Table 5:** Multicollinearity

| Model                   | Variables   | VIF  |
|-------------------------|---|------|
| Government debt         | Government debt, Unemployment rate, Stock, GDP, Interest rate and Exchange rate         | 7.72 |
| Government expenditures | Government expenditures, Unemployment rate, Stock, GDP, Interest rate and Exchange rate | 9.55 |

Table 5 shows that various multicollinearity does not play a significant role within the models, since the values are both below 10 (Smits, 2016).

### 5.1 Augmented Dickey-Fuller test

A second issue related to time series regression is stationarity. A variable is stationary if the mean, variance and autocorrelation structures do not change over time, whereas non-stationary data is unpredictable and cannot be modeled or forecasted. According to Koop (2009) OLS regressions can provide misleading results when non-stationary variables are included. In order to overcome this problem Augmented Dickey-Fuller (ADF) tests are carried out. The ADF tests are performed with the standardized values of the data series and the results are presented in table 6.

**Table 6:** Unit root test variables

| Variable                  | ADF-test statistic | Comment                | Order of integration |
|---------------------------|--------------------|------------------------|----------------------|
| Deal value                | -4.829***          | Reject $H_0$           | I(0)                 |
| Number of deals           | -2.622**           | Reject $H_0$           | I(0)                 |
| Deal value/S&P500         | --5.379***         | Reject $H_0$           | I(0)                 |
| Inward deal value         | -4.620***          | Reject $H_0$           | I(0)                 |
| Inward number of deals    | -3.408**           | Reject $H_0$           | I(0)                 |
| Inward deal value/S&P500  | -5.824***          | Reject $H_0$           | I(0)                 |
| Outward deal value        | -5.946***          | Reject $H_0$           | I(0)                 |
| Outward number of deals   | -3.773***          | Reject $H_0$           | I(0)                 |
| Outward deal value/S&P500 | -6.411***          | Reject $H_0$           | I(0)                 |
| Government debt           | 1.023              | Failed to Reject $H_0$ |                      |
| DIF Government debt       | -5.524***          |                        | I(1)                 |
| Government expenditures   | -3.151**           | Reject $H_0$           | I(0)                 |
| Unemployment rate         | -0.743             | Failed to Reject $H_0$ |                      |
| DIF Unemployment rate     | -3.463***          |                        | I(1)                 |
| Stock                     | -0.975             | Failed to Reject $H_0$ |                      |
| DIF Stock                 | -7.705***          |                        | I(1)                 |
| GDP                       | -0.003             | Failed to Reject $H_0$ |                      |
| DIF GDP                   | -5.369***          |                        | I(1)                 |
| Interest rate             | -1.201             | Failed to Reject $H_0$ |                      |
| DIF Interest rate         | -5.131***          |                        | I(1)                 |
| Exchange rate             | -0.950             | Failed to Reject $H_0$ |                      |
| DIF Exchange rate         | -5.899***          |                        | I(1)                 |

Where DIF means first-order differenced

\* Significant at 10% level

\*\*Significant at 5% level

\*\*\*Significant at 1% level

Table 6 shows that all dependent variables and government expenditures are stationary, since the null hypotheses can be rejected. However, all control variables and the independent variable government debt are non-stationary. These variables are only stationary when taking the first difference of the variable. OLS regressions with these non-stationary variables could lead to misleading results (Koop, 2009). However, non-stationary variables can be used, if there exists co-integration between the variables. Variables are co-integrated when the residuals of the regression of only first-order differenced variables are stationary in nature. Co-integration is tested by employing a unit root ADF test for the residuals (Nielsen, 2005). Therefore, this study performs 18 unit roots with first-differenced data, since merger activity is measured by nine variables whereas fiscal policy is measured by two variables.

**Table 7:** Unit root test residuals

| Variable                      | ADF-test statistic government debt | ADF-test statistic government expenditures |
|-------------------------------|------------------------------------|--|
| Res Deal value                | -13.610***                         | -13.464***                                 |
| Res Number of deals           | -9.347***                          | -9.131***                                  |
| Res Deal value/S&P500         | -14.005***                         | -13.849***                                 |
| Res Inward deal value         | -11.951***                         | -11.998***                                 |
| Res Inward number of deals    | -11.974***                         | -11.650***                                 |
| Res Inward deal value/S&P500  | -13.417***                         | -13.457***                                 |
| Res Outward deal value        | -12.904***                         | -13.018***                                 |
| Res Outward number of deals   | -9.800***                          | -9.498***                                  |
| Res Outward deal value/S&P500 | -13.457***                         | -13.628***                                 |

\* Significant at 1% level

\*\*Significant at 5% level

\*\*\*Significant at 1% level

As evident from table 7 the variables are co-integrated, since the residuals are stationary. Therefore, this article conducts an Error Correction Model (ECM) developed by Engle & Granger (1987) (Nielsen, 2005). Following Uddin & Boateng (2011), Johnson (1990) and Tan & Baharumshah (1999) the error correction term is the one period lag of the residuals calculated from the OLS regression with standardized variables.

