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The effects of fiscal policy and policy announcements on entry and exit decisions of firms: Evidence from the Netherlands

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Abstract

The effect of fiscal policy announcements and real fiscal spending on firm dynamics (entry and exit) are studied using a fixed effects methodology and data from the Dutch government statistics bureau. Panel data encompassing 77 different sectors across 38 quarters (10 years) are used for the analysis (n=2926). I find announcements of all types (positive, negative and neutral) have a significant positive association with the Net Entry Rate (NER). The findings on real fiscal policy remain inconclusive, though some evidence exists to assume a relationship might exist. As a control method, period-transcending lagged models are used, resulting in some evidence to assume the existence of time-trends. Models also control for macro-economic variables

Keywords

Fiscal Policy, Strategy, Firm Dynamics, Entry, Exit, Announcement Effect, Government Strategy, Firm Strategy.

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"A victorious leader plans for many eventualities before the battle; a defeated leader plans for only a few. Many planned options bring victory, few planned options bring defeat. Having no plans at all spells disaster."

Sun Tzu – The Art of War*

* Trapp (2012), new Bilingual Edition of the Art of War

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Table of Contents*

**The written portion of this thesis does not overshoot the 30-page limit, the extra pages are due to figures and tables.*

Section 1
Introduction

Business is war. At least that is what our language suggests. Hostile takeovers, captains of industry, market positioning, a planned retreat or the penetration of a new market are only a few of the many ways we equate doing business to making war. The volatile environment in which we find ourselves is easily likened to a battlefield, with shifting (corporate) alliances and constantly changing circumstances outside our control. In this flux-state, strategy becomes our most important tool to ensure the survival of our interests and allowing them to thrive under uncertainty.

Many managers take Sun Tzu's admonishments to heart and plan for eventualities regarding their target audience or their competitors. Yet there is one aspect of strategic planning that consistently eludes a lot of businesses and managers: The Government. Schneider et al. (1998) suggest that a synergy of actions between government and business is 'elusive' and difficult to get right because of a difference in approach between private and public actors when it comes to strategic choices. They propose that government actions are so dependant on external economic circumstances that careful study of the effect of government on the business ecosystem is largely redundant.

In contrast to the autonomous view proposed by Schneider et al, other sources suggest a distinct effect of fiscal policy measures enacted by government on the entry and formation of new businesses into the market, as well as employment, GDP-growth and overall consumption (Dhont & Heylen, 2008; Fatás et al., 2001; Kneller & McGowan, 2011).

Specifically with regards to entry and exit, the role of government is often described as an 'exterior circumstance' related to policy (Henisz & B.A., 2010; Holburn & Zelner, 2010) rather than a direct influence on entry or exit through subsidies, grants or taxation policy (Devadoss et al., 2016; Dixit & Kyle, 1985).

Literature on political theory has shown that the drive to create regulations increases towards the end of- and directly following the beginning of a political term (de Rugy & Davies, 2009). These regulations are often of economic importance, especially when the term has been dominated largely by an economic shock (McLaughlin, 2010).

If businesses adjust their strategies for entry and exit based on the strategy of government, it could therefore be expected that significant changes in entry and exit should occur as a result of these government policies, especially in economically uncertain times. Businesses might

place an increased amount of faith in the policy announcements and actual policy of government, which leads to the central question of this research:

What is the effect of governmental policy announcements vis-à-vis actual fiscal policy on entry and exit strategies by firms.

In this context, I restrict *policy* to fiscal policy, as it relates to resource allocation within-government and taxation or subsidies allocated to specific sectors, as monetary policy is generally managed by other institutions, such as central- or state-owned banks. Other terminology is expanded upon in section 2.

Subsection 1.1 - Academic and Strategic Relevance

As evidenced prior, the literature on the effect of fiscal policy on firm dynamics is limited and often relegated to an environmental circumstance. Secondly, announcements are largely left untreated in the literature, often only incorporated as an allowance in models, rather than a distinct feature (Mountford & Uhlig, 2009). Furthermore, the announcement effect is most often studied in the context of monetary policy, as in research by Waud (1970) and Neeley (2015), leaving the fiscal policy side largely understudied. As such, this research will contribute to the literature by providing a look into the announcement effect of fiscal policy and the interaction between government policy and firm dynamics.

From a strategy standpoint, establishing a clear cause-effect relationship between government policy announcements or actions and entry or exit decisions in different sectors can help prepare for these events. This in turn would further improve the strategic process for managers and businesses as a whole, creating a more solid baseline for future discussions. Furthermore, knowing the effectiveness of their policy actions will support government agencies and departments in their strategy-making capabilities. The alignment of government strategic expectations and those of businesses will also allow for a more sustainable effect of the policies, rather than short-term gains and losses that do little to influence sectoral firm dynamics.

Subsection 1.2 - Research Structure and Reference

The main topic will be explored in the following sections. In section 2, we will briefly define the core concepts to the research question and expand on the theoretical background. In section 3, I will provide an overview of the relevant literature to the topic, from which I draw conclusions and create hypotheses. Section 4 is dedicated to methodology and the data used in this research, whilst section 5 goes over the results of our analysis and tests rigidity and validity. Section 6 will provide a conclusion, from which I draw practical strategic implications in section 7. Section 8 will discuss our methods and provides proposals for future research. Section 9 is reserved for the references used in this research.

Subsection 1.3 - Executive Summary of Results

Announcements were found to be associated with increases in the Net Entry Rate (NER) across 77 sectors. For positive announcements, this effect lay between 71 and 147 firms. Whilst the increase for negative or neutral announcements lay between 90 and 162 & 35 and 137 respectively. For real fiscal policy, the results were inconclusive, though some association was found between increases in spending on General Economic Affairs and decreases in the NER with 2 firms per 10 million euros spent (or 0.2106 per million euros). An increase in total government spending was associated to a decrease of 0.007 firms per million euros spent, which seems to align with the findings for the spending on General Economic Affairs.

With regards to macro-economic variables, it was found that PMI, GDP, the Unemployment Rate and bourse (AEX) volatility are associated with significant changes in the NER, though this association differs between the models used. There is some evidence to support the existence of trends over time for these factors. Finally a self-informing trend was found for the NER, which indicates that prior values also play a part in the Entry or Exit decision.

Section 2
Definitions & Theoretical Background

In this section, I will define the core concepts of this research, to ensure a clear understanding of its components and the implications derived from them. Firstly, I will discuss the concept of *firm dynamics*, after which I will discuss the concept of governmental *fiscal policy*. Both of these concepts will be discussed using research from different academic backgrounds, tied back to the strategic-economic dimension.

Subsection 2.1 - Firm Dynamics

The concept of firm dynamics encompasses the system of reallocation of resources between companies, facilitated by entry of new firms into and exit of incumbent firms from the market to sustain or reach an equilibrium (Ahn & OECD, 2001; Hopenhayn, 1992).

Based on the general theoretical model first proposed by Marshall and later expanded upon by Dupuit (Ekelund Jr & Hebert, 1999; Marchionatti, 1992). It is expected that firms enter into the market when demand increases exogenously. This demand increase can be brought about by government policy and will facilitate entry up to a short-term peak before levelling off as prices follow the increase in demand. This process also works for exogenous decreases in demand, where firms will exit and prices will adjust in the medium-long term.

Whilst this is a theoretical model, assuming perfect competition, perfect information and no barriers to entry, it can provide some insights into the practical considerations surrounding entry and exit decisions. Firstly, firm dynamics seem to be motivated primarily by exogenous factors through their effect on demand changes. Secondly, changes in firm dynamics are not instantaneous, but require time before they are implemented. Thirdly, it is the aggregate characteristics and number of firms in a given market that determines entry or exit in the model, not firm-specific characteristics.

These observations will be expanded upon further in *Section 3.1*.

Subsection 2.2 - Governmental Fiscal Policy

States and governments have only a limited number of tools that directly influence the real economy. Legislation and regulation of certain parts of the economy, whilst indirect, have been found to exert influence on varying factors, like Foreign Direct Investment (Jensen, 2008),

expropriation and use of resources (Bucheli & Aguilera, 2010), and firm entry (Boddewyn & Brewer, 1994; Hillman & Hitt, 1999).

Besides regulatory measures, states and governments can also implement direct measures to influence the economy: Monetary and Fiscal Policy. Monetary policy encompasses decisions taken by central banking institutions, such as the Federal Reserve and the ECB, which influence the amount of available money in the economy (European Central Bank, 2017). Fiscal Policy encompasses taxation and spending patterns used by governments to influence the economy, such as through subsidies and tax cuts or increases, with the aim to promote sustainable and strong growth (IMF et al., 2020).

The implementation of fiscal policy allows government to dampen the effect of economic downturns and exogenous shocks such as the covid-19 crisis (Ridzuan & Abd Rahman, 2021), as well as increase the rate at which the economy grows by influencing resource allocation (Zagler & Durnecker, 2003). The timing of such policy measures is informed by the business cycle, which can either be cyclical (McManus & Ozkan, 2015) or counter-cyclical (Jha et al., 2014), resulting in different degrees of success. Most theoretical models follow a positive long-term growth trend, with real economic activity oscillating around the trend, incorporating different economic variables, such as division of labour and exogenous (technological) shocks (McGrattan, 1994). From this, it is expected that policies and spending will follow a similar oscillating pattern, with a net positive growth in the long run.

Fiscal policy differs between economies based on their size and relative level of development (Easterly & Rebelo, 1993), as well as level of political involvement and political unity (Fragetta & Kirsanova, 2010). For the purposes of this study, I look at the Netherlands between 2010 and 2020. Size, development and political factors have been largely stable during this period, as there was no significant change in ruling party (Kiesraad, 2021).

The above literature can provide some insights into the general qualities of Fiscal Policy. Firstly, Fiscal policy is more effective when it is implemented as a counter-cyclical tool to dampen the effects of the business cycle (McManus & Ozkan, 2015). Secondly, Fiscal Policy is able to affect changes in the real economy in the short term, as opposed to monetary policy which generally creates long-term changes (Hanson & Stein, 2015). Thirdly, Fiscal Policy is predominantly a means to redistribute means of production in an economy.

With regards to these findings, I expect to find some influence of Fiscal Policy on firm dynamics, as allocation of means (point 3) may provide the incentives and shocks required to shift entry or exit decisions. Furthermore, the relative speed at which fiscal policy has an effect,

combined with its tendency to be used as a cycle-dampening tool (points 1&2) may provide sufficiently clear grounds for firms to base their strategy on, as opposed to the methods of monetary policy, which are often harder for firms to interpret and predict.

These observations will be expanded upon in *Section 3.4.*

Section 3
Literature Review & Hypotheses

In *Section 2*, the relevant core concepts of this research were discussed, as well as the general insights they provide. Their relationship was briefly explored in *Section 2.2*, for which I will now provide further detailed analysis based on the relevant literature. I will first look at the role of uncertainty at the economic and firm level, as governmental actions are predominantly subject to uncertainty from the point of view of the firm. I will then look at the internalisation of political factors into business strategy to inform part of our hypotheses. Thirdly, I will investigate the effect of announcements by government on firms and firm dynamics, after which I will investigate the relationship between fiscal policy and economic shifts more broadly. I will close this chapter by providing several hypotheses, to be used in our analysis.

