Papal Dividends: Popes' Political Communications and Financial Markets*

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Abstract

Do Popes' communications have meaningful financial impacts? We argue that papal communications that speak of important social issues are interpreted politically and can stir policy-relevant debates with market implications. Following a papal message, we contend that investors react as a function of the Pope's orientation and the media response, which can support or oppose the papal message. We test our argument using stock market data in event studies of social encyclicals by John Paul II, Benedict XVI, and Francis—three Popes with different positions on the social role of liberal economic markets. Our analyses show that Popes' messages affect the returns of the most exposed firms. A Pope's positive orientation about liberal markets, combined with a strong supporting media, boosts investors' confidence in traditional assets. Vice versa, a market-skeptic message, coupled with media opposition, generates market volatility. Our findings contribute to research on the distributional impact of non-elected authorities' communications.

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1 Introduction

Research on the economic consequences of political leaders' actions tends to focus on elected or appointed politicians and institutional representatives. Yet, while we increasingly know that non-elected public figures can have equally significant political clout, only a small number of studies investigate the material implications of other political entrepreneurs. This knowledge gap is puzzling given that non-elected leaders can have access to large audiences and their visibility can easily surpass attention to politicians. It is especially compelling from a political economy angle: if non-elected, non-official authorities can influence voters' political beliefs, they can also presumably affect their financial decisions.

There is an especially surprising lack of research on the consequences of political communications from a most prominent and widely visible figure: the Pope. Studies show that positions of the Vatican affect public framing of world issues (Gill, 2001; Grzymala-Busse, 2015; Ziegler, 2020) and the deployment of resources to solve them (Warner, 2000; Juergensmeyer, 2008). Virtually no research, yet, explores the material effect of Popes' communications, starting from their impact on global financial markets. This paper confronts precisely this question. We study how papal communications expressing a vision on how to address social problems affect financial stakeholders. In so doing we provide the first systematic investigation of why modern papal politics matter for financial investors and when papal communications influence capital behavior.

We build on the observation that the Pope frequently releases messages that directly tackle pressing social problems.[1] We focus here on *encyclicals*, the most authoritative

[1]Historically, the papacy has extorted massive authority on political institutions (Grzymala-Busse, 2015, 2023). This made papal messages a focal point of global political problem management (Ferrari, 2006). Since the post-World Wars era, which coincided with the Second Vatican Council period, the Pope has been especially tuned in with issues affecting the vulnerable. Given that global crises with few national solutions tend to impact vulnerable communities the most, these considerations have motivated the Vatican

documents at the heart of any Pope's repertoire. So-called "social" encyclicals tend to be released at the onset of important events and international crises (Genovese, 2015) and address issues related to, for example, inequality and discrimination. Through these writings, the pontiff inevitably places himself on either side of a major public debate on how to concretely solve the social problem ahead. Often, this boils down to addressing the issues at hand either with the help of—or in spite of—market forces (Li et al., 2016; Zieba, 2023).[2]

Against this background, we contend that, conditional on the encyclical being centered on a social crisis, the papal message represents a signal that can be interpreted as either an endorsement for or a dissent from unfettered liberal markets. This is because the Pope's message can stir policy discourse in a way that hinges on the material interests of stakeholders who own specific assets exposed to the issue of the encyclical. We argue that the way the Pope positions himself on the role of markets to solve the issue can affect the value of such assets.[3] In addition, we maintain that the reception of the papal message—and therefore the direction of its market effect—depends on the media environment that diffuses the Pope's message. Whether the media is more or less aligned to the papal vision matters for the credibility and, in fact, the outreach of the message.

Taken together, we argue that, when a Pope releases a social encyclical, his perceived position on the liberal economy and the response of the receiving media result in a signal

to regularly step up for them (Chong and Troy, 2011; Genovese, 2019).

[2]Historians argue that since the early 20th century, Popes have sought a balance between the rejection of the communist economic model and the endorsement of a socially viable market model (the Vatican's so-called 'third way' of thinking about the role of the state in a free market economy, Himes, 2006). Below we discuss if it is reasonable to perceive Popes as right or left from an economic policy perspective.

[3]This assumption find support in the literature. For example, researchers have shown that papal messages are salient in the public debate of Christian-majority countries, or countries with close linkages to the Vatican (Tuñon, 2019; Ziegler, 2020).

that can either hurt or reward the most exposed markets. Assets in exposed, conventional markets (which we call "traditional") may benefit from such an authoritative signal in support of the liberal economy. By contrast, other assets ("newcomers") may be rewarded if the Pope supports a policy turn. Given that traditional market actors tend to benefit from economic-liberal positions on global financial markets (Patterson and Donsbagh, 1996; Sattler, 2013; Benton and Philips, 2020; Brooks, Cunha and Mosley, 2021), we expect that papal messages that double down on liberal markets provide predictable positive returns to investments of traditional market actors. Thus, we contend that a Pope that encourages liberal market visions, in combination with a supportive media reiteration of his message, will boost investors' confidence in status quo markets and will privilege the returns of traditional assets.

Following this logic, a Pope that explicitly challenges liberal economic paradigms could generate price volatility that can even hurt traditional companies in favor of newcomers. That is, if the media context around the Pope's message were to reflect and magnify his stance. Otherwise, we conjecture that the effort could backfire. In this alternative scenario, the message of a more economically interventionist Pope could generate opposition by those that sustain traditional actors and the stakeholders profiting from liberal markets. If this occurs, the outcome could be a decrease in the appreciation of the Pope's message and, we argue, less profitability for companies that would benefit from the alternative policy vision.

We test our argument by studying market trends following the release of social encyclicals by three different Popes. We consider John Paul II's encyclical in honor of work in the liberal economy (*Centesimus Annus*, 1991); Benedict XVI's encyclical on charity in the globalization era (*Caritas in Veritate*, 2009); and Francis' encyclical on sustainability and climate change (*Laudato Si*, 2015). These three case studies allow us to leverage variation in the components of our theory. First, they let us focus on Popes with different world view positions on the role of markets for economic growth and social inequality. Second, these cases are centered on historical moments with different media framing around the Pope. By offering three different cross-country and cross-industry analyses following encyclicals, each case study sets itself up to test different scenarios of Papal influence on financial markets delineated in our argument.

Across the three cases, we perform an event study that draws on daily stock returns of relevant firms in the months around the release of each encyclical. Specifically, we focus on the market value of firms in the sectors that, in our view, should be most exposed to the message of each encyclical, as well as the countries that should be more sensitive to the message of the Pope. In line with our theory, the empirical analyses suggest that papal communications affect investors' short-term market confidence. The encyclicals of John Paul II and Benedict XVI, encapsulating world-order views that endorsed liberal markets and were well received by bipartisan media, generated trust in traditional markets, resulting in positive returns in locked-in assets such as financial service firms and banks. By contrast, Francis' climate encyclical created more controversy and had some negative short-term effects on the profits of locked-in—i.e., fossil fuel—assets; however, the reaction from the right-wing media, particularly in the US, also hurt the returns of emerging renewable stakeholders. We back up this evidence with robustness checks and qualitative evaluations of the encyclicals and the surrounding media content.

Our findings make several important contributions. Firstly, we extend the lessons on the political economy consequences of leaders' behavior to the Pope, an underinvestigated yet salient actor in global politics. Secondly, we shed light on the important ways in which politicization around non-elected public figures can affect policy discourse and eventually influence market speculation. Our results also enrich the political communication scholarship by theoretically and empirically documenting that information from authorities that lack direct policy relevance transposes to investors (Gray, 2009; Wilf, 2016; Kucik and Pelc, 2016). Finally, we show how the media can magnify or, alternatively, hijack the implications of authoritative political messages.

2 Popes and Stocks: The Argument

Political science offers a wide range of studies on the market implications of policy relevant communications by formal political authorities (Bernhard and Leblang, 2006; Mosley and Singer, 2008; Bechtel, 2009; Clark and Arel-Bundock, 2013; Wilf, 2016). However, little work exists on important communications by actors with no direct political role or association. Tackling this research gap, our paper focuses on the Pope as one significant moral entrepreneur (Ferrari, 2006; Tuñon, 2019; Ziegler, 2020) that may affect market behavior.

The Pope is, of course, a special type of spiritual authority: he has access to a jurisdiction, engages in diplomatic relations, and holds formal votes in international organizations, all characteristics that make papal actions peculiar in the international political landscape (Gill, 2001; Minkenberg, 2002; Pelc, 2019). Nonetheless, the Pope remains an actor outside of institutionalized politics, and it is not obvious that Popes' positions systematically form relevant information for financial markets. Additionally, it is not a priori clear in which direction they would move investors' beliefs.

We maintain that Pope's communications *can* stir the direction of public discourse, implant ideas, and inform policy positions across parties and agenda setters—paving a path to policy concerns which, in turn, can affect markets. This is because, in most countries, Popes' communications are publicly announced and engaged with by political elites.[4] Against this background, we posit that Popes' messages can generate a policy-relevant discussion that can make investors update their priors about the short-term profitability of assets which are sensitive to liberal market visions. In what follows we present our argument about which market actors should find the papal communications most relevant, when, and how. We outline how papal communications can reveal information to stockholders and elaborate on how perceptions of the Pope, filtered by media

[4]This is especially true of industrialized countries, which have significant Christian populations and a high degree of market liberalization, although we do not think this is exclusive to these countries (Tuñon, 2019).

discourse, can influence the market effect of his most outreaching communications.

2.1 Perception of Popes' Orientation and Media Reception of Papal Messages

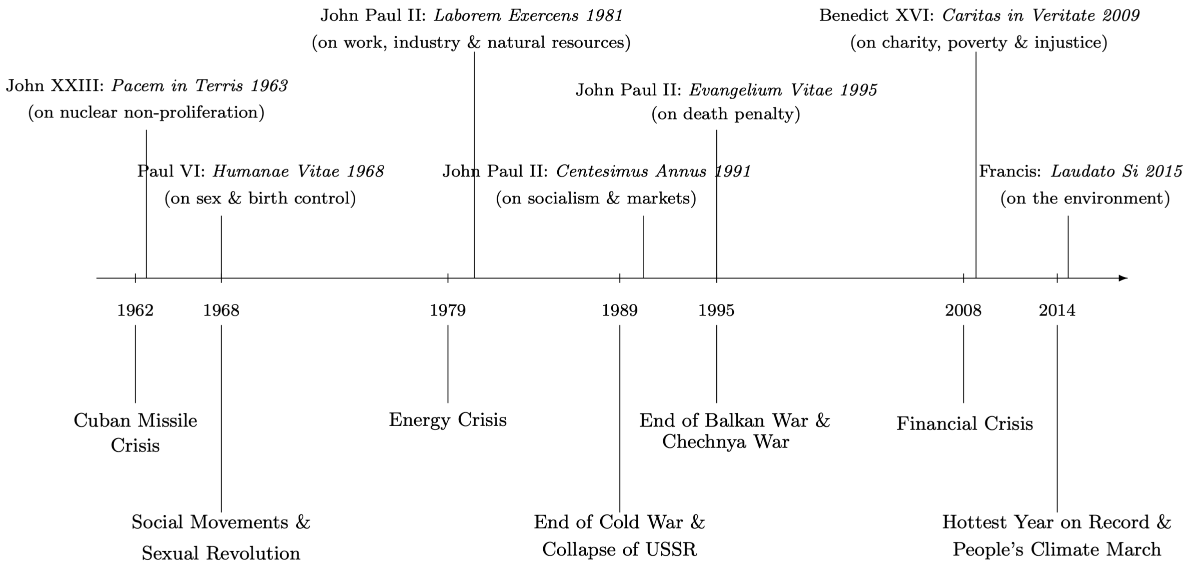
Our theoretical starting point is that papal messages can be strikingly political. We focus here on the social teachings of the Catholic Church, which have political connotations because they often focus on a communal, economy-wide visions of society. Since the reforms of the 1962 Second Vatican Council, Popes have strongly committed to the church's social doctrine, represented by official communications about a range of global social issues. After 1962, the most comprehensive type of communication for these purposes has been the encyclical (Paul VI, 1969). We contend that the so-called social encyclicals have political relevance not only rhetorically but also practically and, in fact, materially.