## 5.2 Regression results

By conducting an ECM model this article tests the null-hypothesis that the coefficients of the indicators of fiscal policy are zero. Besides the regression outputs the tables provide an indication of the appropriateness of the ECM outcomes by presenting the following statistics: the adjusted  $R^2$ , the F-value, Durbin-Watson Statistic (DW) and the Breusch-Pagan (BP) statistic. The adjusted  $R^2$  and the F-value give an indication of the appropriateness of fit of the model. The DW-statistic measures autocorrelation, which is also known as serial correlation. Autocorrelation occurs when the error terms are not independent over time, since the time-series data is influenced by its historical values. A value near 2 is an indicator that there is no auto-correlation, whereas a value toward 0 or 4 could be an indication of autocorrelation. In addition, the BP-statistic is taken into consideration in order to test whether there exists heteroscedasticity within the model. Heteroscedasticity occurs when the error terms do not have a constant variance, though they depend upon the value of the variable (Cook & Weisberg, 1983). When the p-value of the BP-statistic is below 0.05 heteroscedasticity could play a role within the model and as a consequence this significance level is taken into account.

Following Smith (2013) and Uddin & Boateng (2011) the optimal lag for the independent and control variables can be identified by minimalizing the Akaike Information Criterion (AIC)

and the Schwarz Criterion (SC). In comparison to the AIC measure, the SC measure imposes a larger penalty for additional coefficients. Both values measure the relative goodness of fit for statistical model selection and the model with the lowest AIC and SC values is considered as the preferred model. Therefore, this study also performs the regression with one-period lagged variables and two-period lagged variables. However, the AIC and SC values show that the model with a lagged error correction term and no lagged independent variables is preferred above the models with lagged independent variables.

### 5.2.1 Government debt

**Table 8:** Government debt and total M&A

| Variables               | Total number of deals | Total deal value  | Deal value/S&P 500 |
|-------------------------|-----------------------|-------------------|--------------------|
| Intercept               | -0.009 (-0.20)        | -0.008 (-0.09)    | -0.006 (-0.06)     |
| Government debt         | -1.282 (-9.61)***     | -1.082 (-3.93)*** | -1.369 (-4.53)***  |
| Unemployment            | 0.369 (2.64)***       | 0.713 (2.79)***   | 0.868 (3.09)***    |
| GDP                     | 1.330 (8.04)***       | 0.378 (1.10)      | 0.742 (1.98)       |
| Stock                   | 0.311(2.61)**         | 0.892 (3.64)***   | 0.506 (1.88)       |
| Interest rate           | 0.073 (0.71)          | 0.294 (1.37)      | 0.340 (1.44)       |
| Exchange rate           | -0.113 (-1.21)        | -0.158 (-0.80)    | -0.059 (-0.27)     |
| ECM                     | 0.715 (7.72)***       | 0.196 (0.85)      | 0.185 (1.47)       |
| Adjusted R <sup>2</sup> | 0.846                 | 0.374             | 0.252              |
| F-value                 | 59.14***              | 7.34***           | 4.56***            |
| DW-statistic            | 2.060                 | 2.003             | 2.032              |
| BP-statistic            | 9.07**                | 10.02**           | 4.41**             |
| N                       | 75                    | 75                | 75                 |

\* Significant at 10% level

\*\*Significant at 5% level

\*\*\*Significant at 1% level

In section 3.1 this paper hypothesized that government debt is likely to have a negative influence on total merger activity due to expectations of higher future taxes and an increase in political uncertainty and macroeconomic instability. Table 8 shows that in all three models total merger activity is negatively influenced by government debt. The results are in line with Bonaime et al (2016), who states that an increase in policy uncertainty could encourage firms to postpone or to cancel acquisitions. The total amount of variation explained by the regression (adjusted R<sup>2</sup>) for the total number of deals is similar to the study by Uddin & Boateng (2011). However, the adjusted R<sup>2</sup> of the total deal value and the deal value/S&P 500 is relatively low and is similar to the studies by Choi and Jeon (2011), Pablo (2009) and Coffee (1999). The value of the adjusted R<sup>2</sup> can be influenced by heteroscedasticity in the model, which is shown by the relatively high BP-statistic values. In line with various authors as Nelson (1959) Gort (1969), Guerard (1989), Evenett (2003) this article finds a positive relationships between stock and aggregate merger activity. Following

the ECB (2012), high stock prices increases the optimism and capital of firms and individuals within the country. In addition, this study finds a positive relationship between the unemployment rate and aggregate merger activity, which does not support the study by Nelson (1966) and Benzing (1991). One explanation for the negative sign could be that there has to be a minimal level of unemployment within a country, since firms should be able to attract new workforce quickly when a merger or acquisition takes place. In the last place, a positive relationship between aggregate merger activity and GDP is found, which supports the findings by Beckenstein (1979) and Beckett (1986). The DW-statistic shows that autocorrelation does not play a role in the model.