Subsection 3.1 - Uncertainty

Economic uncertainty was defined by Jurado et al (2015) as *'the conditional volatility of a disturbance that is unforecastable from the perspective of economic agents'.* This type of uncertainty is associated with a variance in production and hours worked at the firm level exceeding that of a monetary policy shock and behaved largely countercyclical. These types of uncertainty dramatically increase after major economic and political shocks, which can desensitise firms to government policy measures and decrease their effectiveness (Bloom, 2009; Bloom et al., 2018).

This type of economy-wide uncertainty has a negative impact on other economic factors, such as household expenditure (Knotek II & Khan, 2011), productivity and business attitude (Bachmann et al., 2013), increasing frictions on the financial market and associated negative effects on debt issuance (Gilchrist et al., 2014).

More generally, uncertainty is found to be an influence on the business cycle as a whole, amplifying fluctuations (Popescu & Rafael Smets, 2010) and causing firm-level profitability fluctuations (Bachmann & Bayer, 2013).

At the firm level, this uncertainty can have an influence on relationships with suppliers and customers in chain relationships (Lai et al., 2008), while hostile business environments negatively impact up- or downstream reverse supply chain (RSC) investment (Kocabasoglu et al., 2007). However, the precise nature of uncertainty in a business context is inconsistently conceptualised in the literature, which makes measurement and comparison of the uncertainty effect at the firm level harder (Sniazhko, 2019).

With regards to firm dynamics, as discussed in *Section 2.1*, uncertainty can pose a barrier to entry (McCollum & Upton, 2016), which increases in severity as sunk costs rise or deferment becomes viable (Ahsan & Musteen, 2011; Baumol & Willig, 1981; Folta et al., 2006; O'Brien et al., 2003). Additionally and among other aspects, the political environment and national culture exercise influence on entry decisions (Chen et al., 2020) and modes of [international] entry (Kogut & Singh, 1988). In this context, service firms and manufacturing firms employ different strategic responses to uncertainty, predominantly informed by the capital intensiveness of their entry (Sanchez-Peinado & Pla-Barber, 2006).

Exit Decisions are influenced by uncertainty in a similar fashion, though exit thresholds are expected to differ from entry thresholds (A. Dixit, 1989; Isik et al., 2003). However, the relationship between Firm exit and uncertainty is positive rather than negative (Anderson, 2001). The exit decision framework is similarly influenced by sunk costs as the entry decision, but only when sunk costs are sufficiently high (J. O'Brien & Folta, 2009). The delay or deferment of the exit decision is primarily based on the availability of information, where firms are more likely to keep taking risks if information availability is low (Bragger et al., 1998). Theoretical models show that the optimal exit point comes at a negative net cash flow and operating revenues below the variable costs, indicating that even though a firm is loss-generating, its owners and managers might want to keep it alive, but only to the extent to which losses are less than the cost of irreversible exit (Alvarez, 1998; 1999). The length of time before this threshold is reached also depends on the degree of uncertainty and risk-profile of the leadership of the firm (Miao & Wang, 2011).

Finally, since firm performance and strategic decision-making are tied in part to the decisions of managers and individuals *within* the firm, a degree of irrationality, cognitive bias and loss- or risk-aversion can be expected (Thomas et al., 2007; Trevis Certo et al., 2008).

Conversely, much of the extant literature posits a rational decision-making process, employing heuristics and learning-over-time (Ahi et al., 2017; Bingham & Eisenhardt, 2011).

Subsection 3.2 - Political Strategy of Firms

As shown in *subsection 3.1*, firms operate in an uncertain environment, both economically and politically. As such, involvement with the factors influencing this uncertainty is key. This forms the basis of the need for political strategy: to influence or access the public policy process to gain information and reduce uncertainty, as well as exercise control over contentious legislation or act on their Corporate Social Responsibility [CSR] (Baysinger, 1984; Hillman et al., 1999; 2004; Scherer et al., 2013; Schuler, 1996; Shaffer, 1995). Failing to account for the political environment was found to have a negative influence on expected growth, as well as negatively influencing the overall economic development (Welter, 2005).

One important ground for adopting a firm-level political strategy, furthermore, is the potential skewedness of regulation. A study into the airline industry showed that a proposed deregulation in the 1980's only benefitted a small number of incumbents, which resulted in a fracturing of the industry and opposing political lobbying (Marcus & Goodman, 1986). When executed successfully, these 'non-market' actions significantly increase performance of associated firms on a variety of grounds (Shaffer et al., 2000). Critically, however, their success also depends on the level of political pro-activity (Baron, 1997).

In their seminal work on the subject, Hillman & Hitt (1999) outline several approaches and decision-phases in their taxonomical review of political strategy, an overview of which is given in Figure 1. This interaction with the external political environment is further influenced by the core competences of the firm (Keim & Baysinger, 1988; Rehbein & Schuler, 1995) and increases in importance as the world becomes more globalised and firms become multinational, thereby being exposed to more political risk (Keillor et al., 2005).

Prior to the adoption or execution of such strategies, care should be taken to fully and accurately assess the political environment in which the strategy is expected to operate (White Gunby, 2009). Especially political ties and relationships with entities of opposing interests to a given focal public entity are harmful to effectiveness (Yan & Chang, 2018).

The positive effects of political interaction with a public entity are not reserved to firm-government interactions. Politically connected boards significantly improve firm performance through an increased procurement of government contracts (Goldman et al., 2013) and increased profitability in banking institutions (Braun & Raddatz, 2010). Former politicians serving in firm boards significantly increases long-term abnormal results, though this does not translate to board members who become politically active (Houston & Ferris, 2015)

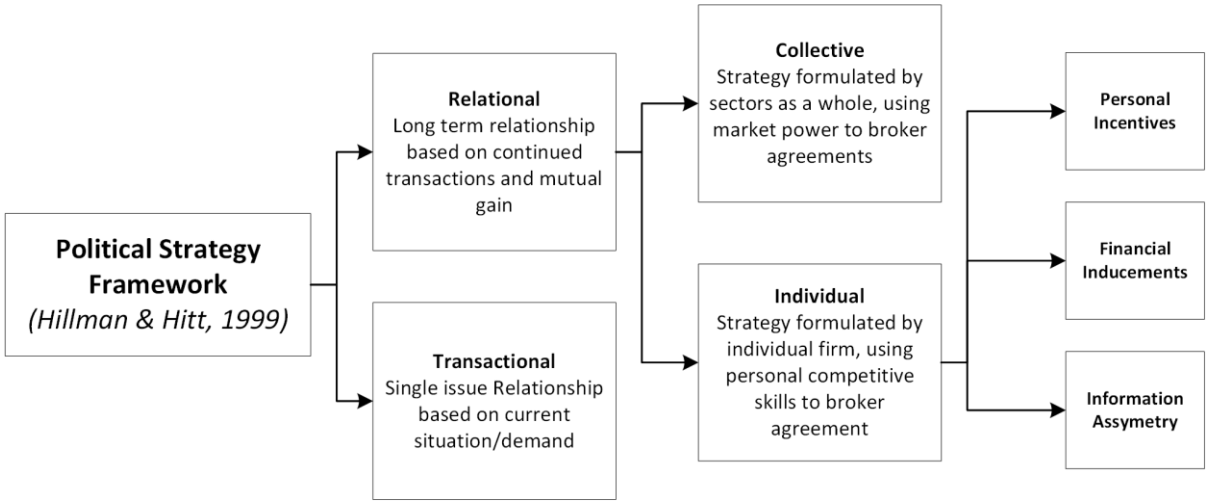

Figure 1: Hillman & Hitt (1999) Political Strategy Framework model. Choice branches for levels 2 and 3 are equivalent between transactional and relational approaches but have been left out for ease of reference.

Subsection 3.3 - Announcement Effects

In the literature, an announcement is often taken as a public declaration of the *intent* to affect a specific change in the period after the announcement is made (Demiralp & Jorda, 2001). This declaration can be made by both private and public actors and assumes asymmetric information between the announcing party and the receiving party.

Private sector announcements generally focus on changes surrounding M&A processes, the issuance of debt, quarterly earnings and dividends (Gunasekarage & Power, 2006; Kross & Schroeder, 1984; Weinstein, 1977). In this regard, there seems to exist a negative relationship between the effect of such announcements and firm size (Haw & Kim, 1991). Additionally, the firm's sector influences the price reaction to these dividend announcements, raising the prospects of sectoral differences influencing the announcement effect (Balachandran & Tanner, 2001).

With regards to M&A announcements, any resulting positive effect on returns was found to be short-lived, turning negative quickly (Zhu & Malhotra, 2008). Furthermore, it is easier to

determine the relative value of bidders than target firms within the bidder-target relationship, mostly based on more actively available information (Cornett et al., 2011). Differences in geographical location can change the effect of announcements of M&A strategies (Mateev, 2017).

When it comes to public policy, the announcement effect literature is predominantly catered to monetary policy. The announcements in this instance are found to have significant power to shape short-term interest rates, as well as influencing the stock market volatility in days prior to an announcement (Aharony et al., 1986; Bomfim, 2003; Demiralp & Jorda, 1999; Kim & Verrecchia, 1991). On the Fiscal Policy side, news about fundamental macro-economic indicators was found to be a good indicator of exchange rate movements (Evans & Lyons, 2005; T. G. Anderson et al., 2003). For other programs, such as schooling programs, no effects of announced policies or 'forward looking behaviour' are found (Attanasio et al., 2011). Fiscal Policy announcements is a relatively under-researched topic, based on a review of the available literature.

Overall, the effect of an announcement is heavily influenced by the credibility of announced changes, which is highly important to the effectiveness of the changes (Handley & Limão, 2015). This credibility threshold is lowered when consumers are personally affected by an announcement, such as in the event of a data-leak (Janakiraman et al., 2018). Timing also seems a critical factor, according to Chai & Tung (2002), who state that late announcements are generally received as negative news, with early announcements are usually equated with positive news. Finally, the announcement also depends on environmental and societal characteristics, such as mechanisms of intertemporal substitution or labor market frictions (Blundell et al., 2011).

Subsection 3.4 - Fiscal Policy Effects

I expand the theoretical overview given in *Section 2.2* with additional literature on macro-economic and firm level effects, as well as some considerations with regards to Fiscal Policy.

The effect of fiscal policy on macro-economic output indicators increases at a higher rate for persistent policies than for short-term incidental policies (Alesina & Ardagna, 1998). This holds especially when the policy is financed through a lump-sum tax (Baxter & King, 1993). Furthermore, the effects of such policies are larger in recession periods than in expansionary periods (Auerbach & Gorodnichenko, 2012). Private sector savings react similarly, with a

larger, non-linear response being more likely as a result of sizable and persistent fiscal impulses (Giavazzi et al., 2000).