Social encyclicals concentrate on specific issues, often following important crises. Figure 1 illustrates the connection between the most important social encyclicals and major international events between 1962 and 2015. Virtually all post-World War II encyclicals reflect on fundamental social dilemmas against the backdrop of globalization, including nuclear non-proliferation, sexual rights and natural resource extraction (Pabst, 2012; Stark, 2015).[5] But despite a continuous focus on vulnerability and social tension, the tone and framing of Pope's messages is far from constant. Research has documented that different pontiffs take different positions on the problems confronted during the papacy and their related solutions (Genovese, 2015; McCormick, 2021). The orientation reflected in these texts varies substantially across time and pontiff.

We focus on the observation that, when addressing social issues, popes inevitably express a view on the role of economic markets to solve the problems ahead. John XXIII

[5]Popes also release political communications in other forms. Similar patterns of political messaging are observed, for example, in the Pope's behavior on social media. While we focus on encyclical letters, we assume the Pope may complement these with other communications (Genovese, 2019).

Figure 1: *Popes' social encyclicals and major international political events* (adaptation of time line in Genovese, 2015)



(1958-1963), for example, was skeptical of economic liberalism and took a concerned stand on how liberal markets could help provide fair and equitable growth (Himes, 2006). By contrast, John Paul II (1978-2005) favored a liberal view of economic development and had vast influence on the market ideology of neoliberal contemporary politicians (Brown, 2009). These positions, we argue, spill onto the Popes' social encyclicals. For example, John Paul II's 1991 *Centesimus Annus*, which contains a hopeful message for states at the dawn of the post-Cold War era, defends the efficiency of free markets "for utilizing resources and effectively responding to needs" (34). Similarly, in the 2009 *Caritas in Veritate* Benedict XVI addresses the market economy in light of the Global Recession, championing the need for stronger banks.

Popes' visions of how to address crises and the role of markets in solving social issues should matter in the public discourse. This is because of the intrinsic relevance of Popes in some societies but also, and importantly, because Popes are widely covered in the global media. Against this background, we make two propositions. First, we contend that the Pope's positions on socioeconomic issues can have asset value implications, because papal messages are explicitly targeting the public and their elites, so they may significantly influence the way investors absorb the likelihood that policymakers may embrace the

Pope's message (Arceneaux, 2023). Additionally, we argue that the media discourse around the message of the Pope matters, because media outlets are not indifferent to this type of authoritative messages (Prior, 2013) and their coverage should affect how investors expect policymakers to react. Taking these together, we conjecture that the effect of an encyclical depends on *the Pope's perceived liberal economy position* related to solving the issue at hand and *the support (or opposition) of the media* to his message.

In the next section we unpack this interaction between the political perception of the Pope and the media coverage of an encyclical. In so doing, we trace how each scenario contributes to the expected financial profitability of exposed market assets. We then derive testable expectations that we later bring to our empirical case studies.

2.2 The Market Effects of Social Encyclicals: Expectations

At a collective level, addressing a social issue requires adopting a position that favors the allocation of resources to solve such issue. In basic form, the solution can be generated by free market forces or a state-supported intervention. Previous research notes that Popes think of the solutions to the issues addressed in their social messages in similar ways (Pabst, 2012; Arceneaux, 2023). Thus, an encyclical can reveal the Pope's vision along similar lines, revealing whether or not the Pope trusts market forces to solve social crises.[6]

Following this premise, we contend that a communication from a Pope with a more or less economically liberal position may channel different policy visions relevant to economic investors. For example, in a context in which a Pope endorses free markets, like most liberal conservative governments, investors of traditionally listed companies may interpret the message as a seal of approval for locked-in, liberal market oriented investments (Sattler, 2013; Bechtel and Schneider, 2010). Vice versa, a Pope endorsing regulations, redistribution, and larger state involvement could be perceived as a recommendation for

[6] This logic is in line with evidence that modern Popes have often voiced positions on markets for the purposes of solving public issues, although not consistently (Li et al., 2016).

less economically liberal (and possibly more socially fronted) policies, which could undermine traditional market assets. We contend that the perception of the Pope's position on this spectrum will influence investments in stocks accordingly.

At the same time, we also argue that mass media have a critical role reproducing the encyclical and its policy implications. In a world in which the media does not give space to the Pope's message, one may expect that the release of a new encyclical does not reach the salient public discourse and no policy-relevant discussion ignites.[7] Here, however, we focus on the more realistic scenario in which the media engages with the encyclical. The question is whether the media politicizes it and in which direction—in other words, which media voice dominates the national discourse around a Pope's communication, which may then resonate with elites' calculations of policy credibility and risk (Groseclose and Milyo, 2005).

Since we assume that markets tend to favor economically liberal policy, we expect that an economically liberal Pope's message should generate support from status-quo oriented media. The Pope's message, magnified by these media, would then boost market actors that gain from traditional financial investments. This should materialize in positive returns for locked-in, traditional market assets, and negative ones for less established ones (*Expectation 1*).

Following this logic, we should also expect that a less economically liberal media would challenge this view and oppose this message. To be clear, in most open countries strong media opposition to liberal market visions is unlikely to exist. For example, in most Western democracies, the vast majority of media actors - and the overall media establishment - conventionally accept the liberal markets paradigm. Nonetheless, we consider this scenario for completeness. We contend that, in the case of a market liberal Pope's message tackled by illiberal media, we should not expect any appreciation in locked-in markets; we remain agnostic about the impact on the value of non-conventional assets (*Expectation 2*).

[7] In this scenario, market investors would not feel pressed to react, as the Pope's message does not generate new information.

Expectation 1 (Economically liberal perceptions / Aligned media) If a Pope's encyclical gives support to economically liberal stakeholders and the media reinforces this message, the stock value of locked-in market actors will *increase* and the value of new assets will *not increase*.

Expectation 2 (Economically liberal perceptions / Opposed media) If a Pope's encyclical gives support to economically liberal stakeholders but the media opposes this message, the stock value of locked-in market actors will *not increase* (the value of the new assets may or may not increase).

We then consider the scenario in which a Pope is perceived as less economically liberal—as a number of pontiffs were in the past, emphasizing "visions for a progressive society and Catholic alternatives to unbridled capitalism" (Pabst, 2012, p. 6)—and his message is interpreted as a challenge to status quo liberal market policy.

Consistent with our argument of how investors interpret authoritative status-quo messages, we maintain that a less economically liberal encyclical could undermine traditional stakeholders' expectations and give momentum to alternative policy winners. So, in a context where media voices support this message, this could create an opportunity for economic newcomers to gain market share at the expense of traditional assets (*Expectation 3*). That is, unless media forces react against that message. For example, consider a scenario where the media are predominantly hostile to a Pope's message attacking liberal markets and mobilize against it. The more powerful the media backlash, the less credible the Pope's political message will be among investors.[8] Consequently, in such a case investors would lower expectations about the profitability of assets that would win from a progressive policy turn and disinvest from newcomer market actors (*Expectation 4*).

Expectation 3 (Less economically liberal perceptions / Aligned media) If a Pope's encyclical gives push-back to economically liberal stakeholders and the media

[8]For a similar argument on how negative politicization undermines the authority of spiritual leaders, see (Williamson et al., 2022).

reinforces this message, the stock value of traditional market actors will decrease, and the value of newcomer's assets will increase.

Expectation 4 (Less economically liberal perceptions / Opposed media) If a Pope's encyclical gives push-back to economically liberal stakeholders but the media opposes this message, the stock value of traditional market actors will not decrease, and the value of the new assets will decrease.

This theoretical discussion delineates different scenarios with subsequent expectations of Popes' effects on financial markets. We now bring these expectations to the data. In the rest of the paper we present the case studies of the three selected encyclicals as market events. The first two cases focus on Popes with more economically liberal orientations and more permissive media chambers, therefore testing Expectation 1 (in absence of a realistic case for Expectation 2). The last case explores the more controversial case of a less economically liberal Pope with mixed media reactions, which allows us to test Expectations 3 and 4.

3 Research Design

We empirically investigate our hypotheses with an event study design of stock market prices following the release of three selected encyclicals. We seek to maximize variation on papal orientation and media reception of papal messages. We focus on John Paul II's *Centesimus Annus* (1991), Benedict XVI's *Caritas in Veritate* (2009); and Francis' *Laudato Si* (2015). In choosing these cases, we take into careful consideration the nature of each encyclical, the time of its release, as well as the plausible targeted firms in the relevant markets given the topic of the encyclical. We present each case study separately in the next section, where we situate the case in history, present a description of the relevant media content, and then show the stock market event analysis, based on financial data all drawn from Eikon. Before we move to the analysis, we briefly describe the methodology used by the event study design.[9]

3.1 Event Study Setup and Assumptions

Our design uses data that predate an encyclical to impute firms' daily returns under the synthetic counterfactual that the text was not published. We then compare imputed counterfactual and factual returns and identify the effect of the document's publication, removing the confounding effect of pre-existing information, trends, and shocks that hit the whole market. For the sake of brevity, we provide here only the essential aspects of the design (see Appendix A for more details).

The design employs observations from a time window that pre-dates each event ("estimation window", 190 days long) to estimate one market model of each firms' daily stock *Returns*—the percentage change in a firm's daily stock price. Each firm-specific market model is estimated using three market-wide indexes: the New York Stock Exchange (NYSE), the Financial Times Stock Exchange (FTSE) and the Frankfurt Stock Exchange (DAX). These market models are then employed to predict what the expected *Returns* to each firms would have been, in a time-window centered around the event ("event window", 21 days long), had the encyclical not been published.[10] We then compute *Abnormal Returns* (AR), for each observation in the event window, as the difference between observed (factual) and expected (counterfactual) *Returns*. We also compute *Cumulative Abnormal Returns* (CAR) as the sum of AR to a firm since the beginning of the event window.

We use AR and CAR as dependent variables in a before-after design to assess the effect of each encyclical release. If the publication provided no more information to firms in our sample than that they received from market-wide events and trends—captured by

[9]Applications of this study are common in political science (see Bechtel and Schneider, 2010; Genovese, 2021; Kucik and Pelc, 2016; Wilf, 2016). We mirror these studies in our empirical set up.

[10]In a series of robustness tests in the Appendix we shrink/extend the arbitrary length of our event window.

market-indexes—average AR and CAR before and after the event should not differ. We estimate linear models that include a binary indicator that, for each of the three studies, takes value 1 after the publication of the encyclical, 0 before. We include firm-level fixed effects (FE) to study within-firm variation before and after the event of interest.[11] All standard errors are clustered at the firm-level.

Two assumptions support our identification strategy. First, the predictive performance of market models should not systematically change in conjunction with the publication of the encyclical. This assumption is untestable, but we minimize the distance in days between the two windows so as to make it plausible. Shorter and longer event windows also lend credibility to this assumption. Second, no shock simultaneous to the event of interest affects solely the set of firms under study (market-wide shocks are already accounted for in the counterfactual estimation). For these purposes, we qualitatively reviewed public events that occurred in the 12 months around each of the three events. We discuss below how other political events in the weeks under analysis could affect the results.[12] Under these assumptions, the coefficients of our binary treatment variables quantify the effect of each encyclical on firms' returns, reporting the average amount by which firms' observed returns depart from expectations following the event.

4 Empirical Results

This section describes each set of analyses for the selected social encyclicals of John Paul II, Benedict XVI and Francis, respectively. Previous research suggests that, especially

[11]In alternative specifications we substitute this with country-level fixed effect—considering the firm's headquarter.

[12]This is especially relevant for the *Laudato Si* encyclical. In 2015 we identify one potential threat to this assumption that pertains the US political domain: the turmoil at the beginning of the presidential primaries leading to the candidature of Trump. As we discuss below, this concern does not threaten the internal validity of our analysis nor the logic of our argument.

in countries with high concentrations of Christians, the *Centesimus Annus* and *Caritas in Veritate* encyclicals by John Paul II and Benedict XVI, respectively, were largely well received (Ferrari, 2006; Chong and Troy, 2011). By some accounts, these two encyclicals represented a message of support for the liberal global economic system (Zieba, 2023). Francis' *Laudato Si*, by contrast, was highly controversial, not least because of its attacks on free market ideology (Li et al., 2016). In light of our argument, we expect the *Centesimus Annus* and *Caritas in Veritate* encyclicals to generate positive signals for investors of traditional assets, leading to significant short-term returns for locked-in firms profiting from a liberal economic system. By contrast, we expect Francis' *Laudato Si* to have more divisive implications for market actors.[13]

For each encyclical we first describe its scope and historical moment, highlighting in particular the Pope's economic views, on the one hand, and the media reception of the encyclical, on the other. Secondly, we present the sampled firms that we believe to be most exposed to the encyclical's message. Lastly, we report the identified statistical effects of each encyclical.