**Table 9:** Government debt and inward M&A

| Variables               | Total number of deals | Total deal value | Deal value/S&P 500 |
|-------------------------|-----------------------|------------------|--------------------|
| Intercept               | -0.002 (-0.03)        | -0.005 (-0.05)   | -0.001 (0.01)      |
| Government debt         | -1.218 (-6.49)***     | -0.475 (-1.71)*  | -0.496 (-1.59)     |
| Unemployment            | 0.576 (3.32)***       | 0.550** (2.14)   | 0.634 (2.19)**     |
| GDP                     | 0.780 (3.37)***       | -0.109 (-0.32)   | 0.061 (0.16)       |
| Stock                   | 0.848 (5.08)***       | 0.924 (3.75)***  | 0.663 (2.38)**     |
| Interest rate           | 0.377 (2.61)***       | 0.047 (2.22)**   | 0.628 (2.62)**     |
| Exchange rate           | -0.037 (-0.28)        | -0.138 (-0.72)   | -0.0378 (-0.17)    |
| ECM                     | 0.424 (3.69)***       | 0.258 (2.10)**   | 0.137 (1.11)       |
| Adjusted R <sup>2</sup> | 0.697                 | 0.379            | 0.212              |
| F-value                 | 25.33***              | 7.46**           | 3.84***            |
| DW-statistic            | 1.998                 | 1.997            | 2.005              |
| BP-statistic            | 0.34                  | 11.70**          | 2.91               |
| N                       | 75                    | 75               | 75                 |

\* Significant at 10% level

\*\*Significant at 5% level

\*\*\*Significant at 1% level

Table 9 shows that the total number of deals is negatively influenced by government debt, which was expected by our hypothesis 1b. A countries' image is heavily impacted by the height of the government debt and outside firms expect that they will have to pay more taxes in the future when government debt is high. However, it only shows a significant result for the total number of deals whereas no or minimally significant results are presented for the other measurements. In addition, the sign for total number of deals is strong in comparison to the other indicators. One explanation for this could be that relatively small firms pay more attention to the government debt of a country in comparison to large firms. For small firms macro-economic stability and political uncertainty could have a devastating effect, whereas for large companies it only has a small effect since they have more resources. Similar to table 8 this table also shows a positive relationship between merger activity and unemployment, which is in contrast to existing



literature. Moreover, this table shows significant positive results for the relationship between stock and aggregate merger activity, since firms would like to move to countries where the optimism is high and where firms and individuals have enough capital. GDP only has a significant positive influence on the total number of deals. It is expected that high GDP attracts foreign firms since there is a higher demand. In contrast to the literature, this article finds a positive relationship between the interest rate and aggregate merger activity. There is an increased likelihood that an increase in interest rates decreases merger activity since it is more difficult to attract capital (Uddin & Boateng, 2011). However, an increase in the interest rate in the home country could provide foreign firms a comparative advantage, since these foreign firms still have access to their own capital market with lower interest rates. In all three models the regressions are not affected by autocorrelation, however with regard to the total deal value heteroscedasticity has to be taken into consideration.

**Table 10:** Government debt and outward M&A

| Variables                     | Total number of deals | Total deal value  | Deal value/S&P 500 |
|-------------------------------|-----------------------|-------------------|--------------------|
| <b>Intercept</b>              | -0.010 (0.18)         | -0.001 (-0.01)    | 0.02 (0.02)        |
| <b>Government debt</b>        | -0.622 (-3.61)***     | -0.891 (-2.93)*** | -1.011 (-3.08)***  |
| <b>Unemployment</b>           | 0.042 (0.26)          | 0.814 (2.89)***   | 0.916 (3.02)***    |
| <b>GDP</b>                    | 0.061 (0.28)          | 0.078 (0.21)      | 0.221 (0.55)       |
| <b>Stock</b>                  | 0.809 (5.25)***       | 0.889 (3.29)***   | 0.522 (1.79)       |
| <b>Interest rate</b>          | -0.140 (-1.05)        | 0.374 (1.60)      | 0.400 (1.59)       |
| <b>Exchange rate</b>          | -0.536 (-4.40)***     | -0.215 (-1.02)    | -0.137 (-0.60)     |
| <b>ECM</b>                    | 0.521(4.84)***        | 0.131 (1.07)      | 0.128 (1.04)       |
| <b>Adjusted R<sup>2</sup></b> | 0.729                 | 0.240             | 0.125              |
| <b>F-value</b>                | 29.48***              | 4.34***           | 2.51***            |
| <b>DW-statistic</b>           | 1.912                 | 1.959             | 1.996              |
| <b>BP-statistic</b>           | 0.18                  | 8.72**            | 3.53               |
| <b>N</b>                      | 75                    | 75                | 75                 |

\* Significant at 10% level

\*\*Significant at 5% level

\*\*\*Significant at 1% level

In chapter 3, this article hypothesized that government debt could have a positive impact on outward M&A activity, since domestic firms would consider to move to other countries in order to leave a country with increasing political uncertainty. However, the table shows similar results to the previous tables and are not in line with the hypothesis. It could be the case that an increase in government debt increases political uncertainty and as a result firms are less likely to enter M&A, whether it is domestic or outside M&A. The negative impact of the government debt on total number of outward deals is smaller in comparison to the impact on total number of deals and total number of deals. One explanation for this could be that foreigners take government debt more

into consideration in comparison to domestic firms. A positive relationship is found between government debt and unemployment rate for the measures total outward deal value and outward deal value/S&P 500. One reason could be that domestic firms consider to move to other countries when the unemployment rate is high. In comparison to the previous table no relationship is found between GDP and outward M&A activity. The signs for the relationship between stock and merger activity is positive, which is similar to the previous tables. This finding supports the notion that firms could enter M&A in other countries when optimism is high in the domestic country. With regard to the outward number of deals this study finds a negative relationship between the trade-weighted U.S dollar index and total outward number of deals. As a result, an appreciation of the dollar leads to more outward M&A, which is expected from the theory (Harris & Ravenscraft, 1991; Kang, 1993; Dewenter, 1995).