A main problem is the political aversion and risk connected to the persistence requirement, which makes implementing restrictive fiscal policy for extended periods of time difficult (Alesina et al., 1998). Additionally, political over-reach and ignoring fiscal boundaries in favour of short-term solutions, captured by the deficit-bias, poses a threat to the consistency of fiscal policy (Wyplosz, 2005). Furthermore, the implementation time for fiscal policies is also dependent on the level of economic development of a given country, changing the optimum from pro-cyclical in developing economies to counter-cyclical in industrial economies (Cimadomo, 2012; Gavin & Perotti, 1997). The previous notwithstanding, fiscal policy remains a viable method of inducing economic changes (Blinder & Solow, 1976; Spilimbergo et al., 2009; Tanzi & Zee, 1997).

Fiscal policy also affects the individual firm. Private sector investment was negatively correlated with fiscal spending, with an increase in growth in fiscally austere periods (Alesina et al., 2002). This seems to support the notion of Bloom (2009) and Bloom et al. (2018) with regards to a desensitisation of firms to fiscal policy shocks mentioned in *Section 3.1*. A further effect to disposable income and an expected indirect effect to consumption will also impact firms through decreased sales (Feldstein, 2009; Perotti, 1999).

With regards to firm dynamics, the recent Covid-19 pandemic and the accompanying fiscal austerity measures have shown an important influence on firm entry and exit. Previously, it was known that a decrease in fiscal expenditure was significantly positively related to entry, and significantly negatively related to exit (Kneller & McGowan, 2011). Furthermore, direct transfers to households and businesses, a form of fiscal policy, might have a dampening effect on recessive influence (Auerbach et al., 2021), though this effect is decreased in the presence of financial frictions (Cooke & Damjanovic, 2020). Exit, meanwhile, can be decreased by increasing economic efficiency and welfare, through subsidies and a subsequent decrease in default rates (Vilmi, 2011).

Finally, Firm Dynamics are cited as a crucial evaluative method for fiscal policy, as it influences the speed at which the policy impacts the economy (Totzek & Winkler, 2010).

Subsection 3.5 - Summary of Literature Findings & Hypotheses

The following is a summary of conclusions that can be drawn from the findings in the previous subsection.

Firstly, the economy-wide and firm-specific effects of uncertainty indicate that communication on the side of government before a policy measure is important to safeguard its effectiveness. Increased uncertainty decreases the likelihood of entry, though it increases exit likelihood.

Secondly, the use of political strategy and sectoral adjacency or involvement at the policy level provides distinct advantages to involved firms and sectors. Closer public-private ties decrease uncertainty and promote firm growth, as well as increase policy effectiveness. Furthermore, ties between board members and political actors, as well as other board roles in this regard, have a positive influence on firm growth.

Thirdly, the effect announcements have on consumers and the economy seems dependent on *expectation* and *delivery*. Unmet or overshot expectations carry a larger announcement effect than announcements confirming held expectations. Furthermore, the agent delivering the announcement influences the effect through credibility, trust and 'power' of the announcement. Expected follow-through, such as in the case of monetary policy announcements, carries larger weight.

Fourthly, I have shown that Fiscal policy is primarily effective when it is sufficiently *stable*, *sizable* and *persistent.* These implementation requirements are hampered by the political aspect of adopting and implementing such measures. The policies *are* expected to influence firm dynamics, both directly through subsidies and indirectly through private consumption and savings.

The findings discussed above are relevant to this research, as they provide an overview of the current literature and theoretical background in which our research is implemented. Based on these findings, I formulate the following hypotheses to answer the main research question:

> *H1a: Positive Announcements from the central government in their annual spending plan have a significant positive influence on the Net Entry Rate (NER) for those sectors it concerns.*
>
> *H1b: Negative Announcements from the central government in their annual spending plan have a significant negative influence on the Net Entry Rate (NER) for those sectors it concerns.*

H1c: Neutral or Mixed announcements from the central government in their annual spending plan have no significant influence on the Net Entry Rate (NER) for those sectors it concerns.

H2a: Government Spending, allocated to a specific sector, has a significant positive effect on the Net Entry Rate (NER) for those sectors it concerns

H2b: An increase in total government spending has a significant positive influence on the Net Entry Rate (NER) across all sectors.

Furthermore, I expect firm entry or exit decisions to be influenced by macro-economic indicators and behaviour as they change the amount of uncertainty in the economy. To analyse this expectation, I additionally formulate the following hypotheses:

H3a: Macro-economic indicators, like PMI, GDP, bourse volatility and Unemployment statistics, are significantly related to a positive change in the NER.

H3b: Macro-economic indicators, like PMI, GDP, bourse volatility and Unemployment statistics, display a significant positive effect on the NER over time/display a time-trend.

Finally, I expect firm entry and exit decisions to be influenced at least in part by the amount of entries or exits in previous periods. To analyse this expectation, I formulate the following hypothesis:

H4: The Net Rate of Entry (NER) is autoregressive for at least its first lag.

By answering the above hypotheses, I will elaborate on the main research question and formulate our conclusions in later sections. The following section will detail our empirical approach to the testing of the hypotheses, as well as answering the main question under study.

Section 4
Methods & Data

In this section, I present the methods and data used for this analysis, as well as issues arising from the methodology and possible biases stemming from the approach. The methodology section is split between the announcement methodology (4.1) and the real effect methodology (4.2) for ease of reference.

Subsection 4.1 - Announcement Effect Methodology

To estimate the effect of a policy announcement on firm dynamics, I estimate a Fixed Effects model using panel data over the period Q3 2010 until Q4 2019. This results in 38 observations per sector, which combines to a total of 2926 observations. The announcement effect estimation is run using formula (1).

$$Y_{n,t} = \alpha_n + \rho_1 D_{1,n,t} + \rho_2 D_{2,n,t} + \rho_3 D_{3,n,t} + X + \gamma_t + \varepsilon_{n,t} \quad (1)$$

Where Y is the net change in the number of firms (NER) in sector n in period t. In this model, α denotes the individual specific fixed effects between all sectors, which captures all time-invariant characteristics between the sectors. Subscript t ∈ T consists of an index of all quarters from Q3 2010 until Q4 2020, resulting in 38 quarterly observations. Subscript n ∈ N consists of an index of 77 sectors in the Dutch economy. The variable D denotes a dummy, where D_1 corresponds to a neutral or no announcement for sector n in quarter t, D_2 corresponds to a positive announcement for sector n in quarter t and D_3 corresponds to a negative announcement for sector n in quarter t. ε represents the error term in period t, for which the zero conditional mean assumption (ZCM) holds. γ represents the isolated effect induced by being in time period t on the net change in the number of firms.

For ease of presentation, X in equation (1) is a substitute for the sum of a set of time-varying control variables, described in equation (2).

$$X = \beta_{1,t} A_t + \beta_{2,t} B_t + \beta_{3,t}(\Delta C_t) + \beta_{4,t} E_t \quad (2)$$

A is defined as the volatility of the Amsterdam Stock Exchange (AEX), taken as a proxy for investor confidence in quarter t. Variable B represents the average of the producer confidence measure known as PMI. It is estimated through the following formula:

$$B_t = \frac{\sum_{j=1}^{J} \delta_{j,t}}{J} \quad (3)$$

Which is computed as the sum of confidence score δ for all firms in the sample in period t, divided by the total number of firms J in the Netherlands. Variable C in equation 1 is defined as the difference in Gross Domestic Product (GDP) between the current and previous period, which is implemented into the model to serve as a baseline indicator of economic growth. I expect to find that GDP growth as a macro-economic indicator influences firm dynamics, in accordance with findings from literature (Evans & Lyons, 2005; T. G. Anderson et al., 2003), which is reason for its inclusion.

Finally, the variable E is defined as the unemployment rate as a percentage of the total labour force, estimated according to Formula 4. Where U is unemployment in period t and M is the number of people employed in period t.

$$E = \frac{U_t}{U_t + M_t} \quad (4)$$

This variable is included because it is expected to influence the decisions of would-be entrepreneurs. If the unemployment rate is high, it is expected that prospective entrepreneurs will forego seeking traditional employment in favour of starting a business. Furthermore, a high unemployment can also be used as a proxy for an increased level of business failures, which would inform a higher exit rate.

Subsection 4.2 - Fiscal Policy Effect Methodology

To estimate the effect of real fiscal spending on firm dynamics, I use a similar Fixed Effects methodology as for the announcement effect model, using panel data over the period Q3 2010 until Q4 2019, which yields 38 observations for each sector, which combines to a total of 2926 observations. The announcement effect estimation is run using the (condensed) formula (5).

$$Y_{n,t} = a_n + \phi + X + \gamma_t + \varepsilon_{n,t} \quad (5)$$

Where the dependent variable Y denotes the net change in the number of firms in sector n in quarter t. In this model, α denotes the individual specific fixed effects between all sectors, which captures all time-invariant characteristics between the sectors. Subscript t ∈ T consists of an index of all quarters from Q3 2010 until Q4 2020, resulting in 38 quarterly observations. Subscript n ∈ N consists of an index of 77 sectors in the Dutch economy. Here, ε represents the error term in period t, for which the zero conditional mean assumption (ZCM) holds. γ

represents the isolated effect induced by being in time period t on the net change in the number of firms.

For ease of presentation, X in equation 5 is the sum of several different time-varying statistics, represented in equation (1) in the previous subsection. In a similar vein, ϕ is the sum of 29 fiscal spending sources of the national Dutch government, represented in equation (6), a list of which is presented in *Appendix 3*.

$$\phi = \sum_{s=0}^{S} \rho_s RealSpend_{t,s} \tag{6}$$

Where RealSpend is the amount spent by the central government in quarter t on source s.

Subsection 4.3 – Robustness and Control

To provide further robustness to the findings resulting from models 1 and 5, we also run these models with the rate of entry and the rate of exit as a dependent variable, the results of which are presented in their associated tables. Furthermore, to isolate possible time-varying effects, we use a lagged autoregressive version of both models and their robustness control variants. The results of this control method are presented in *Appendix 4.*

The selection of the appropriate lag length is conducted using the Akaike Information Criterion (AIC), described in Cavanaugh & Neath (2019), with the following common form:

$$AIC = 2K + n\left[\ln\left(\frac{RSS}{n}\right)\right] \tag{7}$$

where K denotes the number of parameters, n is the sample size and RSS stands for the Residual Sum of Squares, which denotes the amount of variance in the dataset that is not explained by the implemented model by estimating the variance of the residual u. *Appendix 5* provides a list of the lag lengths that I find to be optimal.

Additionally, a Hausman test is used to determine whether a Fixed Effects methodology is suitable for the panel data used in this research. The results of this test are presented in *Appendix 6*.