4.1 Case 1: *Centesimus Annus* (1991)

4.1.1 Context

Our first case study is centered on *Centesimus Annus*, John Paul II's encyclical on work and basic human needs released on May 1st, 1991. Early readings of this letter suggest that this was a celebration of the opening of markets following the collapse of the Soviet Union. In the text, John Paul II reaffirms the lessons of *Rerum Novarum*—the encyclical on workers issued by Pope Leo XIII in 1891 at the dawn of the industrial age. One century late, John Paul II greeted the "end of socialism" stressing the importance of the

[13] Carrington. *Will Pope Francis' encyclical become his 'miracle' that saved the planet?* The Guardian, June 18, 2015.

right to private property and the freedom to exercise it.[14]

We use this encyclical to test our conjecture on the effect of a mainstream message from an economically liberal Pope.[15] With *Centesimum Annus*, John Paul II hoped to strengthen a Catholic social doctrine that put freedom at the forefront, championing market rights. Perhaps unsurprisingly but importantly, the mainstream international media discourse at the time of the release aligned with his defense of private property rights and the right to form private associations (see Appendix B). The New York Times defined the encyclical calling for "*capitalism Ex Cathedra*" and referencing "*the gospel of the marketplace*". Also importantly, the media coverage was wide: a LexisNexis analysis of the 1991 archived newspapers suggests that 3% of all the general English-language news focused on the encyclical on the day of the release—a meaningful figure if compared to other non-political coverage.[16] Furthermore, 3% of coverage in financial newspapers such as the Financial Times and the Wall Street Journal on May 1, 1991 focused specifically on the Pope, suggesting an active interest in the Pope's message among financially savvy audiences.[17]

We speculate that *Centesimus Annus* would have cheered markets because it crystallized the media-celebrated message of an economically liberal world (Expectation 1). We further speculate that, by vindicating the opening of capital markets on Eastern Europe with the collapse of the Soviet Union, this encyclical represented an especially positive signal for Western European firms looking east.

[14] Selling, J. 1992. https://theo.kuleuven.be/apps/christian-ethics/sources/pdf/LS1992.pdf.

[15] Knowingly John Paul II shared dialogues with conservative political leaders such as Ronald Regan and Margaret Thatcher. See https://www.reaganfoundation.org/reagan-institute/events/ronald-reagan-pope-john-paul-ii-the-partnership-that-changed-the-world/.

[16] This proportion is equivalent to sports coverage in 1991.

[17] See Appendix B and Figure B.1 for a systematic description of the relevant newspaper coverage of this encyclical.

4.1.2 Data

To test our argument in the form of an event study analysis, we first build our relevant sample. We focus here on large Western European companies, i.e., traditional market actors that were publicly traded in the early 1990s and which stood to gain from Eastern European countries' adoption of a market economy. The sample comprises a diverse group of firms: the majority are in financial services (credit intermediation, insurances, commercial banking), manufacturing (pharmaceutical and chemical), and heavy industries (machinery, metal, aerospace).[18] For this analysis, we do not distinguish between the industry-specific benefits that these firms could extract from Eastern European countries' adoption of a liberal market economy, but we assume that all were to extract marginal benefits.[19]

In order to construct our sample, we start from a list of European companies that were treated before the beginning of the estimation window for the *Centesimus Annus* encyclical, across all export-oriented sectors. We do not consider pennystock companies, i.e. those that were trading at less than $1 one month before the event. Our final dataframe includes 528 publicly traded companies in Austria, Belgium, Denmark, Finland, France, Germany, Ireland, the Netherlands, Norway, Spain, Sweden, Switzerland, and the United Kingdom.[20]

4.1.3 Results

Table 1 displays the abnormal return results for *Centesimus Annus* in the European stock markets defined above. We start by fitting firm and country fixed effects (FE). Because these firms are quite heterogeneous in terms of industry, for this case study we also present

[18] See Figure B.3 for a breakdown of firms by industry.

[19] Despite their dissimilarities, these different industries were all posited to extract benefits from the opening of the Eastern European market, formerly under Soviet influence, both in terms of access to new customers (for instance for retail and services) or to resources and cheap labour (manufacturing, heavy industry, and extraction).

[20] See Figure B.2 for a breakdown of firms by headquarter.

Table 1: The effect of the *Centesimus Annus* encyclical on traded European firms' Abnormal Returns

	AR			CAR		
	(1)	(2)	(3)	(4)	(5)	(6)
Post-encyclical	0.563***	0.566***	0.555***	0.805**	0.802**	0.730**
	(0.046)	(0.045)	(0.047)	(0.260)	(0.264)	(0.271)
Num.Obs.	9613	9613	9613	9613	9613	9613
R2	0.087	0.026	0.024	0.809	0.101	0.092
R2 Adj.	0.034	0.025	0.017	0.798	0.100	0.086
Std.Errors	by: firm	by: firm	by: firm	by: firm	by: firm	by: firm
FE: naics3			X			X
FE: country		X			X	
FE: firm	X			X		

+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Notes:
Linear fixed-effect models. Standard errors are clustered at the firm-level. Event windows span over 10 days before and after the event

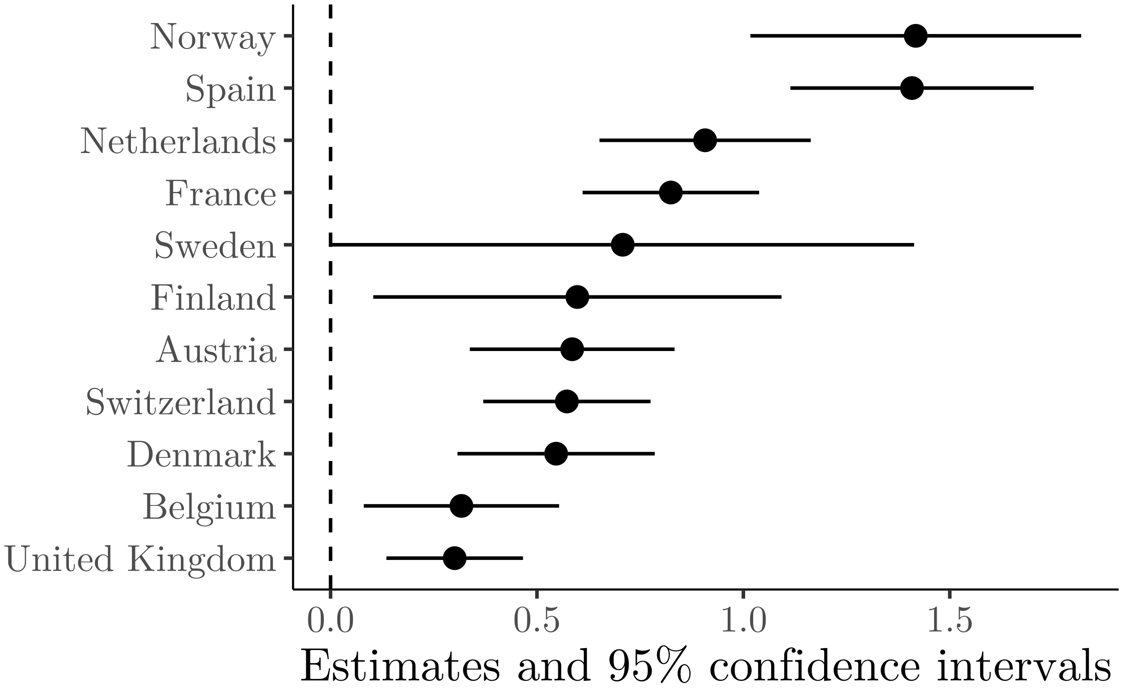
models where we substitute our firm or country-FE with an industry-FE defined at the granular 3-digit level of the North American Industry Classification System (NAICS-3).[21]

Regardless of the specification, in the ten days following the publication of *Centesimus Annus*, European traded firms' abnormal returns were about 0.55% higher than before the encyclical, a difference which is significant at conventional statistical levels. Due to our research design, this estimate accounts for any shocks and trends that affected the whole market and that could be picked up by the three indexes that feature the market models. The cumulative effect (measured by CAR) is also positive and statistically significant, comparable in size. Altogether, these results indicate that, in line with our argument, the release and coverage of John Paul II's economic liberal message generated a noteworthy positive response among investors of European-traded firms at the dawn of the post-Cold War time. We interpret this to mean the Pope's message was interpreted as an endorsement for neoliberal markets and exploited as positive news for investors in traditional stocks opening up to new trading opportunities.

To further qualify our results, we also investigate in which trading countries the identi-

[21]See Figure B.3 for a breakdown of firms by NAICS-3.

Figure 2: *The effect of the* Centesimus Annus *encyclical on traded European firms' Abnormal Returns by headquarter country*



fied effect was mainly concentrated. To do so, we run our firm-FE model after splitting our sample by firms' headquarter countries.[22] In Figure 2 we present our additional estimated effects. We find a positive effect across the board, particularly strong in Catholic countries (Spain, France, Austria) and countries bordering the former Soviet Union (Norway, Sweden, Finland). This evidence would seem to support the contention that, especially in countries where the Pope's message is salient and magnified, papal support of liberal markets constitute a further legitimization signal for market activism. In this light, John Paul II's defense of property rights represented a boost to firms that were ready to explore new markets opening in Eastern Europe.

[22]We exclude Irish and (Western) German firms in this model, due to their small sample sizes.

4.2 Case 2: *Caritas in Veritate* (2009)

4.2.1 Context

Our second case study focuses on *Caritas in Veritate*, Benedict XVI's encyclical on charity and economic order released on July 7, 2009. This letter was explicitly designed as a response to the 2008 financial crisis. Several critics suggest that the document crowned the vision of a reciprocal society that Benedict XVI established earlier in other writings. In *Caritas in Veritate*, Benedict XVI boosts a concept of markets that can fulfill human needs and lives.[23] Accordingly, the market is "the social typology proper to free men who consciously compete to obtain the best possible result in the allocation of scarce and available goods" (Part IV).

The encyclical dwells on the feasibility of market regulation and the governance of globalization; yet, and importantly for our argument, much of the media discourse at the point of release highlighted the "indispensable dimension of markets" in contemporary lives, echoing the neoliberal public perception of the Pope's longstanding social doctrine.[24] This observation corresponds to the results of our analysis of the content of prominent general and financial newspapers' coverage at the time of the encyclical (see Appendix C). We find that the media coverage of Benedict XVI in the last week of June 2009 took 2% of all the general English-language news. Importantly, 4% of the financial news covered the Pope on the day after the encyclical.[25] The tone and content of the coverage is insightful, too. For example, the Financial Times wrote "*Caritas in Veritate* called for the establishment of a world political authority to manage the global economy" but also stressed that "[g]lobalization is not merely a phenomenon to serve the market and

[23]In the encyclical the Pope writes: "the market is the economic institution that permits encounter between persons, inasmuch as they are economic subjects who make use of contracts to regulate their relations as they exchange goods and services of equivalent value between them."

[24]See: https://www.city-journal.org/article/a-principle-of-reciprocity.

[25]See Appendix C and Figure C.1 for a media analysis relative to *Caritas in Veritate*.

economy; it is a call for a new way of thinking" about the role of people in society.

In light of this reading of the market views of the Pope and the media reception of his message, we expect that, just like John Paul II's encyclical, *Caritas in Veritate* could have been received positively by mainstream markets. At this time of regulatory turmoil after the global recession, we expect that it induced more tranquility than panic among traditional asset investors, which in this context we take to be concentrated in financial service sectors, e.g. investment banks that were under the spotlight due to the turmoil of the global financial crisis. In the absence of any noteworthy media backlash, we expect to see positive returns in these stock values, as highlighted in our Expectation 1.

4.2.2 Data

For this analysis we build a sample of firms that is more restrictive than the first event. For *Centesimus Annus* we had focused on most trade-oriented firms that could benefit from an enlargement of liberal markets in Easter Europe and Russia following the Soviet Union collapse. For *Caritas in Veritate*, the motivating event is the 2008 Global Recession, so we narrow down to firms that were particularly exposed by the crisis of financial speculation in the housing bubble and subprime lenders. We focus on investment banks.