### 5.2.2 Government expenditures

**Table 11:** Government expenditures and total M&A

| Variables               | Total number of deals | Total deal value | Deal value/S&P 500 |
|-------------------------|-----------------------|------------------|--------------------|
| Intercept               | -0.012 (-0.26)        | -0.006 (-0.07)   | -0.004 (-0.04)     |
| Government expenditures | 1.112 (8.55)***       | 0.769 (2.80)***  | 1.082 (3.60)***    |
| Unemployment            | -0.365 (-3.69)***     | 0.083 (0.40)     | 0.071 (0.31)       |
| GDP                     | -0.251 (-1.05)        | -0.768 (-1.54)   | -0.837 (-1.53)     |
| Stock                   | 0.399 (3.00)***       | 0.875 (3.13)***  | 0.552 (1.80)       |
| Interest rate           | 0.134 (1.29)          | 0.332 (1.50)     | 0.383 (1.58)       |
| Exchange rate           | -0.016 (-0.17)        | -0.084 (-0.41)   | 0.043 (0.19)       |
| ECM                     | 0.761 (8.33)***       | 0.231 (1.79)     | 0.205 (1.61)       |
| Adjusted R <sup>2</sup> | 0.841                 | 0.326            | 0.1936             |
| F-value                 | 56.74***              | 6.12***          | 3.54***            |
| DW-statistic            | 2.068                 | 1.996            | 2.018              |
| BP-statistic            | 20.61***              | 5.26**           | 0.58               |
| N                       | 75                    | 75               | 75                 |

\* Significant at 10% level

\*\*Significant at 5% level

\*\*\*Significant at 1% level

In section 3 this paper hypothesized that the height of government expenditures is likely to have a positive effect on total M&A activity, since it could improve the attractiveness of the country. Table 11 shows that government expenditures has a positive impact on total merger activity, since there are positive results for all three measurements. It is in line with the theory which states that a country becomes more attractive if the government spends more on various projects, however it is not in line with the theory which states that the government could crowd out private entities. It could be the case that these signs are different in countries where the government intervention

is higher such as Greece or Italy. In contrast to the tables of government debt the unemployment rate has a negative influence on the total number of deals, which is expected from the theory (Nelson, 1966; Benzing, 1991). Moreover, this table also shows positive relationships between M&A activity and stock prices. In the models of total number of deals and total deal value there exists heteroscedasticity, which could have an influence on the found results.

**Table 12:** Government expenditures and inward M&A

| Variables               | Total number of deals | Total deal value | Deal value/S&P 500 |
|-------------------------|-----------------------|------------------|--------------------|
| Intercept               | -0.003 (-0.05)        | -0.002 (-0.02)   | 0.004 (0.04)       |
| Government expenditures | 1.047 (5.63)***       | 0.155 (0.58)     | 0.251 (0.83)       |
| Unemployment            | -0.127 (-0.90)        | 0.278 (1.36)     | 0.348 (1.51)       |
| GDP                     | -0.716 (-2.11)**      | -0.373 (-0.76)   | -0.327 (-0.59)     |
| Stock                   | 0.933 (4.92)***       | 0.798 (2.90)***  | 0.587 (1.89)       |
| Interest rate           | 0.424 (2.85)***       | 0.512 (2.39)**   | 0.659 (2.72)***    |
| Exchange rate           | 0.057 (0.42)          | -0.103 (-0.53)   | 0.001 (0.01)       |
| ECM                     | 0.446 (3.82)***       | 0.282 (2.28)**   | 0.151 (1.22)       |
| Adjusted R <sup>2</sup> | 0.676                 | 0.365            | 0.1948             |
| F-value                 | 23.02***              | 7.08***          | 3.56***            |
| DW-statistic            | 2.032                 | 1.998            | 2.006              |
| BP-statistic            | 0.22                  | 11.47**          | 2.80               |
| N                       | 75                    | 75               | 75                 |

\* Significant at 10% level

\*\*Significant at 5% level

\*\*\*Significant at 1% level

Hypothesis 2a stated that government size would have a positive influence on M&A inflows since it improves the attractiveness of the country. Table 12 shows that government expenditures have a significant positive influence on the total number of inward deals. In line with the reasoning under table 11 it is expected that the current size of the US government does not crowd out private investors and as a result an increase in government intervention will positively influence merger activity. When the US government size would increase in the upcoming years, the positive influence of government expenditures can change since private investors could be crowded out by the government. In line with all the previous results stock has a significant positive impact on all measurements. The table shows a negative sign for the relationship between GDP and inward M&A total number of deals, which is in contrast to the prediction that an increase in GDP will have a positive influence on inward M&A activity. It could be the case that firms do not want to move to countries with a high GDP, since in those countries the competition is likely to be greater. The height of the competition could have a serious impact on the market position of a firm. Similar to table 9, table 12 shows a positive result between the interest rate and merger activity, which is

not in line with the theory. However, this rise in interest rate could provide foreigners a comparative advantage, since they have still access to the domestic market.