Subsection 4.4 – Data

To estimate the modelled effects, I constructed a dataset for every variable mentioned over the time period from Q3 2010 to Q4 2020. Data on the number of entries and exits, as well as other characteristics of the firms and sectors such as ownership distribution and size of the businesses, were retrieved from a dataset by the Central Bureau of Statistics for the Netherlands. This dataset provided the mentioned variables referenced by their Standard Business Classification 2008 (SBI) code (KVK, 2021). I have narrowed down this classification to the SBI2 level, which indicates sub-sectors but retains the distinction between sectors otherwise lost when using the SBI3, or sub-sub-sector, level. A list of the sectors used in this analysis is provided in *Appendix 2* to this document. The tobacco industry, water utilities sector and water treatment sector were dropped from this dataset, as there was no entry or exit for these sectors over the observed period. Government entities and lottery organisers were also dropped from the dataset to control for internal government effects and because lotteries are subject to such strict regulation that entry or exit decisions are not influenced by exogenous factors.

GDP, PMI and Employment figures were gathered from the CBS and then computed by hand. Data on real government spending was gathered from a separate CBS database, as well as spending reports published by the ministry of Finance on behalf of the Rijksoverheid. This data was then transformed from the annual to the quarterly level using the quarterly spending reported by the ministry of Finance as a baseline for the distribution of spending in other government sources. Since the data on real spending was still an approximate figure for 2020, the period of Q1-Q4 2020 was dropped from the analysis for this year. An additional benefit of this measure is insulating the analysis from effects stemming from the Covid-19 crisis.

Data on announcements was gathered from the fiscal plan published every third Tuesday of September by the Ministry of Finance. To operationalise the tone of the report as ‘positive’ or ‘negative’, the reports were scanned and categorised for every sector.

Finally, the AEXvolatility is based on the AEX Volatility Index (AEX VIX), reported by Euronext. This volatility index has a daily volatility measure, which was aggregated to the quarterly level for the observed period.

Descriptive statistics for government spending allocations are presented in Table 1. The descriptive statistics for the PMI, AEXvolatility, GDP and Unemployment figures is presented in Table 2.

TABLE 1 - Descriptive Statistics of Government Spending Sources

Variable	Allocation	Mean	Std. Dev	Min	Max
A	*Executive and Legislative Authorities*	3595.602	310.980	3185.754	4259.872
B	*Fundamental Research*	903.294	59.890	800.191	1032.114
C	*Judiciary*	502.714	30.750	456.138	575.792
D	*Greater Economic Affairs*	915.838	196.146	611.287	1575.999
E	*Agri- & Arborculture, Fishing & Hunting*	262.539	41.701	200.639	378.972
F	*Fuels & Energy*	311.321	138.173	155.046	558.612
G	*Mining, Industry & Construction*	146.441	23.180	100.978	195.434
H	*Transportation*	4127.736	200.972	3784.764	4539.414
I	*Communication*	23.530	3.403	16.841	32.763
J	*Other Sectors*	544.052	37.805	452.541	606.275
K	*Economic Research*	846.949	67.517	734.247	964.810
L	*Other Economic Affairs*	29.952	19.856	12.021	76.878
M	*Waste Management*	911.353	92.847	796.597	1109.660
N	*Wastewater Management*	850.691	53.990	760.577	952.007
O	*Biodiversity and Environment*	206.525	32.990	147.870	271.144
P	*Environmental Research*	27.190	5.125	18.379	37.659
Q	*Housing*	323.182	143.817	99.536	574.263
R	*City and Countryside development*	290.774	20.509	262.063	340.018
S	*Water Services*	42.530	9.198	29.798	58.956
T	*Other Government-provided Services*	25.841	8.390	16.446	52.886
U	*Medical products*	1511.790	143.224	1300.521	1840.686
V	*Medical Treatment (Specialised)*	6355.267	524.217	5159.577	7511.264
W	*Medical Treatment (General)*	398.745	49.479	324.478	497.617
X	*Recreation & Sports*	891.069	56.534	811.193	1028.050
Y	*Cultural Institutions*	801.239	62.105	690.294	937.317
Z	*Public Broadcasting & Publishers*	320.053	16.716	281.192	354.997
AA	*Societal Organisations*	127.407	8.320	112.662	144.469
AB	*Recreation, Cultural and Religious Research*	46.923	8.643	38.127	65.968
AC	*Recreation, culture & Religion (Other)*	56.665	18.453	37.914	95.750
AD	*Education*	9200.835	538.692	8475.738	10428.660
AE	*Total Spending*	78258.230	4072.567	73202.940	88413.770

Note: Table 1 presents an overview of the Governmental Fiscal Allocation used in the model proposed in section 4.2. All variables are observed for 38 quarters in the period between Q3 2010 and Q4 2019. To preserve space, column 1 assigns a code to each spending source, which will be used in further tables. Column 2 provides a description of the spending allocation and columns 3-6 present their descriptive statistics over the observed periods. All units are in millions of euros.

TABLE 2 - Descriptive Statistics of Control-Regressors

Var	Unit of Measure	Mean	Std. Dev.	Min	Max
PMI	% change of GDP expected by managers	3.409524	10.96555	-37.2	18.1
GDP	Real GDP in quarter t in million Euro	175508.4	8912.658	162340	193485
JobsInd	% change of available jobs in industry	.4926191	2.119303	-5.37	4.02
JobsServ	% change of available jobs in services sector	-.0842857	1.64198	-3.18	2.17
JobsConst	% change of available jobs in construction	1.084048	2.993209	-4.92	4.86
JobsAllEcon	% change of available jobs in the whole economy	0.0184127	0.5865282	-1.13	0.8566667
Unempl	% of labour force unemployed	0.0540238	0.014379	0.032	0.081
AEXVol	Volatility Index in quarter t, index measure	16763.56	5423.226	10132.19	32838.77

Note: Table 2 presents an overview of the measures used in the models proposed in section 4.1 and 4.2. All variables are observed for 38 quarters in the period between Q3 2010 and Q4 2019. Collumn 1 presents the variable names, column 2 presents their unit of measure whilst columns 3-6 present their descriptive statistics over the observed periods.

Section 5
Results & Rigidity Testing

Subsection 5.1 - Announcement Effect Results

The results of the analysis on the effects of announcements on firm dynamics are presented in Table 3. Firstly, I find that all three forms of possible announcements (Neutral, Positive and Negative) are statistically significant and positively related to a change in the net entry rate (NER) in a given sector. A neutral or mixed announcement, wherein the government gives both positive and negative messages about the sector under study, was associated with a net change of 35 firms in that sector. A positive announcement, wherein the government praises a given sector or announces increases in spending allocations to that sector, was associated with a net change of 71 firms in that sector. Finally, a negative announcement, wherein the government signals caution in a given sector or announces spending decreases, was associated with a net change of 90 firms in the sector.

This seeming positive effect of a negative announcement on the net number of firms can be interpreted as follows: whenever the government gives off negative signals of a sector, these signals are almost always accompanied by measures or mitigating announcements. Furthermore, whilst a large number of *settled* firms exit the market, a number of *new entrants*

fills the gaps left by the exiting incumbents. As such, a seeming increase in the net number of firms should not be interpreted as singular growth as a result of negative announcements.

This is further supported by the control models: A neutral or mixed announcement is only weakly significant and negatively related to exit, but not entry, with 23 less exits after a neutral announcement which indicates a decrease in exiting firms when there is at least some mention of measures surrounding the sector. A positive announcement is strongly significant and positively associated with entry, but not associated with exit. Such an announcement was found to increase entry by 43 firms for the sector in that quarter. Finally, a negative announcement is significant and negatively associated with exit, but not entry. The negative announcements were found to decrease the number of exiting firms by 62.

The reported negative relationship between sector mentions and exits can be ascribed to a method of 'soothing' noticable among negative announcements by the central government, as these are almost always accompanied by the plans for support measures or with the promise that, for instance, budget cuts are temporary. Furthermore, an announcement that is solely negative might be interpreted by firms as a signal that the government is planning support measures in the near future, which would discourage exit even though the sector's economic health might warrant exit.

With regards to the control variables, a positive and significant relationship is found for bourse volatility, PMI and GDP, but not for unemployment. An increase in volatility with a thousand points would increase the net number of entrants by 3 (or 0.003 per point). An increase in the producer confidence by 1 point, as measured by PMI, increases the net number of entrants by 1 (or 1.13). Finally, an increase in the GDP by a billion euros increases the net number of firm entries by 7 (or 7.3). This relationship between macro-economic variables and the net entry rate indicates that the NER is heavily influenced by exogenous shifts in the economy, but especially where these shifts influence implicit factors like trust confidence and certainty, such as changes in PMI. This seems to support earlier findings from the literature indicating a relationship between economic certainty and entry rates (McCollum & Upton, 2016).

With regards to the control models, bourse volatility is only significantly associated with the exit rate, but not the entry rate. PMI is found to be significantly and negatively associated with both gross entry and exit rates. Differently from the main model, unemployment is found to be significantly and negatively associated with both gross entry and exit rates, whilst the

Table 3 – Announcement Effect: FE Models

Announcement Effect	*Main Model*	*Control Models*	
	Saldo	**Entries**	**Exits**
Neutral/Mixed	35.2424**	12.0425	-23.1999*
	(17.2270)	*(10.1381)*	*(12.0807)*
Positive	71.3626***	42.9987***	-28.3639
	(27.0940)	*(16.2157)*	*(17.3339)*
Negative	90.2961**	28.5699	-61.7263**
	(38.5724)	*(18.1943)*	*(26.8510)*
AEXVol.	0.0030***	-0.0005	-0.0035***
	(0.0008)	*(0.0007)*	*(0.0007)*
PMI	1.1311**	-0.9147*	-2.0458***
	(0.4624)	*(0.5007)*	*(0.3849)*
GDP	0.0073***	0.0044***	-0.0029***
	(0.0016)	*(0.0014)*	*(0.0010)*
Unempl.	741.4834	-1043.1920**	-1784.6750***
	(461.9769)	*463.1015*	*(415.9678)*
Constant	-1182.6830***	-150.0170	1032.6660***
	(300.2601)	*(250.9118)*	*(201.7940)*
Obs.	2,926	2,926	2,926
F-Statistic	0.0002	0.0018	0.0001

Note: Table 3 shows the results of a Fixed Effects regression of Government Announcements on panel data for 77 sectors across 38 Quarters over the period Q3 2010 to Q4 2019. This results in 2926 observations. Standard errors are given in parentheses and all variables have been rounded to 4 decimal points. Models breaking down the found effect into the effect on entry and exit specifically have been added as a means of control. The *F-statistic* row shows the probability of the model having a score above the F-stat value for the model. A set of 38 dummies for time-periods were also added to the analysis, but are not shown for ease of reference. Significance levels are indicated by the asterisks: *if p<0.10, ** if p<0.05, and *** if p<0.01.