We start from the sample of 36 US investment banks selected in an authoritative study of bank stock returns (Wilf, 2016). We complement this sample with 25 publicly traded non-US banks, drawing from the top commercial banks by total assets as reported on Bureau van Dijk's Orbis corporate ownership database.[26] Our sample of 68 investment banks are traded in the world's largest economies, many of which are in Europe and United States (but not exclusively): Australia, Brazil, Canada, France, Germany, India, Italy, Netherlands, Russian Federation, Spain, Switzerland, United Kingdom, and the United States.[27]

[26] We considered only companies under the North American Industry Classification System (code 522110: Commercial Banking).

[27] See Figure C.2 for the distribution of firms in this sample by headquarter.

4.2.3 Results

We present the results linked to the release of *Caritas in Veritate* in Table 2. We find that, in the ten days following the publication of the encyclical, investment banks experienced abnormal returns that were about 0.42% larger than those before the publication of the text. These effects are statistically significant at conventional levels, although we find no significant cumulative effect, which suggest that the signal may be weaker than for, e.g., *Centesimus Annus*.

These findings confirm our prior that an unchallenged, and in fact media-boosted, pro-market message by a morally authoritative source can induce confidence of investors in exposed traditional assets. More generally, these patterns suggest that investors pay attention to the discourse around papal messages, and that—under the right conditions– these messages can have real material implications, here in the form of abnormal positive market returns.

Table 2: The effect of the *Caritas in Veritate* encyclical on financial firms' Abnormal and Cumulative Abnormal Returns

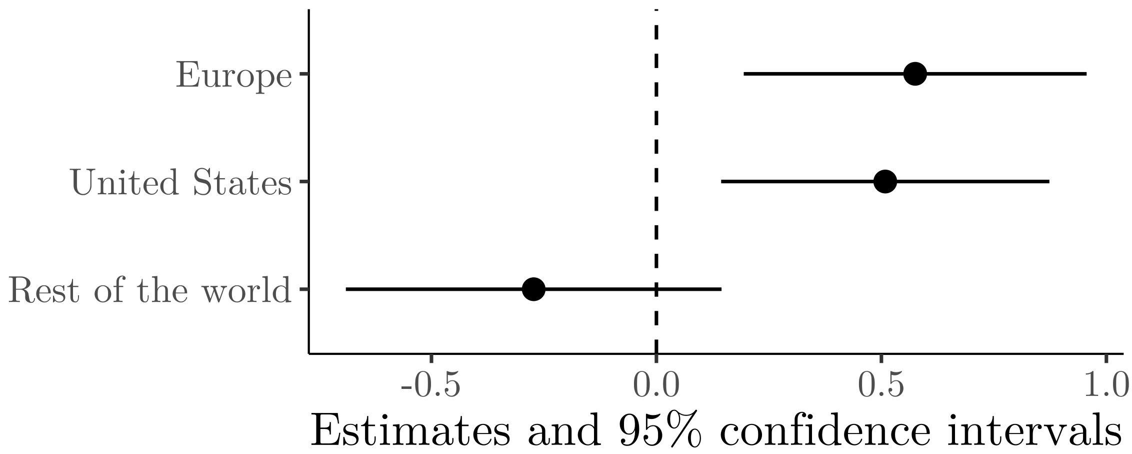
	AR		CAR	
	(1)	(2)	(3)	(4)
Post-encyclical	0.423**	0.420**	-0.707	-0.706
	(0.127)	(0.128)	(0.873)	(0.875)
Num.Obs.	1341	1341	1341	1341
R2	0.052	0.013	0.827	0.271
R2 Adj.	0.002	0.003	0.818	0.263
Std.Errors	by: firm	by: firm	by: firm	by: firm
FE: country		X		X
FE: firm	X		X	

+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Notes:
Linear fixed-effect models. Standard errors are clustered at the firm-level. Event windows span over 10 days before and after the event

To learn more about the potential heterogeneity, and thus salience, of this event across our sample of global banks, we disaggregate our analysis by country. Given our limited sample size, here we distinguish between firms in the US, those in Europe (France, Germany, Italy, Netherlands, Russia, Spain, Switzerland, and the United Kingdom), and those in the rest of the world (Australia, Brasil, Canada, and India). Figure 3 presents these additional subgroup results. We find that Benedict XVI's encyclical boosted the profits of American and European banks, while no effect is detected in the rest of the world. This may be in part because the Vatican's message is less prominent in some of these countries and the local media is less likely to broadcast its message.[28] This result may be suggestive of the importance of public salience and media attention in our argument. This may be less acute in some parts of the world, therefore decreasing the relevance of this type of messages for markets (in the spirit of Expectation 2).

Figure 3: *The effect of the* Caritas in Veritate *encyclical on investment banks' Abnormal Returns by geographic area*



But one can also speculate that the "rest of the world" null-result manifests the fact that these banks were less exposed to the crisis than their Western counterparts to begin with. Given their quicker recovery, banks outside of the US and Europe may have depended less on external prescriptive signals to boost investors' confidence. Overall, we take these additional disaggregated results as suggestive evidence that the Pope's message was more meaningful for investors of actors most exposed to the Great Recession and, potentially, most in need of a confidence boost from global authorities. This subgroup effect is consistent with our theory and largely aligned with our expectation that, in ab-

[28]For example, the People's Republic of China has no bilateral relations with the Vatican and roughly 1% of the Chinese population is Christian.

sence of conflicting media coverage, a Pope's signal in favour of liberal markets would generate positive returns for traditional market assets.

4.3 Case 3: *Laudato Si* (2015)

4.3.1 Context

Our third and final case study is *Laudato Si*, the encyclical released on June 18, 2015. This is Francis' first encyclical letter and is focused on environmental sustainability and climate change. It was published with a significant amount of controversy.[29] Substantively, the letter tackles the science of climate change and the implications of environmental degradation for inequality and poverty. It explicitly laments sources of pollution as well as the implications of lack of clean water and loss of biodiversity. It unambiguously reflects on the economic rules that influence ecological exploitation and delay environmental preservation.[30]

Environmentalists and social activists welcomed the document's punches directed to liberal economic forces.[31] Others read it as an attack to capitalism broadly intended, a collection of ideas in support of progressive social policy, some even in tension with markets.[32] A content analysis of the dominant media discourse around the Pope at the time

[29] The letter was first leaked by the Italian newspaper *L'Espresso* on June 15, 2015, and then officially released (unchanged) at noon on June 18, 2015.

[30] As the Pope noted on his Twitter account, `"there is a need to seek other ways of understanding the economy and progress #LaudatoSi"` (June 18, 2015).

[31] See: "Will Pope Francis' encyclical become his 'miracle' that saved the planet?" *The Guardian*. June 18, 2015. https://www.theguardian.com/environment/damian-carrington-blog/2015/jun/18/will-pope-franciss-encyclical-become-his-miracle-that-saved-the-planet.

[32] In the NYT on June 20, 2015, Harvard economist Stavins said "I respect what the pope says about the need for action, but this is out of step with the thinking and the work of informed policy analysts around the world, who recognize that we

of the encyclical suggests the strength of both types of media activation (see Appendix D). On the one hand, both general and business-oriented newspaper sources magnified the Pope's concerns, giving much attention to the message of the Pope. In fact, 5% of general news' articles and up to 6% of financial news' ones (e.g. the Wall Street Journal) covered the event on June 18.[33] Some media sources, like *The Guardian*, cheerfully noted that "one recurring motif throughout the encyclical is a general scepticism [...] to the role that big business should play in tackling climate change." On the other hand, especially on the more business-oriented media side, the significant attention to *Laudato Si* turned into an attack to the environmentalism underlying the Pope's message.[34] Importantly, the descriptive content analysis suggests that this is especially evident in the US media discourse, where polarization was significant and opposition was more explicit and profound (Li et al., 2016).

To further explore the US media case, we performed an additional content analysis of US television sources, which is possible for this case study (for the US market) given that we focus on a more recent encyclical.[35] The analysis suggests that the *Laudato Si*

can do more, faster, and better with the use of market-based policy instruments". See: "Championing Environment, Francis Takes Aim at Global Capitalism." *The New York Times*. June 18, 2015. https://www.nytimes.com/2015/06/19/world/europe/pope-targets-carbon-credits-economists-favored-path-to-change.html.

[33]See Appendix D and Figure D.1 for our newspaper analysis.

[34]The *Financial Times*, on June 18, reported that the encyclical suggests "global economic structure that would make it more difficult for large oil companies, agricultural producers and industrial groups to harm the environment in their quest for profit." See: "Pope attacks political and business leaders for destroying planet." *Financial Times*. June 18, 2015. https://www.ft.com/content/c1b3fb70-15a4-11e5-8e6a-00144feabdc0.

[35]Data come from the Global Database of Events, Language and Tone (GDELT). The analysis is performed in Appendix D.1.1, where we concentrate on all televised clips including the word "Pope" between May and July 2015.

hit a nerve in the US, most likely because of the preparation to the 2016 elections. At the point of the release of the encyclical, several American right-wing media commentators compared the message of Francis' letter to the economic visions of Senator Bernie Sanders.[36] Importantly, some television franchises used their air to systematically attack the policy message underlying the vision of the Pope. Data on the Pope's airtime coverage in particular suggests that Fox News and Fox Business proposed most of the content covering the Pope compared to general audience channels such as CNN and MSNBC.[37]

In light of these insights, we believe this case to illustrate the expectations we delineated with regards a less economically liberal Pope. On the one hand, we expect that the volume of the Pope's message in mainstream media could have generated an alignment that hurt the value of traditional assets in the short run, which in this case we take to be locked-in fossil fuel returns (Expectation 3). At the same time, in line with what we observe in the US, we advance the possibility that the backlash against Francis' message could have depressed enthusiasm for alternative assets, e.g. renewable energy products (Expectation 4).

4.3.2 Data

As per our previous approach, for this analysis we build a sample of firms that we believe to be most exposed to the message underlying Francis' encyclical. We identify these firms in the realm of energy markets, which should be sensitive to expectations about ambitious climate action and energy transitions. Differently from the previous exercises, we focus on two subsections of energy markets: on the one hand, renewable energy companies,

[36]In 2015, Sanders was already making remarks in awe of Francis. "How Bernie Sanders greeted Pope Francis." *The Washington Post.* September 22, 2015. https://www.washingtonpost.com/news/post-politics/wp/2015/09/22/how-bernie-sanders-greeted-pope-francis/.

[37]Furthermore, we find that Fox News and Fox Business coverage referred consistently to the economic policy implications of the Pope's message. See Figure D.3.

which are the winners of climate action, and, on the other hand, fossil fuel firms, which bear the higher costs from climate action.

We collect data on 88 firms altogether. In terms of renewable energy companies that we expect to win from a positive climate message, we start from the firms selected by Aklin (2018) with primary activity in wind, solar, hydro, biofuel, and other explicit clean energy operations. This sample sums up to 42 due to data availability. Next, we build a sample of traded firms with primarily fossil-fuel based energy production. We concentrate on the top listed companies in the 2010 Forbes Global 2000 dataset that belong to the energy-production business. Stock price data availability narrowed the sample down to 46 companies involved in the coal, oil, gas, and chemical businesses.

4.3.3 Results

Table 3 presents the results for the companies that we would expect to win from the message of Francis, i.e., renewable energy companies (columns 1 to 4) and for the companies that we expect to lose from the same signal, i.e. fossil fuel (columns 5 to 8). With respect to the renewable energy companies, we find that, instead of boosting confidence in the newcomer market actors, the *Laudato Si* affected renewable energy firms *negatively.* In the 10 days following the release of the encyclical, these firms experienced abnormal returns that were 0.45% lower than in the 10 previous days. This difference is statistically significant at conventional levels, although it is weaker in the CAR models. As for the sample of fossil fuel firms, we find that the *Laudato Si* had a negative but smaller and overall insignificant effect. In other words, the fossil fuel assets did not suffer as much as renewable energy companies.