**Table 13:** Government expenditures and outward M&A

| Variables               | Total number of deals | Total deal value | Deal value/S&P 500 |
|-------------------------|-----------------------|------------------|--------------------|
| Intercept               | -0.008 (0.15)         | -0.000 (-0.00)   | 0.003 (0.903)      |
| Government expenditures | 0.655 (3.99)***       | 0.750 (2.53)**   | 0.880 (2.76)***    |
| Unemployment            | -0.320 (-2.56)**      | 0.297 (1.32)     | 0.329 (1.36)       |
| GDP                     | -0.831 (-2.75)        | -1.003 (-1.86)*  | -1.046 (-1.80)*    |
| Stock                   | 0.914 (5.45)***       | 0.950 (3.14)***  | 0.611 (1.87)*      |
| Interest rate           | -0.116 (-0.88)        | 0.399 (1.69)*    | 0.425 (1.67)*      |
| Exchange rate           | -0.479 (-3.98)***     | -0.145 (-0.68)   | -0.058 (-0.25)     |
| ECM                     | 0.496 (4.43)***       | 0.124 (0.99)     | 0.114 (0.92)       |
| Adjusted R <sup>2</sup> | 0.731                 | 0.220            | 0.1034             |
| F-value                 | 29.79***              | 3.98***          | 2.22***            |
| DW-statistic            | 1.929                 | 1.945            | 1.98               |
| BP-statistic            | 0.14                  | 7.58**           | 2.76               |
| N                       | 75                    | 75               | 75                 |

\* Significant at 10% level

\*\*Significant at 5% level

\*\*\*Significant at 1% level

Hypothesis 2b stated that the relationship between government size and outward aggregate merger activity is positive, since higher government expenditures provide domestic firms more opportunities to enter into foreign M&A. Moreover, it can be expected that private firms are crowded out by an increase in government expenditures and as a result they will have an incentive to perform foreign M&A. The results in table 13 do confirm this expectation. Government expenditures has a significant positive impact on all three measurements of deal activity, though the influence is lower in comparison to total M&A. Path dependency could be one of the reasons of these lower signs, since domestic firms will take more factors into consideration when conducting foreign M&A. Similar to the previous tables a positive sign is shown for stock, since this will increase optimism. In addition, GDP has a negative influence, since a high GDP in the home country could discourage firms to move to other countries. Positive results are found between the interest rate and outward total deal value and outward deal value/ S&P 500. This finding does not support the studies by Tolentino (2010) and Uddin & Boateng (2011), who stated that merger activity will increase after a decrease in the cost of financing. However, the interest rate could have a different impact on outward M&A, since higher interest rates could provide firms incentives to move to other countries. Unemployment rate seems to play a different role on the total number of deals on one hand in comparison to the deal value/S&P 500 and total deal value

on the other hand. It is expected that aggregate merger activity increases when the unemployment rate decreases. However, the other way around is also possible, since domestic firms could move to other countries when there is an increase in the unemployment rate. In line with table 10 this table also presents a negative relationship between the trade-weighted value of the U.S. Dollar and outward number of deals. Table 11, 12 and 13 show that autocorrelation does not have an impact on the relationship between government expenditures and merger activity, whereas heteroscedasticity has to be taken into consideration.

### 5.3 Additional analysis

This study included all US M&A deals following the study by Uddin & Boateng (2011). However, Choi & Jeon (2011) did only perform regressions including deals with a deal value not less than \$1 million. The previous presented results can be spurred, since opportunism and counter-cyclicity can be one of the reasons to enter into small transactions. As a consequence a focus on deals with a minimum value could give additional information on the examined relationship. Therefore, additional analysis is performed with a subsample which includes only deals with a deal value from \$10 million or higher. The data for the additional analysis is based on the following criteria:

- (a) The transactions are completed between January 1997 and December 2015
- (b) The firm level data on US mergers and acquisitions is aggregated into quarterly observations.
- (c) The acquirers or targets are public firms, private firms and subsidiaries located in the United States.
- (d) The transaction has to be a merger or an acquisition
- (e) The deal value is not less than \$10 million

Similar to the previous regressions, this analysis makes use of non-stationarity variables. Therefore ADF tests are performed on the residuals in order to check whether the variables are co-integrated. In line with the initial regression this article runs an Error Correction model, since the variables are co-integrated.