Table 4 – Real Spending Effect: Total Government Spending

Real Spending Effect (Total Spending)	*Main Model*	*Control Models*	
	Saldo	**Entries**	**Exits**
AE	-0.007***	-0.007***	0.0002
	(0.0025)	*(0.0024)*	*(0.0012)*
Constant	764.4488***	1077.613***	313.1641
	(186.5971)	*(178.7194)*	*(91.0349)*
Obs	2926	2926	2926
F-Statistic	0.0016	0.0033	0.0001

Note: Table 4 shows the results of a Fixed Effects regression of real fiscal spending by the Dutch Government on panel data for 77 sectors across 38 Quarters over the period Q3 2010 to Q4 2019. This results in 2926 observations. Standard errors are given in parentheses and all variables have been rounded to 4 decimal points. Models breaking down the found effect into the effect on entry and exit specifically have been added as a means of control. The *F-statistic* row shows the probability of the model having a score above the F-stat value for the model. A set of 38 dummies for time-periods were also added to the analysis, but are not shown for ease of reference. Significance levels are indicated by the asterisks: *if p<0.10, ** if p<0.05, and *** if p<0.01.

GDP retains its significance for both gross entry and exit rates. The shift in significance for unemployment can be attributed to a difference in measurement for the Net Entry Rate (NER) and the Gross Entry Rate (GER), which treats the NER as the difference between the GER and the Exit rate. This would cause the NER to be smaller or negative, which might lead to a difference in statistical significance.

Unemployment is expected to influence entry and exit negatively, because a higher unemployment signals that economic circumstances are not conducive to firm growth (as proxied by new hiring). Furthermore, unemployed employees do not necessarily make good entrepreneurs, which would cause the GER to decrease. Finally, the negative association between bourse volatility and the exit rate can be attributed to a higher degree of uncertainty, as supported by Miao & Wang (2011). Because of a volatile bourse, the prospects of businesses are liable to shift rapidly. This would cause a decrease in the exit rate as volatility rises.

Subsection 5.2 - Fiscal Policy Effect Results

Next, I look at the effect of real changes in fiscal spending by the Dutch national government on firm dynamics. The results for the analysis are presented in tables 4 and 5.

Firstly, an analysis of the association between shifts in *total* government spending, without controlling for the specific allocation of this spending, was found to be negatively associated with the NER at a rate of -0.007 firms per million, or -7 firms per billion euros spent. This indicates that the effect of real government spending/fiscal policy is low at the aggregate or total level. The negative relationship might be explained by the choice to defer entry or exit decisions in light of government spending increases, to see how or where the spending comes into effect. The negative relationship is replicated in the control models for the GER, with a rate of -0.007 firms per million, or -7 firms per billion euros spent. No significant association was found between total spending levels and the exit rate across sectors.

Secondly, I analyse the effect of specific spending allocations on the NER. I first found a high degree of collinearity between spending allocations, which caused a number of these variables to be omitted. From the remaining variables, I found a significant association for spending allocated to *Greater Economic Affairs* (D), *Agri- & Arborculture, Fishing and Hunting* (E) and *Mining, Industry & Construction* (G) with regards to the NER. The relationship with D seems to be negative, with a 2 firm decrease in the NER for every ten million spent on Greater Economic Affairs. The relationship with E and G is positive, with a 1.44 and 0.53 firm

Table 5 – Real Spending Effect: Spending Allocation Breakdown

Real Spending Effect (Breakdown)	*Main Model*	*Control Models*	
	Saldo	**Entries**	**Exits**
A	-0.0821	-0.0076	0.0602
	(0.0550)	*(0.0605)*	*(0.0550)*
B	0.6150	0.0385	-0.4150
	(0.5108)	*(0.5601)*	*(0.5184)*
C	0.3237	-0.7436	-1.0710
	(0.8464)	*(1.1167)*	*(1.1136)*
D	-0.2106*	-0.1282	0.0609
	(0.1222)	*(0.1325)*	*(0.1103)*
E	1.4415*	0.6833	-0.5372
	(0.7370)	*(1.1824)*	*(1.2808)*
F	-0.0671	0.0711	0.1462**
	(0.0843)	*(0.0789)*	*(0.0736)*
G	0.5383*	0.2459	-0.1975
	(0.2893)	*(0.2852)*	*(0.3159)*
H	-0.1201	0.0606	0.1589
	(0.2132)	*(0.2672)*	*(0.2774)*
I	4.8524	0.8653	-3.7891
	(3.9031)	*(3.3218)*	*(3.1355)*
J	0.0459	-0.2015	-0.2590
	(0.2407)	*(0.2376)*	*(0.1833)*
PMI	3.0025***	-0.5184	-3.2231***
	(0.7834)	*(0.6901)*	*(0.6254)*
GDP	0.0027**	0.0038**	0.0003
	(0.0014)	*(0.0018)*	*(0.0011)*
Unempl.	-1065.0860*	-1535.4890**	-622.0174
	(619.6258)	*(702.5782)*	*(338.4099)*
AEXVol	0.0023***	-0.0007	-0.0030
	(0.0007)	*(0.0006)*	*(0.0006)*
Constant	-523.7907**	61.9891	730.7845***
	(212.8550)	*(201.2464)*	*(147.9686)*
Obs	2926	2926	2926
F-Statistic	0.0011	0.0005	0.0001

Note: Table 5 shows the results of a Fixed Effects regression of real fiscal spending, broken down by allocation source, by the Dutch Government on panel data for 77 sectors across 38 Quarters over the period Q3 2010 to Q4 2019. This results in 2926 observations. Standard errors are given in parentheses and all variables have been rounded to 4 decimal points. Models breaking down the found effect into the effect on entry and exit specifically have been added as a means of control. Due to collinearity, variables K through AD have been omitted from the model. The *F-statistic* row shows the probability of the model having a score above the F-stat value for the model. A set of 38 dummies for time-periods were also added to the analysis, but are not shown for ease of reference. Significance levels are indicated by the asterisks: *if $p<0.10$, ** if $p<0.05$, and *** if $p<0.01$.

increase per million euros spent in E or G respectively. It is assumed that these changes in the NER fall largely to their associated sectors or are spread over the economy as a whole in the case of D.

The negative association between an increase in D and a decrease in the NER can be explained through the nature of the expenses. *Greater Economic Affairs* are generally construed as expenses boosting the economy as a whole or supporting measures like consumer-side benefits such as child-related tax rebates. These expenses, though a stimulus measure for the economy as a whole, will have little result stimulating specific sectors, which might cause an increase in the NER. Furthermore, such measures might be aimed at supporting parts of the economy that are currently failing, without taking away the problem causing the economic failure. This would also not motivate firms to enter or rather increase the exit rate, creating a negative association with the NER.

With regards to the control variables, the positive and significant association found for PMI, GDP and bourse volatility in *Section 5.1* is supported in this analysis. The effect of the PMI is higher, with an increase of 3 to the NER for every index point increase of the PMI, whereas the influence of GDP is lower, with an increase of 2.7 firms for every billion euro increase in the GDP. The influence of bourse volatility is decreased slightly, to an increase of the NER by 2.3 firms for every thousand basis points volatility (or 0.0027 per point). This supports my earlier assumptions about the influence of (un)certainty, public perception and trust in the economy on the NER.

The unemployment rate is found to be significantly and negatively associated with the NER, with a decrease of 1065 firms for every percentile increase in the unemployment rate. The trend of influence by the unemployment rate mirrors the one found in the control models for the announcement effect, where a higher unemployment rate proxies more uncertain economic behaviour and a decreased appeal to entry decisions. Furthermore, the rise in unemployment signals to other firms that the current economic environment is not conducive to growth, which might accelerate the use exit strategies. All in all, this would cause a decline in the NER with rising unemployment.

With regards to the control models, no significant relationship between government spending and entry or exit was found, except a positive relationship between increases in *Fuel & Energy* (F) spending and an increase in exits for associated sectors of 0.14 firms per million spent. Of the control variables, bourse volatility loses its significance. PMI becomes

significantly and negatively related to the exit rate, with 3.2 firms per index point, which indicates increases in producer confidence decrease exits. GDP becomes significant only for the GER, with a positive influence of 3.8 firms per billion increase in GDP. The negative effects for an unemployment remain significant only for the entry rate, with a significant negative association between the unemployment and entry, decreasing the GER by 1535 firms per percentile increase in the unemployment rate.

Subsection 5.3 – Rigidity Testing and Controls

As a means of controlling for possible period-exceeding or self-influencing behaviour in the data, I implement several models with time-lags and autoregressive components. The outcomes from these analyses are collected in *Appendix 4*, with Table 6 reserved for the Announcement effects and Table 7 reserved for real spending. Exact values for the variables can be found in the mentioned tables, as this section primarily deals with the implication of period-exceeding trends & self-influence. At the end of this section, I conduct a Hausman test to see whether the FE method is applicable to my data, as well as interpreting the model fit of my models through their F-statistic.

5.3.1 – Announcements

I find some evidence to suggest that the NER is (mildly) autoregressive for the quarter directly preceding the period under study and the quarter a year before the period under study. This results in an increase of the NER by 0.1626 and 0.5152 firms in the studied period for every firm in the preceding quarter and preceding year respectively. This can be explained by the means of economic reporting, which most often compare quarters to their preceding period and the same period in the preceding year. As such, these two periods are logically the most important predictor for companies in the period under study, which results in significant changes to the NER. In the control models, the period 3 quarters preceding the current period is also found to be significantly associated with the current period (0.0958) for the GER, though no such association was found for the Exit Rate.

The three announcement types are not lagged (due to their nature as a dummy variable) and are all found to be statistically significant in both the main and control models. The associations

are positive for the NER in all three instances, but are all negative for the GER and Exit models. The difference between the NER and GER/Exit models can be logically explained as follows: A negative relationship for the Exit rate *increases* the NER, whilst a negative relationship for the GER *decreases* the NER. In this instance, the effect on the exit rate is larger than the effect on the GER, which results in an increase in the NER and as such, a positive relationship.

With regards to the control variables, no significant lags are found for bourse volatility. GDP follows a similar pattern as the autoregressive behaviour of the dependent variable (NER) in the main model, which I interpret as resulting from similar reporting standards. PMI is found to have an influence for unlagged, first and second lagged variable, indicating that the trend/change over time in the PMI is more important than in the GDP statistics, which focus more on a quarter-by-quarter comparison. The pattern followed by the PMI suggests that preceding quarters are positively associated with the NER, whilst current-period PMI is negatively associated. This might indicate that incumbents or prospective entrants in the current period use information about preceding periods to inform them, whilst going against the tendencies displayed by the current period. This reinforces the idea that the PMI trend is more important than single-period PMI readings, proposed earlier.

The unemployment rate was found to be significant for the unlagged, first and third lagged variables, which suggests an immediate short-term and correcting mid-to-long-term influence. This might be caused by self-correcting behaviour in the labour market, in which employers try to capitalise on the large amounts of available and relatively low-cost labour by increasing their hiring.