These results go against Expectation 3 which assumes the magnifying effect of aligned media. However, as we indicated above (Section 4.3.1), the *Laudato Si* was published in the midst of media controversy and conservative backlash. Furthermore, as pointed out, in some countries—most notably, the US—the encyclical became a point of confrontation between ideological stances. This suggests that some of these aggregate results may be driven by heterogeneity of media reception across the countries under consideration, and

Table 3: The effect of the *Laudato Si* encyclical on energy firms' Abnormal and Cumulative Abnormal Returns

	Renewable Energy				Fossil fuel			
	AR		CAR		AR		CAR	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Post-encyclical	-0.455*	-0.454*	-0.693	-0.586	-0.043	-0.055	0.723	0.669
	(0.200)	(0.201)	(0.906)	(0.904)	(0.051)	(0.051)	(0.744)	(0.744)
Num.Obs.	867	867	867	867	924	924	924	924
R2	0.033	0.015	0.862	0.186	0.011	0.007	0.888	0.377
R2 Adj.	-0.017	0.003	0.855	0.176	-0.041	-0.007	0.882	0.369
Std.Errors	by: firm	by: firm	by: firm	by: firm	by: firm	by: firm	by: firm	by: firm
FE: country		X		X		X		X
FE: firm	X		X		X		X	

+ p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001

Notes:
Linear fixed-effect models. Standard errors are clustered at the firm-level. Event windows span over 10 days before and after the event

that media backlash may in fact explain the negative effects for the renewable energy companies.

Therefore, in additional regressions we disaggregate the analyses by firm headquarters, separating in particular the US—as per the discussion above—and the rest of the world. These results are reported in Figure 4. We find that the negative effect of the *Laudato Si* encyclical on abnormal returns is particularly driven by the devaluation of renewable energy firms in the United States (while the effect on renewable assets outside of the US is insignificant). As we show in Appendix D.1.1, the backlash against renewable energy can be explained by considering the conservative media attitude against Francis' text[38] in the general context of the Republican and Democratic primaries leading up to the 2016 presidential election. The counter-mobilization of far-right US outlets may also explain why the *Laudato Si* effect on fossil fuel firms tends to negative but is overall insignificant, which we speculate is a netting out product.

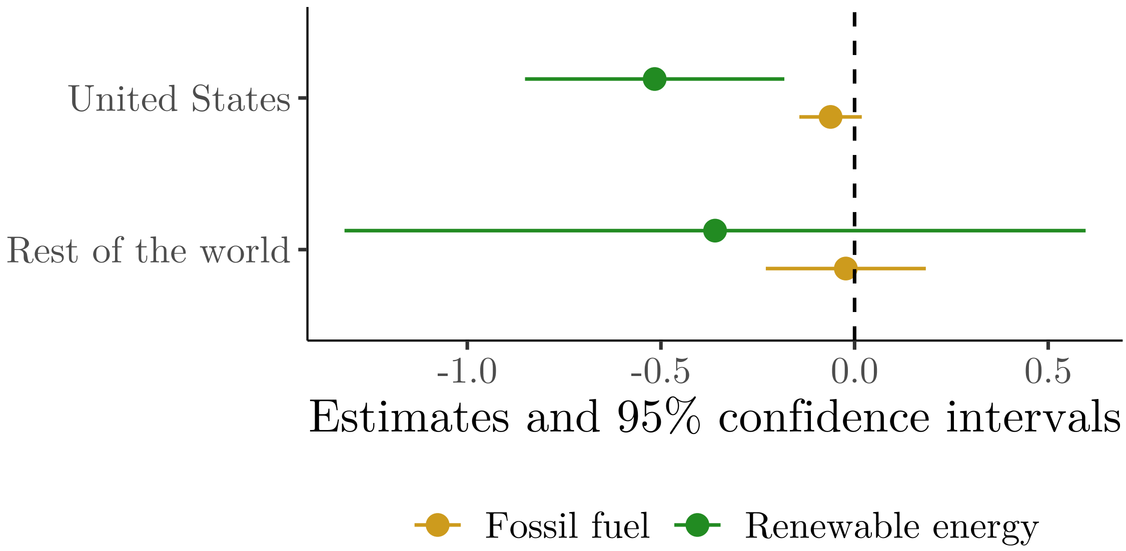
4.4 Robustness checks

We test robustness of our findings to several sensitivity checks in the Appendix.[39] For each encyclical, we test robustness to alternative event window sizes (7, 15, and 20 days before

[38]See Figure D.3.

[39]See Appendices B, C, and D, respectively, for each encyclical.

Figure 4: *The effect of the* Laudato Si *encyclical on energy firms' Abnormal Returns for US and non-US firms*



and after the event). We also show that results are substantively the same if we control for lagged abnormal returns up to a 4-year lag. For the *Laudato Si* analysis, we show that results are in fact stronger to controlling for the possible confounding effect of Donald Trump's primary announcement which occurred a few days before the publication of the encyclical. The Appendices also describe our media content analyses and our samples in more detail.

5 Conclusion

Studies on the impact of politics over markets have extensively concentrated on the effect of actions and communications of appointed political leaders (e.g. elected politicians or political institutions) on the returns to sensitive market actors. In this paper we note that this scholarship has overlooked the impact of other authorities. Spiritual leaders, for example, have wide public audiences and frequently address social and political issues. However, little research has so far investigated their influence on the economy, and specifically on financial markets. We fill this gap focusing on a most understudied leader in the modern era: the Pope.

Our paper explores the financial implications of the release of the most relevant papal writings—the encyclicals—for stakeholders invested in the political issues addressed by these forms of communications. Our argument draws on theories of political communication and political economy to explain why papal messages could alter financial outcomes. We conjecture that investors of exposed economic activities are sensitive to Popes' communications that signal a policy approach directed at them. Investors react to a papal communication if the Pope is particularly politicized, and if his vision is seen to matter for their assets. In these contexts, papal communications can divide the public and become market-relevant. Hence, we contend that the message of a Pope with economically conservative views may be received as good news by traditional stock markets. Vice versa, the encyclical of a left-wing Pope may generate more market volatility for traditional investments and more opportunities for alternative stocks, unless conservative forces mobilize. Along these lines, a left-wing papal message could generate backlash which then hurts market actors that would gain from a left-wing policy vision.

We test our argument on stock market data for three encyclicals of three different Popes. The results show the conditions under which the papal message reinforces or undermines traditional stakeholders' expectations. The findings suggest that the perceptions of papal orientations and the way papal communications are received by the media affect investors' short-term market confidence. The analyses of *Centesimus Annus* (John Paul II) and *Caritas in Veritate* (Benedict XVI) suggest that traditional markets respond cheerfully to the message by Popes that support neoliberal economic solutions to international problems. By contrast, the analysis of *Laudato Si* (Francis) shows that, particularly in the US, a combination of the politicization of Francis' persona and far right media backlash against his market-skeptic views cost renewable energies on average 0.45% in their stock value each day for the 10 days after the encyclical was published.

Our research sheds new light on the material effects of the communications of unconventional political leaders and suggests new lines of research. Whilst our findings indicate the crucial role that the domestic political context plays in absorbing the Pope's message, they also elevate the direct role of actors that international relations and comparative politics tend to discount and give new angles to the study of the rise of anti-establishment politics, which clearly also extend to public and media reactions to the Pope. Furthermore, our research gives credit to the political economy scholarship that believes in the power of words in international politics. Official communications, even by political outsiders, seem to influence financial markets. Our findings encourage further studies on the behavioral and material effect of the messages by political entrepreneurs and other "influencers."

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Online Appendix

Papal Dividends: Popes' Political Communications and Financial Markets

A Research design description

For each case study, we define two time-windows of analysis. First, an "estimation window" corresponding to the pre-event timespan used to estimate synthetic counterfactuals. Second, an "event window", where the effect of the event under consideration is estimated. The first window spans over 190 days (from t_0 to t_1). The second time window spans over 21 days (t_2 to t_3) and is centered around the publication of the encyclical.

Our empirical strategy proceeds in two steps. First, we focus on observations in the estimation window solely. The goal is to estimate, for each individual company, a linear market model – using ordinary least squares (OLS) – that predicts daily $Returns_{i,t}$ to that firm as a function of a vector of covariates $\mathbf{X}_{i,t}$ made of our three market-wide indicators (NYSE, DAX, and FTSE). These variables construct our vector of covariates $\mathbf{X}_{i,t}$ since the majority of firms in our case studies are headquartered in either the US or Europe and those indexes measure performances of the most important financial hubs in these areas. For each firm i in our dataset we estimate the following model in the estimation window using ordinary least squares (OLS):

$$Returns_{i,t} = \alpha_i + \beta_i \text{NYSE}_t + \gamma_i \text{DAX}_t + \theta_i \text{FTSE}_t + \varepsilon_{i,t} \mid t_0 < t < t_1 \tag{1}$$

Once market models are estimated, we use them to predict daily percentage changes in prices for each firm's stocks in the event window. Predicted $Returns_{i,t}$ represent our daily synthetic counterfactual observations around the publication of the encyclical:

$$E[Returns_{i,t}|\mathbf{X}_{i,t}] = \widehat{\alpha}_i + \widehat{\beta}_i \text{NYSE}_t + \widehat{\gamma}_i \text{DAX}_t + \widehat{\theta}_i \text{FTSE}_t \mid t_2 < t < t_3 \tag{2}$$

Next, we estimate two main outcomes of interest. We compute *Abnormal Returns*$_{i,t}$ for each observation in the event window, defined as the difference between the daily *observed* returns to a firm and those that are *expected* by our models (equation 3). We also compute *Cumulative Abnormal Returns*$_{i,t}$ as the sum of all *Abnormal Returns*$_{i,t}$ to a firm i from the beginning of the event window (t_2) until that moment t (equation 4).

$$Abnormal\ Returns_{i,t} = Returns_{i,t} - E[Returns_{i,t}|\mathbf{X}_{i,t}] \mid t_2 < t < t_3 \tag{3}$$

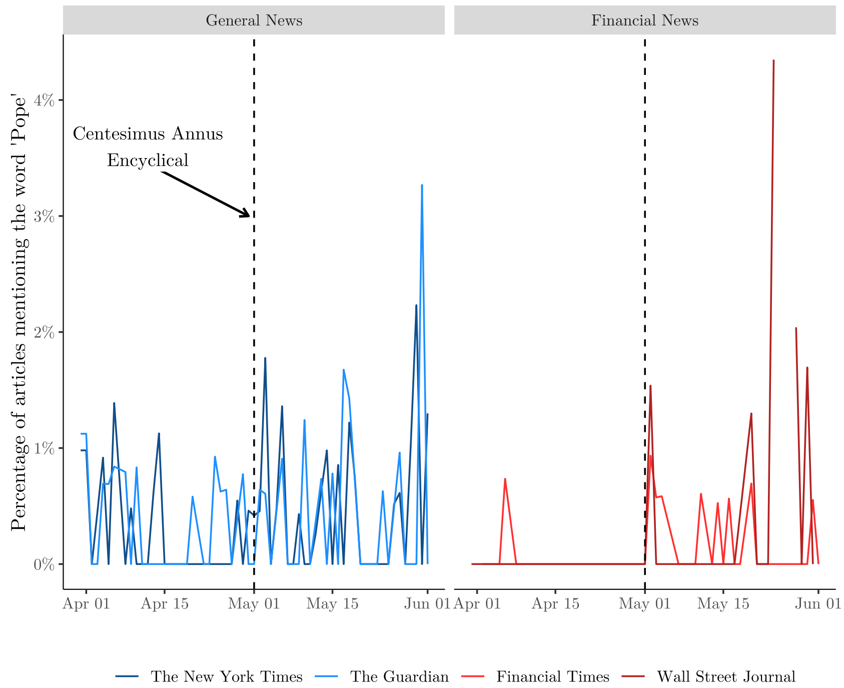
$$Cumulative\ Abnormal\ Returns_{i,t} = \sum_{\tau=t_2}^{t} Abnormal\ Returns_{i\tau} \mid t_2 < t < t_3 \tag{4}$$

B *Centesimus Annus* analysis: Additional material

B.1 Media coverage of the encyclical

In figure B.1 we plot the share of articles mentioning the Pope in a time window of a month before and after the publication of *Centesimus Annus* (May 1, 1991). We consider two anglophone general news sources with global audience (*The New York Times*, *The Guardian*) and two equivalent financial news sources (*Financial Times*, *Wall Street Journal*). We survey Lexis Nexis database and count the total number of articles published by each source per day as well as the number of articles matching the simple query "Pope." We then take the percentage of daily articles mentioning the query.