Table 14 shows that government debt also has a significant negative impact on aggregate merger activity when only deal values above \$10 million are taken into consideration. This is mainly the case with regard to total, inward and outward number of deals. This finding supports the notion that government debt lead to expectations about higher future taxes and an increase in policy uncertainty and macro-economic instability within a country. In line with the previous regression results the unemployment rate shows a positive result. It could be expected that aggregate merger activity increases when the unemployment rate is not too low, since this provides firms the opportunity to attract labor force. In addition, GDP does mainly have a negative

influence on merger activity. For outward M&A activity this can be expected, since domestic firms would like to stay in countries where the GDP is high. One reason for the negative relationship between GDP and inward M&A activity could be that foreign firms do not want to move to countries with a high GDP, because there can be more competition. In line with the previous tables the height of stock prices has a positive influence, since this reflects optimism within a country. Similar to table 9 and 12 a positive relationship is shown between interest rate and inward M&A, where the reasoning could be that foreigners feel a comparative advantage since they still have access to the domestic market. A negative relationship is found between interest rate and outward number of deals and the outward relative measure, where the explanation could be that domestic firms will move to other countries when the interest rate increases. A positive relationship is found between the exchange rate and the total number of deals, which indicates that a depreciation of the currency has an impact on the total number of deals. In six of the nine models of table 14 heteroscedasticity exists, whereas autocorrelation does not play a role.

**Table 14:** Government debt (deal value above 10 million)

| Total Variables         | Total number of deals | Total deal value  | Deal value/S&P 500 |
|-------------------------|-----------------------|-------------------|--------------------|
| Intercept               | -0.008 (-0.17)        | -0.005 (-0.06)    | -0.006 (-0.08)     |
| Government debt         | -1.544 (-10.89)***    | -0.971 (-3.77)**  | -1.030 (-4.04)***  |
| Unemployment            | 0.729 (5.55)***       | 0.895 (3.69)***   | 0.802 (3.39)***    |
| GDP                     | 0.254 (1.46)          | -0.665 (-2.11)**  | -0.564 (-1.81)*    |
| Stock                   | 0.616 (4.89)***       | 1.179 (5.15)***   | 0.941(4.15)***     |
| Interest rate           | -0.165 (-1.51)        | -0.032 (-0.16)    | -0.171 (-0.87)     |
| Exchange rate           | 0.349 (3.55)***       | 0.148 (0.83)      | 0.233 (1.32)       |
| ECM                     | 0.799 (10.51)***      | 0.297* (2.50)     | 0.252 (2.11)**     |
| Adjusted R <sup>2</sup> | 0.837                 | 0.467             | 0.479              |
| F-value                 | 55.19***              | 10.28***          | 4.56***            |
| DW-statistic            | 1.989                 | 2.068             | 2.052              |
| BP-statistic            | 3.94**                | 41.20**           | 38.78**            |
| N                       | 75                    | 75                | 75                 |
| Inward Variables        | Total number of deals | Total deal value  | Deal value/S&P 500 |
| Intercept               | -0.000(-0.00)         | 0.004 (0.05)      | 0.006 (0.07)       |
| Government debt         | -1.062 (-6.97)***     | -0.417 (-1.65)    | -0.282 (-1.09)     |
| Unemployment            | 0.783 (5.55)***       | 0.814 (3.48)***   | 0.686 (2.85)***    |
| GDP                     | -0.362 (-1.94)*       | -0.779 (-2.52)**  | -0.773 (-2.43)**   |
| Stock                   | 0.880 (6.50)***       | 1.043 (4.64)***   | 0.830 (3.59)***    |
| Interest rate           | 0.276 (2.36)**        | 0.403 (2.07)**    | 0.372 (1.87)*      |
| Exchange rate           | 0.167 (1.58)          | 0.133 (0.75)      | 0.179 (0.99)*      |
| ECM                     | 0.661 (7.17)***       | 0.257 (2.17)**    | 0.210 (1.76)*      |
| Adjusted R <sup>2</sup> | 0.814                 | 0.488             | 0.460              |
| F-value                 | 47.13                 | 11.07             | 9.99               |
| DW-statistic            | 2.046                 | 1.914             | 1.941              |
| BP-statistic            | 2.90                  | 104.3**           | 74.08**            |
| N                       | 75                    | 75                | 75                 |
| Outward Variables       | Total number of deals | Total deal value  | Deal value/S&P 500 |
| Intercept               | 0.010 (0.16)          | 0.007 (0.07)      | 0.006 (0.07)       |
| Government debt         | -0.879 (-4.62)***     | -0.499 (-1.79)*   | -0.390 (-1.45)     |
| Unemployment            | 0.468 (2.65)***       | 0.497 (1.92)*     | 0.285 (1.45)       |
| GDP                     | -0.753 (-3.22)***     | -1.034 (-3.03)*** | -0.910 (-2.77)***  |
| Stock                   | 0.759 (4.48)***       | 0.892 (3.58)***   | 0.497 (2.07)**     |
| Interest rate           | -0.273 (-1.86)*       | -0.276 (-1.29)    | -0.387 (-1.88)*    |
| Exchange rate           | 0.112 (0.85)          | 0.076 (0.39)      | 0.139 (0.75)       |
| ECM                     | 0.519 (4.99)***       | 0.165 (1.36)      | 0.145 (1.19)       |
| Adjusted R <sup>2</sup> | 0.706                 | 0.376             | 0.425              |
| F-value                 | 26.33                 | 7.37              | 8.82               |
| DW-statistic            | 2.170                 | 2.039             | 2.039              |
| BP-statistic            | 11.95**               | 0.73              | 2.32               |
| N                       | 75                    | 75                | 75                 |