In the control models, bourse volatility loses its significance for the GER, but gains significance also in the first lag-variable for the Exit Rate. The pattern that emerges for the exit rate is a decrease in exits as a result of high volatility in the preceding period, with an increase in exits as a result of high volatility in the current period. This might indicate that whilst a single-period volatility is insufficient to push firms to execute exit strategies, a prolonged period of volatility actually increases exits. This would be in line with conclusions from the literature surrounding uncertainty and exit decisions, posited in *Section 3.1*.

The PMI loses significance for the first lag-variable for the GER, but retains significance for the same variable in the Exit Rate model. It follows a similar pattern as in the main model and as such warrants no further discussion.

For the GDP, the GER model is significant for all lags, whereas the exit rate is significant only for the lags and not the current period. The pattern of associations is that of a negative association in lags 4 through 2, with a positive association in the preceding and current periods. This might indicate some manner of cyclical behaviour or expectations among entrants and incumbents exiting their sector.

Finally, the unemployment rate is significant for all lagged variables in the GER model, whilst being insignificant only for the third leg in the Exit Rate model. With regards to the pattern, the association seems to follow a curve of negative (lags 3 and 4) – positive (lag 2 and 1) – negative (current period) associations. This seems to further support the notion of self-adjusting labour markets. Furthermore, it makes possible the assumption that short-term unemployment (with a maximum of half a year) is actually conducive to entrepreneurship, as it increases the number of entries, whilst long-term unemployment (upwards of half a year) reduces entrepreneurial intent. A similar pattern is found among exiting firms, which I attribute to restrictive labour market conditions decreasing firm growth options, which pushes the exit rate up in the short run, but decreases the exit rate in the long run as sectors self-stabilise.

5.3.2 – Real Spending

Firstly, for the Autoregressive and Lagged Real Spending model, I find a significant autoregressive association for all lags. The pattern that emerges seems to indicate that previous quarter growth in the NER positively affects growth in the current period, which might indicate a sort of 'suction effect'. The second lag is the only lag negatively associated with the NER, which complicates the suction effect assumption. More research is needed to explain this apparent trend relationship.

For the lagged spending allocations, I only find a significant effect for the third lag of increases in *Executive and Legislative Authorities* (A) spending in the main model and the second lag of increases in *Judiciary* (C) spending in the control model for the GER. No other significant relationships are found. Though these spending allocations are positively associated, the nature of the omission of variables from the real spending model suggests that another spending allocation could also be significant. Due to it following a near-identical path to A or C, it would share a significance. More research would be needed to isolate which spending allocations could share a significance.

With regards to the control variables in the lagged Real Spending model, I find a similar pattern to the data for PMI as in the announcement effect model, though the third lag-variable loses significance. The GDP also follows a similar trend, though it gains significance in the third lag-variable. I take from this similarity that both the trends of both variables are accurately displayed by the models.

The unemployment rate only retains significance in the fourth lag-variable, with a severely negative association between unemployment and the NER. As such, the model predicts that the unemployment in the same period of the preceding year has significant negative impact on the NER, which I find surprising. More research is required to explain this apparent association.

Bourse volatility gains significance and is negatively related for the first lagged period. The pattern indicates whilst an increase in volatility in the preceding quarter drives down the NER, current quarter volatility increases the NER. This pattern is supported by the GER and Exit Rate models, which display a similar relationship as with the announcement types in the previous subsection.

5.3.3 – Hausman Testing & Model Significance

In this subsection, I conduct a Hausman Specification Test (HST) as proposed by Hausman (1978) to test whether my models are mis-specified. A misspecification result under the HST would mean that my data is better suited to a Random Effects model, rather than a Fixed Effects model. I find that for each instance of the model, the data is conducive to the use of a Fixed Effects Methodology.

Further investigating the fit of each model to the data, I add their F-statistic significance value to each table. With every F-statistic significant at below the 0.01 level, I conclude that my models provide an accurate description of the data used in the analysis, as well as its proposed effects.

Subsection 5.4 - Hypotheses Testing

From the literature survey, several hypotheses were constructed, which will now be answered based on the found results reported above.

> *H1a: Positive Announcements from the central government in their annual spending plan have a significant positive influence on the Net Entry Rate (NER) for those sectors it concerns.*

Firstly, it was found that positive announcement are significantly and positively associated with the NER, with an increase between 71 and 147 firms in a given sector, depending on the model used in the analysis. Though this is a wide interval for the announcement effect, I can conclude that positive announcements do carry a positive influence on the NER of a sector. To further refine the magnitude of this effect, more research might be conducted. Based on the above, I accept this hypothesis.

> *H1b: Negative Announcements from the central government in their annual spending plan have a significant negative influence on the Net Entry Rate (NER) for those sectors it concerns.*

Secondly, it was found that negative announcements are *not* significantly and negatively associated with the NER, but rather have a significant and positive effect of the NER. With an added amount of firms between 90 and 162 added to a given sector, the effect of a negative announcement is even larger than that of a positive announcement. The most probable reason for this would be that negative announcements help prevent uncertainty in a sector, which drives down exit strategy adoption among incumbents and as a result increases the NER. Furthermore, it can also be due to the manner of reporting negative announcements, though this prospect requires further study and exploration to become a feasible answer. Based on the above, I must reject this hypothesis

> *H1c: Neutral or Mixed announcements from the central government in their annual spending plan have no significant influence on the Net Entry Rate (NER) for those sectors it concerns.*

Thirdly, it was found that neutral or mixed announcements *are* significantly and positively associated with an increase in the NER. This is not entirely surprising in hindsight, as announcements seem to carry a weight to them for firms and sectors. If a sector is mentioned,

it already creates a positive effect in this sector, even though the announcements are mixed in their message. Such an announcement adds between 35 and 137 firms to their respective sectors and though once again this is a wide interval, I can conclude that there is a positive effect of neutral announcements. Based on the above, I reject this hypothesis.

H2a: Government Spending, allocated to a specific sector, has a significant positive effect on the Net Entry Rate (NER) for those sectors it concerns

Fourthly, the analysis on government spending shows that there are some specifically allocated spending categories with a positive effect (Mining, Industry & Construction: 0.5383 / Agri- Arborculture, Fishing & Hunting: 1.4415) whereas other allocations carry a negative effect (Greater Economic Affairs: -0.2106). This effect is not replicated in models controlling for time trends. Due to a high amount of collinearity, it is hard to isolate exactly which spending categories carried a positive effect due to most being omitted from the analysis. As such, although there is some evidence to suggest this hypothesis can be accepted, I must reject the hypothesis based on the current data and suggest further research on this subject.

H2b: An increase in total government spending has a significant positive influence on the Net Entry Rate (NER) across all sectors.

Fifthly, the analysis on total government spending shows a significant and negative relationship between changes in total government spending and the NER across sectors of a magnitude of -0.007 firms per million euros. Such a negative association was unexpected and will require further research to explain. Based on the above, I reject this hypothesis.

H3a: Macro-economic indicators, like PMI, GDP, bourse volatility and Unemployment statistics, are significantly related to a positive change in the NER.

Further, I find that macro-economic indicators, entered into the announcement and spending models as a means of control, are largely significantly associated with the NER. The exception being the unemployment statistic in the spending model, which is negative and very large. Because of the findings of both models, I conditionally accept the hypothesis. Further research on the relationship between unemployment and firm entry or exit strategies can and should support this hypothesis.

H3b: Macro-economic indicators, like PMI, GDP, bourse volatility and Unemployment statistics, display a significant positive effect on the NER over time/display a time-trend.

From the control models in *Appendix 4*, I find that most of the macro-economic indicators are significantly associated with the NER. These indicators also display trend-like behaviour over time, as described in previous subsections. The nature of their relationship is not strictly positive, however, which leads me to reject this hypothesis on its premise that these indicators display a significant *positive* effect.

H4: The Net Rate of Entry (NER) is autoregressive for at least its first lag.

Finally, the control models have shown evidence of some manner of autoregressive behaviour in the NER, both in the announcement and spending models. Strictly, this is enough to accept this hypothesis. I highly recommend further research be done to see the extent of this self-informing behaviour and the interaction between this autoregression and other factors.

In the following Section 6, I will elaborate on the strategic implication of these findings, as well as the nature of the analysis itself. In Section 7, I will discuss some shortcomings of this analysis and propose future research, after which I will conclude this analysis in Section 8.

Section 6
Strategic Implications

The research conducted in this analysis can be categorised largely as a policy-related subject. However, the results found also provide implications for strategic assessments, both in the public and private sphere.

As a reactive player in the firm-government relationship, it is important for firms and managers to be mindful of the effect that government policy can have, as well as the reaction that competitors may have to this same policy. When it comes to entry decisions, a firm might wish to postpone entry until a later period, to gauge the long-term likelihood of survival of its competitors, given macro-economic characteristic, without expending their own resources. Whilst this would sacrifice the short-term first mover advantage in some cases, the long term survivability of firms might be improved. The inverse is also true for exit decisions, where decisions made shortly after announcements, along with the bulk of exiting firms, may entail leaving a market that transitions to a situation in which exit would not have been necessary, which is supported by the existence of trends over time in certain variables of this analysis. The use of information, provided through announcements by public players, is a powerful tool in any firm or managers' strategy repertoire, yet it can prove vital to tactically use this information

in order to reap its benefits to the fullest. In particular the reaction to different types of announcements should be taken into account, as these might differ on a per-firm basis. As such, this analysis implies that firm strategy with regards to entry, exit and the government, should take a less reactive and more proactive approach, increasingly taking into account government actions and, where possible, factoring them in to their strategic decision-making framework.

For public actors, as the active player in the firm-government relationship, it is often hard to assess the effect of policies intended to strengthen the economy, in particular when it comes to entries of new, mostly start-up firms. This analysis shows that it is possible to assess this effect, which opens up new possibilities for evaluation of previous policies. Government actors, with a wealth of information at their disposal, should be increasingly incorporated into the strategy-building process to create inbuilt evaluation possibilities and provide the data-gathering parties with clear guidelines and a structured overview of needs to assess the policies and strategies implemented. More specifically, an increased level of granularity when it comes to government spending data will positively impact the clarity of results when the effect of this spending is analysed.

As a general implication, this analysis shows that economy-wide sentiment is an important additional driver of decision-making among firms, which will benefit public actors if used to formulate public strategy objectives. Likewise, the rates of entry and exit have been shown to be at least partially autoregressive, which opens up an extra means of prediction for public actors.

Finally, the differences in reaction to different announcements among sectors indicates that government fiscal strategy is not a one-size-fits-all issue, but rather a fractured and complex process. Especially due to the inherent differences in entry barriers, entry rates, exit decision frameworks and government involvement in the sectors, it is important to assess the critical success factors of a given strategy before it is enacted. Increasing levels of public consultation, opening up the strategic dialogue to private partners and transitioning to a more data-driven strategy-making and evaluative process are key to improving the strategic attainment of public fiscal policy.