Figure B.1: *Newspaper coverage of the query "Pope" by representative sources around the publication of* Centesimus Annus. Data from the Lexis Nexis database. Percentage over the daily number of articles in the outlets



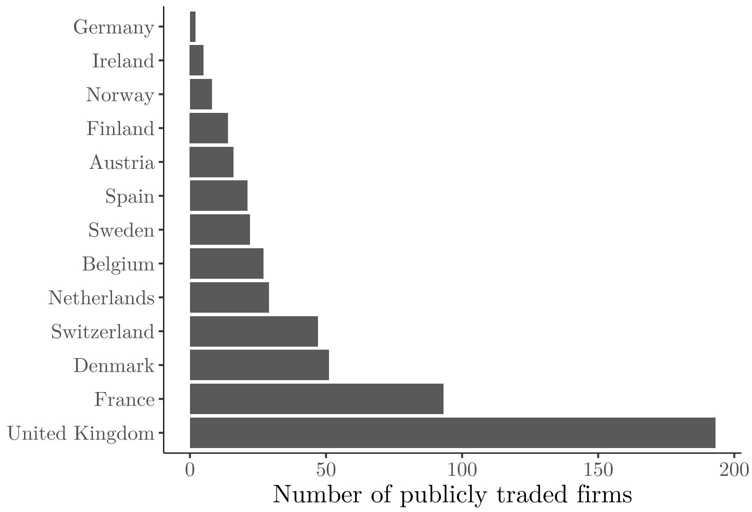
In general, we observe that the coverage of the Pope increased in both type of media after the publication of the encyclical. General news seemed to talk about the Pope already in the month before the encyclical was published but the frequency increased significantly after publication. Financial news sources, instead, reported about the Pope virtually solely in response to the publication. The amount of coverage reaches peaks of about 3% in daily articles devoted to the Pope on *The Guardian* at the end of May 1991 and peaks of more than 4% for the *Wall Street Journal* over the same period.

B.2 Sample description

Figure B.2 shows the distribution of our firms by their headquarter countries and Figure B.3 by their 3-digit North American Industry Classification System (NAICS) code. Most firms in this analysis are in manufacturing industries (Chemical manufacturing; Computer and Electronic Product Manufacturing; Machinery Manufacturing; Food Manufacturing;

Primary Metal Manufacturing; etc.) and financial services (Credit Intermediation and Related Activities; Funds, Trusts, and Other Financial Vehicles; Securities, Commodity Contracts, and Other Financial Investments and Related Activities; Insurance Carriers and Related Activities).

Figure B.2: *Distribution of firms in the* Centesimus Annus *analysis by headquarter country*



B.3 Robustness tests

B.3.1 Alternative window sizes

We replicate our analysis after changing the size of our 10-days event windows into 7, 15, and 20 days around each encyclical (Table B.1). When we focus on a 7-days event-window, we detect a small and noisy negative effect (only significant at a 0.10 level in the country-FE model). The effect is, instead, consistently positive and statistically significant when we consider windows of 15 or 20-days before and after the event. The effect size for the 15-days window is not dissimilar to that detected with a 10-days window in the main text (only slightly smaller). We notice that the magnitude of the effect diminishes significantly in our longest windows (20 days), as the signal generated by the encyclical washes out.

B.3.2 Alternative lag specifications

In Table B.2we reproduce the firm FE models of Table 1 after introducing step-wise all lagged values of *Abnormal Returns* from year -1 to year -4 on the right-hand side of our models. Results do not change substantively (country and industry-FE available upon request).

Figure B.3: *Distribution of firms in the* Centesimus Annus *analysis by their 3-gidit NAICS code*

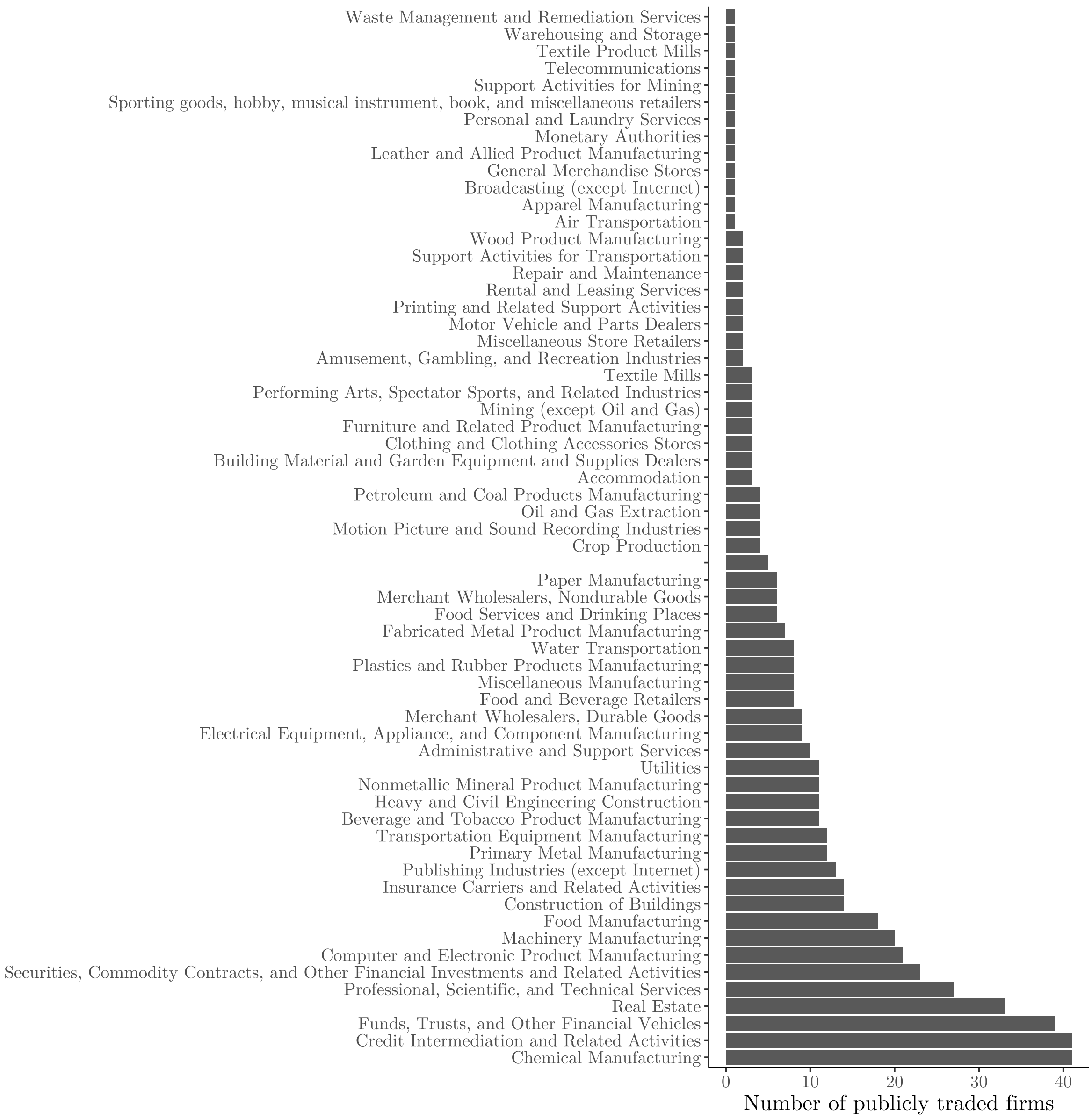


Table B.1: The effect of the *Centesimus Annus* encyclical on traded European firms' Abnormal Returns. Alternative event window sizes

	7-days window			15-days window			20-days window		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Post-encyclical	-0.109*	-0.097+	-0.116*	0.315***	0.314***	0.307***	0.093**	0.097**	0.091**
	(0.055)	(0.055)	(0.056)	(0.038)	(0.038)	(0.038)	(0.032)	(0.032)	(0.032)
Num.Obs.	6606	6606	6606	14315	14315	14315	18855	18855	18855
R2	0.084	0.014	0.012	0.049	0.010	0.009	0.037	0.006	0.005
R2 Adj.	0.004	0.012	0.003	0.013	0.009	0.005	0.009	0.005	0.001
Std.Errors	by: firm	by: firm	by: firm	by: firm	by: firm	by: firm	by: firm	by: firm	by: firm
FE: naics3			X			X			X
FE: country		X			X			X	
FE: firm	X			X			X		

+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Notes:
Linear fixed-effect models. Standard errors are clustered at the firm-level. Event windows vary over 7, 15, or 20 days before and after the event

Table B.2: The effect of the *Centesimus Annus* encyclical on traded European firms' Abnormal Returns. Lag specifications with firm-FE

	(1)	(2)	(3)	(4)
Post-encyclical	0.650***	0.719***	0.782***	0.796***
	(0.060)	(0.076)	(0.102)	(0.113)
Abnormal Returns (t-1)	-0.093***	-0.099***	-0.104***	-0.103***
	(0.023)	(0.026)	(0.028)	(0.029)
Abnormal Returns (t-2)		-0.078***	-0.085***	-0.087***
		(0.020)	(0.023)	(0.024)
Abnormal Returns (t-3)			-0.062+	-0.064+
			(0.032)	(0.033)
Abnormal Returns (t-4)				-0.017
				(0.019)
Num.Obs.	9613	9611	9604	9596
R2	0.095	0.101	0.103	0.104
R2 Adj.	0.042	0.049	0.051	0.051
Std.Errors	by: firm	by: firm	by: firm	by: firm
FE: firm	X	X	X	X

+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

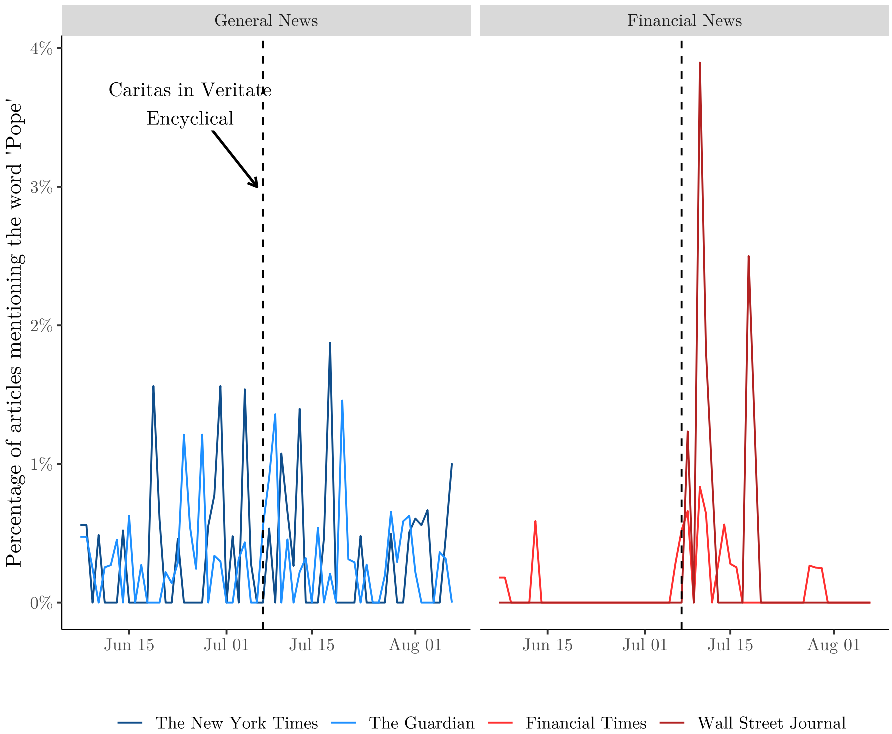
Notes:
Linear fixed-effect models. Standard errors are clustered at the firm-level. Event windows span over 10 days before and after the event

C *Caritas in Veritate* analysis: Additional material

C.1 Media coverage of the encyclical

Similarly to what we did above, in figure C.1 we plot the share of articles mentioning the Pope in a time window of a month before and after the publication of *Caritas in Veritate* (July 7, 2009). We consider the same two general news (*The New York Times*, *The Guardian*) and financial news sources (*Financial Times*, *Wall Street Journal*). We compute the daily percentage of articles matching the query "Pope" on Lexis Nexis.