\* Significant at 10% level

\*\*Significant at 5% level

\*\*\*Significant at 1% level

In line with table 11-13 table 15 also shows positive relationships between government expenditures and aggregate merger activity, however it must be stated that the significant results are mainly found for the total number of deals. This is expected since the number of deals is likely to be more affected by the government consumption than the aggregate deal value. The findings on the relationship between the unemployment rate and total merger activity support the findings of previous tables. Moreover, there exists a strong negative relationship between GDP and merger activity for the subsample and the result is stronger than in the initial sample. It could be the case that big foreign firms do not want to move to countries with a high GDP, big domestic firms do not want to leave the country with a high GDP and there is no urgency for big domestic deals since a growing economy provides other opportunities to these firms. The regression results support the prediction that higher stock prices lead to higher M&A activity. Similar to table 13 a positive relationship between interest rate and inward merger activity is found. Lastly, a positive relationship between depreciation and inward M&A deals is found, which is expected from the theory. Table 15 shows that autocorrelation does not play a role whereas heteroscedasticity does.



**Table 15:** Government expenditures (deal value above 10 million)

| Total Variables         | Total number of deals | Total deal value  | Deal value/S&P 500 |
|-------------------------|-----------------------|-------------------|--------------------|
| Intercept               | -0.010 (-0.20)        | -0.003 (-0.04)    | -0.004 (-0.05)     |
| Government expenditures | 1.244 (8.38)***       | 0.664 (2.60)**    | 0.728 (2.87)***    |
| Unemployment            | -0.153 (-1.35)        | 0.331 (1.71)*     | 0.205 (1.06)       |
| GDP                     | -1.519 (-5.62)***     | -1.651 (-3.56)*** | -1.638 (-3.55)***  |
| Stock                   | 0.661 (4.37)***       | 1.143 (4.39)***   | 0.918 (3.55)***    |
| Interest rate           | -0.074 (-0.62)        | 0.012 (0.06)      | -0.127 (-0.63)     |
| Exchange rate           | 0.201 (1.49)          | 0.219 (1.19)      | 0.310 (1.69)*      |
| ECM                     | 0.809 (10.39)***      | 0.339 (2.88)***   | 0.297 (2.50)       |
| Adjusted R <sup>2</sup> | 0.805                 | 0.431             | 0.439              |
| F-value                 | 44.65***              | 9.01***           | 9.27***            |
| DW-statistic            | 2.086                 | 2.090             | 2.074              |
| BP-statistic            | 1.26                  | 34.59**           | 31.14**            |
| N                       | 75                    | 75                | 75                 |
| Inward Variables        | Total number of deals | Total Deal Value  | Deal Value/S&P 500 |
| Intercept               | -0.001 (-0.03)        | 0.004 (0.05)      | 0.006 (0.07)       |
| Government expenditures | 0.881 (5.76)***       | 0.331 (1.36)      | 0.231 (0.93)       |
| Unemployment            | 0.174 (1.50)          | 0.573 (3.09)***   | 0.523 (2.76)***    |
| GDP                     | -1.616 (-5.81)***     | -1.257 (-2.84)*** | -1.107 (-2.44)***  |
| Stock                   | 0.929 (5.96)***       | 1.056 (4.25)***   | 0.844 (3.31)***    |
| Interest rate           | 0.331 (2.71)***       | 0.419 (2.15)**    | 0.382 (1.92)*      |
| Exchange rate           | 0.025 (2.30)**        | 0.166 (0.95)      | 0.201 (1.12)       |
| ECM                     | 0.671 (7.26)***       | 0.256 (2.16)**    | 0.207 (1.74)*      |
| Adjusted R <sup>2</sup> | 0.796                 | 0.482             | 0.457              |
| F-value                 | 42.20***              | 10.83***          | 9.88***            |
| DW-statistic            | 2.155                 | 1.915             | 1.941              |
| BP-statistic            | 2.79                  | 103.83**          | 73.97**            |
| N                       | 75                    | 75                | 75                 |
| Outward Variables       | Total number of deals | Total Deal Value  | Deal Value/S&P 500 |
| Intercept               | 0.008 (0.12)          | 0.007 (0.08)      | 0.007 (0.08)       |
| Government expenditures | 0.887 (4.84)***       | 0.416 (1.55)      | 0.282 (1.09)       |
| Unemployment            | -0.043 (-0.31)        | 0.208 (1.02)      | 0.060 (0.30)       |
| GDP                     | -1.981 (-5.94)***     | -1.633 (-3.34)*** | -1.323 (-2.80)***  |
| Stock                   | 0.893 (4.78)***       | 0.921 (3.35)***   | 0.492 (1.85)*      |
| Interest rate           | -0.242 (-1.65)        | -0.261 (-1.21)    | -0.371 (-1.80)*    |
| Exchange rate           | 0.186 (1.41)          | 0.115 (0.60)      | 0.170 (0.92)       |
| ECM                     | 0.493 (4.62)***       | 0.167 (1.37)      | 0.148 (1.22)       |
| Adjusted R <sup>2</sup> | 0.703                 | 0.368             | 0.418              |
| F-value                 | 26.01***              | 7.16***           | 8.58***            |
| DW-statistic            | 2.191                 | 2.037             | 2.039              |
| BP-statistic            | 10.03**               | 0.65              | 2.38**             |
| N                       | 75                    | 75                | 75                 |