Section 7
Discussion & Future Research

This research provides assessment of the previously unresearched interplay between governmental fiscal policy announcements, real fiscal investment and firm dynamics such as entry, exit and ownership. As a generalist assessment, this research has several important shortcomings and possible sources of bias, which should be taken into consideration for future research on this subject. Firstly, the number of control variables is limited to a select few, which could overestimate their effect in the models. Future research can and indeed should incorporate more measures related to the macro-economic and social environments, such as international investment, changes in labour law which might increase or decrease the attractiveness of entry or exit, special support measures to increase start-up rates, bankruptcy postponement measures such as the ones implemented in the financial crisis and the current Covid-19 crisis, cultural views on entrepreneurship, announcements and legislation by the European Union and other such measures.

Furthermore, a more detailed breakdown of entries and exits by firm size, as well as ownership type and other such characteristics, can help increase the usability of the research findings in building a strong and comprehensive strategy toolkit for fiscal measures on this topic. Increasing the granularity of firm dynamics data to the monthly or even weekly level will help isolating the effects of policy more specifically. Added to this, time-differing firm characteristics, such as a shift in ownership dynamics through IPO's or mergers might provide additional insights into the effect of government policy. By also incorporating firm side strategies, the analysis can be focused more intensely on the success rate of firm side strategies pertaining to government action, highlighting this subject from the bottom up instead of top-down.

With regards to announcements, other announcements, such as reports by government-adjacent entities, bureaus and agencies, as well as political statements made through the media, might provide further insight into the effect of these announcements. This is also an important limitation to the data, as I do not control for other announcements besides those in the spending plan that coincide with or predate its publication. This might award too much weight to the spending plan.

With regards to the fiscal policy analysis, I have focused solely on fiscal *spending*, not restrictive measures. This biases the result by excluding restrictive measures from the policy side of this analysis, whilst retaining 'negative announcements' in the earlier portion of the analysis. As such, future research should also be conducted on the effect of tax increases for certain sectors to round out the fiscal policy side of this subject.

The effect of time-trends on entry and exit should also be explored in further detail, as this analysis did not focus on this subject as its main goal. Based on the findings in this analysis, there is grounds to assume research in this regard might be fruitful.

Finally, this research focuses its data on the pre-covid period for lack of post-shock data, As data becomes available, this analysis should specifically be replicated for the pre- during- and post-covid periods to review the effects of the tremendous fiscal policy measures that were implemented during this time. This is also a limitation of the current analysis, which focuses specifically on the post-2008 period, in which the economy was recovering from the Banking- and Euro crisis. This might have caused a lesser likelihood of uptake among the firms of certain sectors, such as those in the financial services industry. As such, a further analysis on the pre- and post-2008 period should be conducted to estimate the effect of the post-crisis period on the current data.

Section 8

Conclusions

In this analysis, I have studied the effect of announcements and real fiscal policy on the Net Entry Rate of Firms for 77 sectors across 10 years. I find evidence to suggest that announcements, in whatever form, increase the Net Entry Rate, but that this same effect for real fiscal policy is inconclusive. This conclusion was supported by several control models. Macro-economic variables, which in part act as a proxy for market sentiment, were found to be associated to the NER, which seem to support the notion proposed in the literature that sentiment and certainty are a large influencer of entry and exit decisions.

As an analysis of government fiscal strategy regarding firm dynamics, this analysis provides a basis for future applications of the FE-methodology and theoretical insights to the subject of the government-firm interaction when it comes to entry and exits. Important caveats remain in the above analysis, though it provides a well-balanced starting point for additional insights.

Every reader of the Art of War, be they general or corporate strategist, is admonished to be mindful of their surroundings and plan for every eventuality. Though we all try to incorporate as much information as possible into our decision-making process, it can often be hard to isolate the types of relationships and associations necessary for these decisions. Through this analysis, we have learned that sometimes, the word of our government has a more appreciable effect than their actions and by implementing this knowledge into our corporate strategies, we can protect ourselves from reacting too quickly or too late. Indeed, by acknowledging the nature of our knowledge, we, as wise commanders, can use this information to our advantage to not only survive our competitors, but to claim victory on the battlefield of commerce.

Appendix 1 – Final thoughts

This analysis proved to be a daunting and expansive task, which has provided some interesting results and prospects for further study. With regards to some of the prospects raised in this analysis, I believe there are distinct opportunities for the university and its researchers to play a comprehensive and key role in the evaluative process of (local) governments' strategies and policies.

Working as a consultant for a local government, one of the main problems faced by many public institutions is the design and evaluation of economic strategy and policy, particularly when it comes to its effect for individual firms as opposed to macro-economic variables. As evidenced by the analysis I conducted, it is possible to provide some insight into this topic, though I hesitate to call this analysis anything remotely close to comprehensive.

As such, an expansion of this analysis, geared specifically towards evaluating the impact of government policy in a firm context and providing overviews of the differences in adoption between sectors or firms or their reasons for these differing adoptions would, in my opinion, be an invaluable product to offer to public entities as a researcher or research institution.

By formulating more concrete points of action for our policymakers, as well as providing actionable insights to our business community, will elevate our academic field from research for research sake to an indispensable tool for policymaking and the conduct of business.

In saying this, I thoroughly hope that my thoughts and intentions have been presented in a clear and actionable fashion. I look forward to future research on the topics suggested and, if possible, to future cooperation between the public branch and the research sector.

As a final note, I want to thank my supervisor, G. Antonecchia for his words of caution and his insights at the inception of this research concept, as well as his teaching during prior courses that guided me in the direction of this topic.

Thank you for reading.

Kind Regards,

Thomas van Eijl

APPENDIX 2 – SBI2 CODES AND THEIR IDENTIFIER[1]

01 Landbouw

02 Bosbouw

03 Visserij

06 Winning van aardolie en aardgas

08 Delfstoffenwinning (geen olie en gas)

09 Dienstverlening delfstoffenwinning

10 Voedingsmiddelenindustrie

11 Drankenindustrie

13 Textielindustrie

14 Kledingindustrie

15 Leer- en schoenenindustrie

16 Houtindustrie

17 Papierindustrie

18 Grafische industrie

20 Chemische industrie

21 Farmaceutische industrie

22 Rubber- en kunststofproductindustrie

23 Bouwmaterialenindustrie

24 Basismetaalindustrie

25 Metaalproductenindustrie

26 Elektrotechnische industrie

27 Elektrische apparatenindustrie

28 Machine-industrie

29 Auto- en aanhangwagenindustrie

30 Overige transportmiddelenindustrie

31 Meubelindustrie

32 Overige industrie

33 Reparatie en installatie van machines

35 Energiebedrijven

38 Afvalbehandeling en recycling

39 Sanering en overig afvalbeheer

41 Algemene bouw en projectontwikkeling

42 Grond-, water- en wegenbouw

43 Gespecialiseerde bouw

45 Autohandel en -reparatie

46 Groothandel en handelsbemiddeling

47 Detailhandel (niet in auto's)

49 Vervoer over land

50 Vervoer over water

51 Vervoer door de lucht

52 Opslag, dienstverlening voor vervoer

53 Post en koeriers

55 Logiesverstrekking

56 Eet- en drinkgelegenheden

58 Uitgeverijen

59 Film- en tv-productie; geluidsopname

60 Radio- en televisieomroepen

61 Telecommunicatie

62 IT-dienstverlening

63 Diensten op het gebied van informatie

64 Bankwezen

65 Verzekeraars en pensioenfondsen

66 Overige financiële dienstverlening

68 Verhuur en handel van onroerend goed

69 Juridische diensten en administratie

70 Holdings en managementadviesbureaus

71 Architecten-, ingenieursbureaus e.d.

72 Research

73 Reclamewezen en marktonderzoek

74 Design, fotografie, vertaalbureaus

75 Veterinaire dienstverlening

77 Verhuur van roerende goederen

78 Uitzendbureaus en arbeidsbemiddeling

79 Reisbureaus, reisorganisatie en -info

80 Beveiligings- en opsporingsdiensten

81 Schoonmaakbedrijven, hoveniers e.d.

82 Overige zakelijke dienstverlening

85 Onderwijs

86 Gezondheidszorg

87 Verpleging en zorg met overnachting

88 Welzijnszorg zonder overnachting

90 Kunst

91 Bibliotheken, musea en natuurbehoud

93 Sport en recreatie

94 Ideële, belangen-, hobbyverenigingen

95 Reparatie van consumentenartikelen

96 Overige persoonlijke dienstverlening

[1] For English, please refer to Chamber of Commerce Netherlands (2021).

Appendix 3 – Fiscal Spending Allocation Sources

1. Executive and Legislative Authorities
2. Fundamental Research
3. Judiciary
4. Greater Economic Affairs
5. Agri- & Arborculture, Fishing & Hunting
6. Fuels & Energy
7. Mining, Industry & Construction
8. Transportation
9. Communication
10. Other Sectors
11. Economic Research
12. Other Economic Affairs
13. Waste Management
14. Wastewater Management
15. Biodiversity and Environment
16. Environmental Research
17. Housing
18. City and Countryside development
19. Water Services
20. Other Government-provided Services
21. Medical products
22. Medical Treatment (Specialised)
23. Medical Treatment
24. (General)
25. Recreation & Sports
26. Cultural Institutions
27. Public Broadcasting &
28. Publishers
29. Societal Organisations
30. Recreation, Cultural and Religious Research
31. Recreation, culture & Religion (Other)
32. Education
33. Total Spending

Appendix 4 – Autoregressive Lagged Control-Models (Result Tables)

Table 6 – AR & Lagged Control Models for Announcement Effects

Announcement Effect		*Main Model*	*Control Models*	
		Saldo	**Entries**	**Exits**
(Dependent)	*L1.*	0.1626***	0.2538***	0.0771
		(0.0606)	*(0.0575)*	*(0.0556)*
	L2.	0.0146	0.0455	--
		(0.0280)	*(0.0315)*	
	L3.	0.0494	0.0958***	--
		(0.0374)	*(0.0258)*	
	L4.	0.5152***	0.5433***	--
		(0.0791)	*(0.0685)*	
Neutral		137.8188***	-142.5749***	-340.1176***
		(50.1325)	*(34.6549)*	*(64.6508)*
Positive		147.8141***	-135.5861***	-348.0578***
		(55.0755)	*(31.6120)*	*(65.4368)*
Negative		162.0579***	-168.3339***	-369.2542***
		(56.0530)	*(36.0989)*	*(72.2782)*
AEXVolatility		-0.0049***	-0.0001	0.0035***
		(0.0013)	*(0.0006)*	*(0.0009)*
	L1.	-0.0005	0.0012	-0.0017***
		(0.0009)	*(0.0007)*	*(0.0006)*
PMI		-6.6247***	-4.0389**	-4.5545***
		(1.9092)	*(1.5844)*	*(1.0770)*
	L1.	13.1237***	1.6113	-11.5142***
		(2.6909)	*(1.2162)*	*(2.2206)*
	L2.	7.4490***	8.0883***	3.3263***
		(1.9507)	*(1.8238)*	*(0.8037)*
GDP		0.0224***	0.0156***	0.0004
		(0.0050)	*(0.0038)*	*(0.0015)*
	L1.	-0.0062	0.0131***	0.0211***
		(0.0041)	*(0.0036)*	*(0.0042)*
	L2.	0.0036	-0.0082**	-0.0137***
		(0.0035)	*(0.0035)*	*(0.0031)*
	L3.	0.0001	-0.0076***	-0.0050***
		(0.0026)	*(0.0024)*	*(0.0018)*
	L4.	-0.0145**	-0.0121***	-0.0061***
		(0.0056)	*(0.0039)*	*(0.0022)*
Unempl.		25475.6700***	-845.0017	-29846.8500***
		(4,972.6020)	*(2,064.7960)*	*(6,062.8330)*
	L1.	-4652.8050*	7489.4080**	15642.7800***
		(2,493.8290)	*(2,993.4780)*	*(3,570.4090)*