Figure C.1: *Newspaper coverage of the query "Pope" by representative sources around the publication of* Caritas in Veritate. Data from the Lexis Nexis database. Percentage over the daily number of articles in the outlets

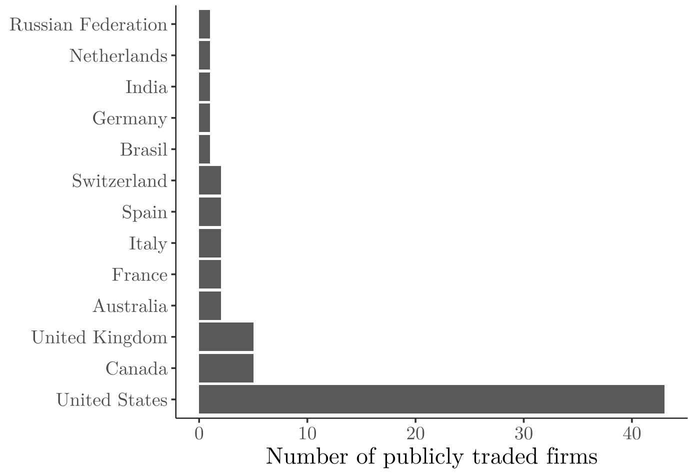


In this case, too, coverage of the Pope increased after the publication of the encyclical. Here we do not detect a stark change in coverage by general news, which seemed to talk about the Pope constantly in the days leading up to the encyclical's publication. Financial news sources' coverage of the Pope, instead, spiked in the immediate aftermath of the publication reaching a 4% peak for the *Wall Street Journal* shortly after it.

C.2 Sample description

Figure C.2 shows the distribution of our firms by their headquarter countries.

Figure C.2: *Distribution of firms in* Caritas in Veritate *analysis by headquarter country*



C.3 Robustness tests

C.3.1 Alternative window sizes

We restrict our 10-days event window size, as done above, to 7, 15, and 20 days before and after the event and re-estimate our models. Results, presented in Table C.1, are consistently positive and comparable to the ones in the main analysis.

Table C.1: The effect of the *Caritas in Veritate* encyclical on traded European firms' Abnormal Returns. Alternative event window sizes

	7-days window		15-days window		20-days window	
	(1)	(2)	(3)	(4)	(5)	(6)
Post-encyclical	0.400*	0.401*	0.594***	0.589***	0.528***	0.526***
	(0.153)	(0.154)	(0.106)	(0.106)	(0.093)	(0.093)
Num.Obs.	936	936	2012	2012	2677	2677
R2	0.079	0.020	0.048	0.015	0.042	0.013
R2 Adj.	0.007	0.006	0.015	0.009	0.017	0.009
Std.Errors	by: firm	by: firm	by: firm	by: firm	by: firm	by: firm
FE: country		X		X		X
FE: firm	X		X		X	

+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Notes:
Linear fixed-effect models. Standard errors are clustered at the firm-level. Event windows vary over 7, 15, or 20 days before and after the event

C.3.2 Alternative lag specifications

In Table C.2, we introduce step-wise all lags from year -1 to year -4 of the dependent variable on the right-hand side of our models. Results do not change substantively.

Table C.2: The effect of the *Caritas in Veritate* encyclical on financial firms' Abnormal Returns. Lag specifications

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Post-encyclical	0.437**	0.447**	0.485**	0.482**	0.429**	0.426**	0.445**	0.416*
	(0.140)	(0.155)	(0.171)	(0.173)	(0.137)	(0.149)	(0.159)	(0.159)
Abnormal Returns (t-1)	-0.125**	-0.133**	-0.140**	-0.143**	-0.082*	-0.084+	-0.084+	-0.080+
	(0.039)	(0.042)	(0.044)	(0.047)	(0.041)	(0.043)	(0.046)	(0.047)
Abnormal Returns (t-2)		-0.069	-0.086+	-0.083+		-0.018	-0.024	-0.020
		(0.044)	(0.047)	(0.049)		(0.057)	(0.061)	(0.060)
Abnormal Returns (t-3)			-0.123***	-0.121***			-0.070+	-0.064
			(0.030)	(0.032)			(0.040)	(0.040)
Abnormal Returns (t-4)				0.005				0.063
				(0.044)				(0.046)
Num.Obs.	1341	1340	1339	1338	1341	1340	1339	1338
R2	0.067	0.071	0.085	0.087	0.020	0.020	0.024	0.028
R2 Adj.	0.017	0.019	0.033	0.035	0.009	0.009	0.012	0.015
Std.Errors	by: firm	by: firm	by: firm	by: firm	by: firm	by: firm	by: firm	by: firm
FE: country					X	X	X	X
FE: firm	X	X	X	X				

+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Notes:
Linear fixed-effect models. Standard errors are clustered at the firm-level. Event windows span over 10 days before and after the event

D *Laudato Si* analysis: Additional material

D.1 Media coverage of the encyclical

As done for the previous two studies, first we plot the share of articles mentioning 'Pope' in the month before and after the publication of *Laudato Si* (June 18, 2015) in Figure D.1. We consider the same two general news (*The New York Times*, *The Guardian*) and financial news sources (*Financial Times*, *Wall Street Journal*). The daily percentage of articles matching the query "Pope" is computed from Lexis Nexis data.

In this case, too, coverage of the Pope increased significantly leading up to the publication of the encyclical. Both general and financial news sources reported largely on the Pope in the days running up to the publication date, with a peak that anticipates the publication of a few days (in conjunction with its leakage, June 15). Both groups of news reach peaks of almost 5% or higher in coverage, with the lion's share being taken by *The New York Times* and *Wall Street Journal* shortly following the publication. This observation confirms our interpretation that Francis' text became particularly important in the US context, leading up to the 2016 election.

D.1.1 US coverage of *Laudato Si*

Here, we document the specific way *Laudato Si*, and Francis, were covered in US media. For this more recent encyclical, and only for the US market, we can leverage data on the airtime coverage of the Pope by major US TV outlets. The data indeed suggest that, in the US, a strong conservative backlash against Francis materialized in the context of the publication of the encyclical. We draw our data from the Global Database of Events, Language and Tone (GDELT). We concentrate on all televised clips including the word "Pope" in the month before and after June 15, 2015.

While a significant amount of US TV time in the summer 2015 was unsurprisingly focused on the Pope after the release of the encyclical (Figure D.2), Fox News and Fox Business proposed most of the content covering the Pope compared to CNN and MSNBC

Figure D.1: *Newspaper coverage of the query "Pope" by representative sources around the publication of* Laudato Si. Data from the Lexis Nexis database. Percentage over the daily number of articles in the outlets

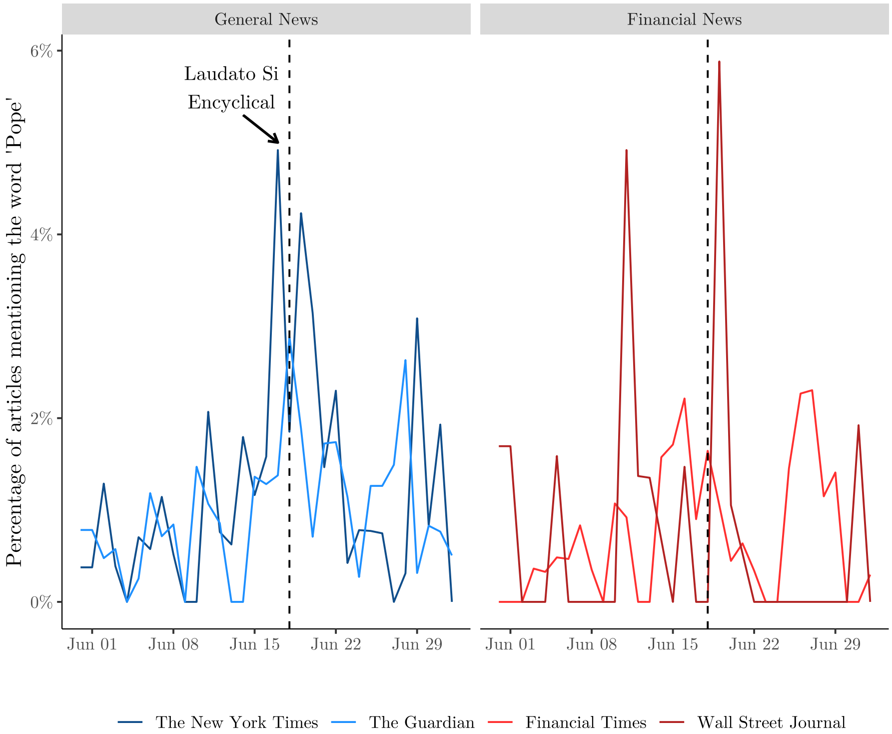


Figure D.2: *TV coverage of the query "Pope" by representative US broadcasting sources.* Data units correspond to GDELT 15-seconds clips mentioning the word "Pope" in the four selected networks

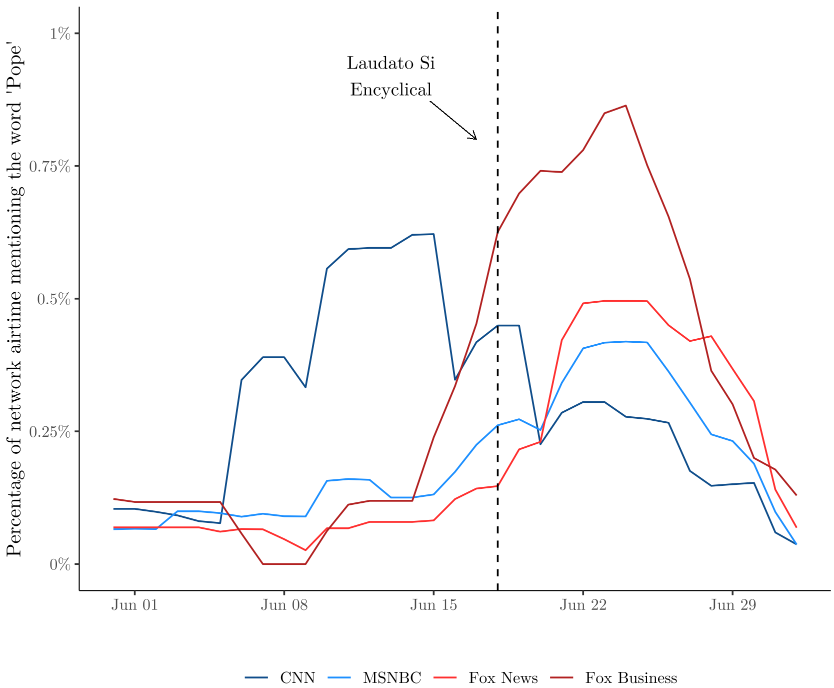


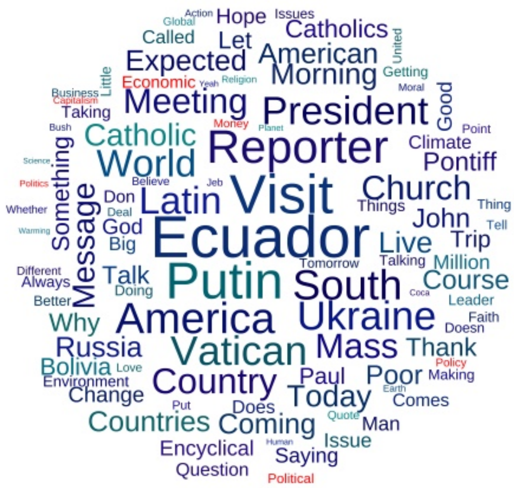
Figure D.3: *Word cloud of the 100 most frequent words in relevant TV clips mentioning the word "Pope"*. Higher word font size corresponds to higher word frequency. Words in red correspond to an economic policy theme and were highlighted by the authors. Scores are computed using term-frequency inverse-document-feature

(a) Fox News

(b) Fox Business

(c) MSNBC

(d) CNN

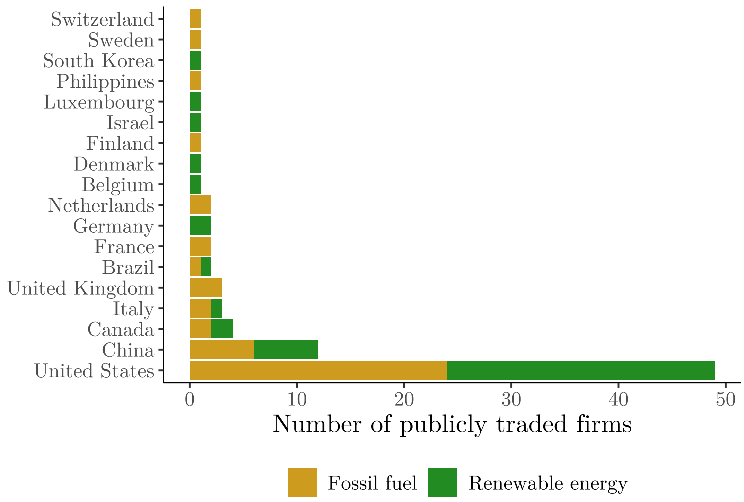


(two general audience channels). Furthermore, it was in particular the coverage by the conservative network Fox (including its financial channel, Fox Business) that referred consistently to the economic policy implications of the Pope's message. This is described by Figure D.3 which shows wordclouds of the 100 most frequent words in TV clips menioning the word "Pope," by network, weighted using term-frequency inverse-document-feature (TF-IDF). We claim that the ideological framing of the encyclical by the media is critical to understand its effects on investors' perceptions. Given the significant coverage of the Pope by conservative channels, which particularly underlined the market-skeptic dimension of the text, the message might have generated sizeable uncertainty for climate policy investments in the US.