\* Significant at 10% level

\*\*Significant at 5% level

\*\*\*Significant at 1% level

The results from the subsample show similar results as the initial tables with respect to the influence of government expenditures, government debt and most control variables on merger activity. However, the influence of a variable as GDP has a stronger negative impact on the merger activity in the subsample in comparison to the initial sample. As a result, the previous tables make clear that the relationship between fiscal policy and M&A activity also hold for M&A deals with a bigger deal value.

## VI Conclusion

This thesis examined the influence of US fiscal policy on aggregate merger activity during the period between Q1 1997 and Q4 2015 using US M&A data. Fiscal policy is measured by government expenditures and government debt as percentage of GDP whereas aggregate merger activity is measured by three variables namely: total number of deals, total deal value and total deal value/ S&P 500. In order to get an overview how fiscal policy influences M&A activity a distinction is made between total M&A activity, inward M&A activity and outward M&A activity. An Error Correction Model is constructed in order to measure the relationship, since some of the variables were non-stationary by nature, though co-integrated. Following previous studies other variables also do have an influence on aggregate merger activity and therefore unemployment rate, GDP, stock, interest rate and exchange rate are used as control variables. In order to test the relationship the same regressions are performed on a subsample which consist of deals with a deal value of 10 million US dollar and higher.

The main finding of this study is the fact that fiscal policy of a country does have an impact on aggregate merger activity. Government debt as a percentage of GDP does have a negative influence on M&A activity. Consistent with the view of Bonaime et al. (2016) government debt seems to have an impact on the political and macro-economic stability within a country. The government debt has a bigger negative impact on the number of inward M&A deals in comparison to the number of outward M&A deals, since the outward image of a country is more affected by the height of the government debt in comparison to the feeling of domestic firms. In contrast to the government debt, the height of the government expenditures often has a positive influence on total, inward and outward merger activity and this finding is in line with Yuan et al. (2010). It could be the case that there is a certain point where the positive effect of government expenditures diminishes when government debt is considered to be too high. Moreover, this article found a significant positive relationship between stock and M&A activity, which supports the findings of authors as Weston (1953) and Nelson (1996). In contrast to Nelson (1966) and Benzing (1991) negative relationships were found between aggregate merger activity and the unemployment rate. In addition, this article has found negative as well as positive relationships between GDP and aggregate merger activity. In line with Billington (1999) the effect of GDP on aggregate merger activity remains inconclusive.

This study makes several contributions to the current literature. Up to this point, the impact of government policies on aggregate merger activity is mainly investigated from a monetary and a corporate tax perspective. To the best of my knowledge it is the first study which investigates the relationship between government expenditures and government debt on aggregate merger activity. Secondly, this article provides a contribution to the theory of government debt, by increasing the knowledge how government debt could impact the economy

(Martin, 2009). Moreover, this study increases the understanding how economic activity is affected by the government size of a country. In the last place, this article improves the framework of examining M&A activity. At the moment, aggregate merger activity is only investigated from a total perspective (Choi & Jeon, 2011) or from an inward and outward cross-border perspective. Future studies should make use of all different streams of merger activity, since the study by Uddin & Boateng (2011) and this study show that variables could have a different impact on outward, inward and total M&A activity. This will improve the understanding of the different primary causes of aggregate merger activity.

There are various drawbacks related to this article. In the first place, the variable government expenditures is aggregated in order to understand the relationship between government size and merger activity. However, various streams of government expenditures as subsidies and investments can have a different impact on aggregate merger activity. In addition, this study only made use of five control variables since it took multicollinearity into consideration. Though, the literature shows that variables as money supply also could have an influence on merger activity. In order to get a full understanding future studies should try to incorporate more or other control variables. Lastly, this study only made use of three measurements of aggregate merger activity, since other data was not available. The adding value of the study could be improved by adding a measurement as transaction value/ total assets.

This article gives rise to various other studies. Following Barro (1990) and Scully (1995) the impact of government debt and government expenditures on aggregate merger activity could be 'U-shaped'. In order to get a full understanding of the relationship this research also has to be performed in countries with high and low debt. Moreover, future studies could investigate whether there is a different impact of fiscal policy on the type of deal, since this study only focused on the sum of mergers and acquisitions. For instance, the impact of government expenditures and government debt could be different on management buy-ins (MBI) in comparison to management buyouts (MBO), because MBO's could be more preferred in times of political uncertainty and macro-economic instability. In the last place, future studies should not ignore firm- and industry level variables, which also have an influence on merger activity (Mitchell & Mulherin, 1996; Harford, 2005). An attempt should be made to construct a model, where firm-specific, industry-related, macro-economic and fiscal policy variables are all taken into consideration in order to get a full understanding of the relationship.

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