L2.	-2127.2350	10725.8600***	14307.4400***
	(3,646.3290)	*(3,046.3300)*	*(3,555.7480)*
L3.	-10334.6700***	-7625.6520**	2223.4500
	(2,218.2490)	*(3,017.3500)*	*(1,769.6620)*
L4.	-1567.9020	-9627.1870***	-8518.0640***
	(2,278.8850)	*(2,767.8710)*	*(1,446.4390)*
Constant	-1299.7220***	-132.0699	1338.9400***
	(476.0847)	*(298.9449)*	*(288.5290)*
Obs	2156	2156	2156
F-Statistic	0.0000	0.0000	0.0000

Note: Table 6 shows the results of a Fixed Effects regression of announcements by the Dutch Government on panel data for 77 sectors across 38 Quarters over the period Q3 2010 to Q4 2019. The observations have been lagged to allow for time-trends and to allow some slowness of uptake as a result of announcements. This results in 2156 observations. Standard errors are given in parentheses and all variables have been rounded to 4 decimal points. Models breaking down the found effect into the effect on entry and exit specifically have been added as a means of additional control. The *F-statistic* row shows the probability of the model having a score above the F-stat value for the model. A set of 38 dummies for time-periods were also added to the analysis, but are not shown for ease of reference. Significance levels are indicated by the asterisks: *if p<0.10, ** if p<0.05, and *** if p<0.01.

(APPENDIX 4 CONTINUES ON THE NEXT PAGE)

Table 7 - AR & Lagged Control Models for Real Spending Effect

Real Spending Effect	*Main Model*	*Control Models*	
	Saldo	**Entries**	**Exits**
(Dependent) L1.	0.1701**	0.3783***	0.0338
	(0.0715)	*(0.0817)*	*(0.0550)*
L2.	-0.0820**	-0.0692	--
	(0.0355)	*(0.0424)*	
L3.	0.0689*	0.1491***	--
	(0.0391)	*(0.0370)*	
L4.	0.5629***	0.4961***	--
	(0.0794)	*(0.0793)*	
A	1.8085	0.3309	-0.7145
	(1.6954)	*(1.3502)*	*(0.8903)*
L1.	0.3796	0.1574	-0.1450
	(0.3164)	*(0.2675)*	*(0.1560)*
L2.	-0.0255	-0.0497	-0.0205
	(0.0766)	*(0.0594)*	*(0.0455)*
L3.	0.2741*	0.1198	-0.0741
	(0.1601)	*(0.1139)*	*(0.0613)*
L4.	0.8533	0.0652	-0.3996
	(0.7824)	*(0.6448)*	*(0.4014)*
L5.	0.2526	0.2521	0.0031
	(0.2464)	*(0.2327)*	*(0.1302)*
L6.	-0.1708	-0.1501	0.0960
	(0.1633)	*(0.1210)*	*(0.1407)*
L7.	0.0946	0.1047	-0.0170
	(0.1549)	*(0.1547)*	*(0.0971)*
B	-19.9181	-2.8358	8.9591
	(17.6712)	*(14.4001)*	*(8.8232)*
L1.	-5.5567	-2.2187	1.7333
	(4.8346)	*(4.1472)*	*(2.1011)*
L2.	-0.0957	0.7054	-0.2417
	(1.6544)	*(0.9445)*	*(1.1178)*
L3.	-2.0344	-1.4810	0.5750
	(1.6225)	*(1.2684)*	*(0.7815)*
L4.	2.9522	0.5461	-0.8338
	(2.9314)	*(2.1737)*	*(1.7420)*
L5.	1.5147	-0.3777	-1.2362
	(1.4520)	*(1.1807)*	*(0.7860)*
L6.	-1.0279	1.0614	0.5222
	(1.3450)	*(0.9215)*	*(1.0613)*
L7.	-1.4180	-0.6996	0.7014
	(1.6682)	*(1.4935)*	*(0.7051)*
L8.	5.4535	1.2315	-1.9470

	(5.2891)	*(4.1259)*	*(2.7782)*
C	22.9462	2.3564	-11.2224
	(20.5151)	*(16.9419)*	*(10.4570)*
L1.	8.1670	4.3432	-1.5888
	(7.5415)	*(6.5676)*	*(3.3931)*
L2.	-3.7889	-2.8756*	1.8565
	(3.1238)	*(1.5661)*	*(2.3352)*
L3.	2.0227	2.6322	-0.1603
	(2.6296)	*(2.2927)*	*(1.5514)*
L4.	-12.9882	-2.2379	4.6545
	(12.9673)	*(10.6352)*	*(6.7449)*
L5.	-5.1469	-1.7182	2.0325
	(3.5552)	*(2.8622)*	*(2.1243)*
L6.	3.9368	0.1977	-2.1154
	(2.6581)	*(1.4710)*	*(1.5311)*
L7.	0.0350	-1.3229	-1.1871
	(1.5612)	*(1.2587)*	*(1.3546)*
L8.	-8.7565	-1.9058	2.5114
	(9.3628)	*(6.9626)*	*(5.8267)*
L9.	1.2822	-0.7368	-1.1157
	(1.2152)	*(0.9938)*	*(1.1472)*
D	1.9732	0.4005	-0.7813
	(1.7797)	*(1.4008)*	*(0.9780)*
L1.	0.1916	0.1506	-0.0110
	(0.2912)	*(0.2305)*	*(0.1987)*
L2.	-0.0061	-0.0056	-0.0177
	(0.1646)	*(0.0930)*	*(0.1138)*
L3.	0.0658	0.0241	0.0130
	(0.1363)	*(0.0990)*	*(0.0845)*
E	-16.9985	-2.3965	7.7774
	(14.6182)	*(11.7330)*	*(7.5014)*
L1.	-3.9925	-1.3153	1.5294
	(4.1206)	*(3.4849)*	*(1.6419)*
L2.	-1.5379	0.3133	1.4166
	(1.7286)	*(1.2546)*	*(1.0027)*
L3.	-1.7220	-0.2927	0.6815
	(1.2509)	*(0.9121)*	*(0.7210)*
F	-2.0050	-0.1593	0.9671
	(1.6716)	*(1.3324)*	*(0.8771)*
L1.	-0.5795	-0.2255	0.1831
	(0.7276)	*(0.6352)*	*(0.2981)*
PMI	-9.0769***	2.2318	4.4195***
	(2.7372)	*(2.7404)*	*(1.1498)*
L1.	17.8213***	0.9828	-15.1215***
	(3.2275)	*(1.9663)*	*(2.6643)*

L2.	-4.8339	4.1567**	8.1104***
	(3.2157)	*(1.6288)*	*(1.7391)*
GDP	0.0185**	0.0041	-0.0017
	(0.0075)	*(0.0073)*	*(0.0045)*
L1.	-0.0086	0.0031	-0.0015
	(0.0082)	*(0.0065)*	*(0.0041)*
L2.	0.0211	-0.0030	-0.0208***
	(0.0132)	*(0.0112)*	*(0.0052)*
L3.	-0.0189*	-0.0026	0.0215***
	(0.0110)	*(0.0091)*	*(0.0053)*
L4.	-0.0270***	0.0029	0.0230***
	(0.0095)	*(0.0057)*	*(0.0045)*
Unempl.	-30.2671	6979.0700**	2574.0660
	(6,621.2390)	*(3,670.9050)*	*(4,003.6810)*
L1.	1097.8510	4022.4730	7625.3060
	(7,725.7040)	*(4,617.6230)*	*(4,900.1650)*
L2.	632.8804	-727.8560	-5977.3830
	(5,838.8870)	*(3,404.8570)*	*(4,251.4740)*
L3.	-2672.0210	-4814.7400	1062.4030
	(5,564.1130)	*(2,962.5750)*	*(3,684.3150)*
L4.	-5455.4980**	-3210.9820	3018.6400
	(2,630.9240)	*(2,308.6270)*	*(1,382.8480)*
AEXVol.	0.0083**	-0.0035*	-0.0100***
	(0.0035)	*(0.0018)*	*(0.0020)*
L1.	-0.0100***	0.0040*	0.0075***
	(0.0036)	*(0.0023)*	*(0.0017)*
Constant	9976.1670*	971.6504	-5963.7480*
	(5,881.7190)	*(5,009.1850)*	*(3,195.6000)*
Obs.	2156	2156	2156
F-Statistic	0.0000	0.0000	0.0000

Note: Table 6 shows the results of a Fixed Effects regression of real spending by the Dutch Government on panel data for 77 sectors across 38 Quarters over the period Q3 2010 to Q4 2019. The observations have been lagged to allow for time-trends and to allow some slowness of uptake as a result of announcements. This results in 2156 observations. Standard errors are given in parentheses and all variables have been rounded to 4 decimal points. Models breaking down the found effect into the effect on entry and exit specifically have been added as a means of additional control. Due to collinearity, variables F through AD and several lagged variables of the implemented spending variables have been omitted from the model. The *F-statistic* row shows the probability of the model having a score above the F-stat value for the model. A set of 38 dummies for time-periods were also added to the analysis, but are not shown for ease of reference. Significance levels are indicated by the asterisks: *if $p<0.10$, ** if $p<0.05$, and *** if $p<0.01$.

Appendix 5 – Optimal Lags

Table 8 – Optimal Lags for all Variables Used

Variable	Optimal Lag
A	7
B	8
C	9
D	3
E	3
F	5
G	10
H	5
I	10
J	3
K	4
L	1
M	9
N	9
O	2
P	9
Q	5
R	5
S	2
T	5

Variable	Optimal Lag
U	5
V	5
W	5
X	9
Y	9
Z	5
AA	5
AB	5
AC	10
AD	4
AE	5
GDP	4
PMI	2
AEXVol	1
Unempl	4
Saldo	4
Entries	4
Exits	1

Note: All lag lengths were determined using the Akaike Information Criterion (AIC) as described in *Section 4.3*