D.2 Sample description

Figure D.4 shows the distribution of our firms by their headquarter countries. We distinguish between fossil fuel and renewable energy firms.

Figure D.4: *Distribution of firms in the* Laudato Si *analysis by headquarter country*



D.3 Robustness tests

D.3.1 Alternative window sizes

We alter the length of our 10-days event window size into 7-days (Table D.1), 15-days (Table D.2), and 20-days (Table D.3) before and after the event. Results are comparable to those reported in the main analysis in the second and third table. In the first one, instead, estimates are small and fail to reach statistical significance.

Table D.1: The effect of the *Laudato Si* encyclical on energy firms' Abnormal and Cumulative Abnormal Returns. 7-days event window

	Renewable Energy				Fossil fuel			
	AR		CAR		AR		CAR	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Post-encyclical	-0.044	-0.045	-0.181	-0.124	-0.034	-0.042	0.708	0.659
	(0.224)	(0.226)	(0.771)	(0.770)	(0.067)	(0.068)	(0.689)	(0.691)
Num.Obs.	622	622	622	622	660	660	660	660
R2	0.029	0.016	0.904	0.189	0.085	0.042	0.896	0.375
R2 Adj.	-0.041	-0.002	0.897	0.174	0.016	0.024	0.888	0.364
Std.Errors	by: firm	by: firm	by: firm	by: firm	by: firm	by: firm	by: firm	by: firm
FE: country		X		X		X		X
FE: firm	X		X		X		X	

+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Notes:
Linear fixed-effect models. Standard errors are clustered at the firm-level. Event windows span over 7 days before and after the event

Table D.2: The effect of the *Laudato Si* encyclical on energy firms' Abnormal and Cumulative Abnormal Returns. 15-days event window

	Renewable Energy				Fossil fuel			
	AR		CAR		AR		CAR	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Post-encyclical	-0.456*	-0.449*	-2.042+	-1.954+	-0.077	-0.079	0.558	0.503
	(0.176)	(0.176)	(1.156)	(1.156)	(0.055)	(0.055)	(0.649)	(0.651)
Num.Obs.	1239	1239	1239	1239	1325	1325	1325	1325
R2	0.025	0.009	0.753	0.192	0.004	0.002	0.896	0.370
R2 Adj.	-0.009	0.000	0.744	0.185	-0.031	-0.007	0.892	0.364
Std.Errors	by: firm	by: firm	by: firm	by: firm	by: firm	by: firm	by: firm	by: firm
FE: country		X		X		X		X
FE: firm	X		X		X		X	

+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Notes:
Linear fixed-effect models. Standard errors are clustered at the firm-level. Event windows span over 15 days before and after the event

D.3.2 Alternative lag specifications

In Tables D.4 and D.5, we introduce step-wise all lags from year -1 to year -4 of the dependent variable on the right-hand side of our models (firm-FE and country-FE, respectively). Results do not change substantively.

Table D.3: The effect of the *Laudato Si* encyclical on energy firms' Abnormal and Cumulative Abnormal Returns. 20-days event window

	Renewable Energy				Fossil fuel			
	AR		CAR		AR		CAR	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Post-encyclical	-0.372*	-0.362*	-3.108*	-2.961*	-0.045	-0.048	0.270	0.218
	(0.144)	(0.144)	(1.326)	(1.327)	(0.033)	(0.033)	(0.569)	(0.572)
Num.Obs.	1611	1611	1611	1611	1725	1725	1725	1725
R2	0.020	0.008	0.713	0.201	0.006	0.002	0.891	0.354
R2 Adj.	-0.006	0.001	0.706	0.195	-0.021	-0.005	0.888	0.349
Std.Errors	by: firm	by: firm	by: firm	by: firm	by: firm	by: firm	by: firm	by: firm
FE: country		X		X		X		X
FE: firm	X		X		X		X	

+ p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001

Notes:
Linear fixed-effect models. Standard errors are clustered at the firm-level. Event windows span over 20 days before and after the event

Table D.4: The effect of the *Laudato Si* encyclical on financial firms' Abnormal Returns. Lag specifications and firm-FE

	Renewable Energy				Fossil fuel			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Post-encyclical	-0.554*	-0.583+	-0.606+	-0.606+	-0.041	-0.037	-0.045	-0.045
	(0.262)	(0.297)	(0.321)	(0.323)	(0.057)	(0.077)	(0.070)	(0.069)
Abnormal Returns (t-1)	-0.291**	-0.322**	-0.332**	-0.331**	-0.308***	-0.449***	-0.386***	-0.390***
	(0.098)	(0.100)	(0.102)	(0.104)	(0.026)	(0.065)	(0.061)	(0.064)
Abnormal Returns (t-2)		-0.123	-0.143+	-0.142+		-0.386***	-0.302***	-0.295***
		(0.078)	(0.078)	(0.084)		(0.067)	(0.061)	(0.052)
Abnormal Returns (t-3)			-0.090+	-0.089			0.152***	0.164***
			(0.053)	(0.055)			(0.036)	(0.042)
Abnormal Returns (t-4)				0.006				0.028
				(0.063)				(0.039)
Num.Obs.	867	867	867	867	924	923	922	921
R2	0.111	0.124	0.131	0.131	0.108	0.250	0.266	0.266
R2 Adj.	0.065	0.077	0.084	0.083	0.060	0.209	0.225	0.224
Std.Errors	by: firm	by: firm	by: firm	by: firm	by: firm	by: firm	by: firm	by: firm
FE: firm	X	X	X	X	X	X	X	X

+ p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001

Notes:
Linear fixed-effect models. Standard errors are clustered at the firm-level. Event windows span over 10 days before and after the event

D.3.3 Account for Trump's primary campaign announcement

Finally, we account for the possible confounding effect of Donald Trump's official announcement that he would run for the Republican Presidential primaries, which he made on June 16, 2015 (that is, just two days before *Laudato Si* was published). Aklin (2018) shows that Trump's 2016 unexpected election depressed stocks of renewable energy firms while eliciting a positive effect on fossil fuel ones. A similar effect could have been in place already at the time of his June 2015 primary announcement, if energy markets had anticipated the future president's climate positions and expected him to be likely to win the primary and Presidential election. If so, then it might be that the encyclical effect we detect among US firms is rather to be attributed to the tycoon entering the Republican primary race, rather than to Francis' text.

As we have documented, we interpret the effect of Francis' encyclical in the US in

Table D.5: The effect of the *Laudato Si* encyclical on financial firms' Abnormal Returns. Lag specifications and country-FE

	Renewable Energy				Fossil fuel			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Post-encyclical	-0.547*	-0.569+	-0.583+	-0.579+	-0.053	-0.047	-0.058	-0.049
	(0.260)	(0.287)	(0.304)	(0.299)	(0.057)	(0.077)	(0.070)	(0.067)
Abnormal Returns (t-1)	-0.271**	-0.294**	-0.299**	-0.297**	-0.305***	-0.440***	-0.372***	-0.379***
	(0.100)	(0.100)	(0.102)	(0.102)	(0.028)	(0.069)	(0.062)	(0.066)
Abnormal Returns (t-2)		-0.096	-0.107	-0.102		-0.376***	-0.284***	-0.274***
		(0.080)	(0.080)	(0.083)		(0.071)	(0.064)	(0.055)
Abnormal Returns (t-3)			-0.060	-0.054			0.170***	0.189***
			(0.048)	(0.048)			(0.032)	(0.034)
Abnormal Returns (t-4)				0.039				0.042
				(0.061)				(0.033)
Num.Obs.	867	867	867	867	924	923	922	921
R2	0.085	0.093	0.096	0.098	0.102	0.239	0.258	0.260
R2 Adj.	0.072	0.079	0.081	0.082	0.089	0.227	0.245	0.247
Std.Errors	by: firm	by: firm	by: firm	by: firm	by: firm	by: firm	by: firm	by: firm
FE: country	X	X	X	X	X	X	X	X

+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Notes:
Linear fixed-effect models. Standard errors are clustered at the firm-level. Event windows span over 10 days before and after the event

light of the Presidential campaign and conservative media backlashing against Francis as an example of what a progressive climate agenda would entail. Thus, our interpretation of the Francis effect is strictly grounded in the Presidential campaign context.

However, we make two observations to rule out that what we document is a very early "Trump effect" on energy markets. To sum up our logic here, Trump did not have any evident climate agenda back in June 2015 that should have obviously concerned energy market investors; and, at the time, his chances to win the primary (let alone the Presidential race) appeared low—which, in turn, is exactly what made his November 2016 election an unexpected shock for energy investors (Aklin, 2018). Such observations find empirical support in a host of data.

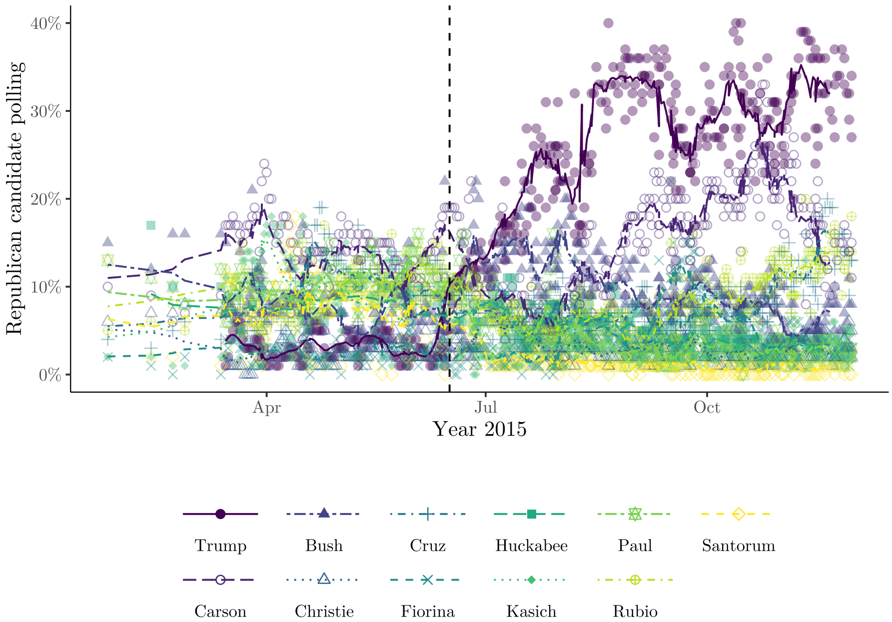
First, we note that Trump's June 2015 candidacy speech was centered on immigration into the US, the infamous wall with Mexico, competition with China and loss of American jobs, security in the Middle East, and repealing Obamacare.[1] Nowhere in his almost 50-minute long speech did he mention issues related to energy transition or security, renewable energy firms, fossil fuel, or climate change, not even in passing.[2] At this very early stage of his campaign, his future, strong anti-energy transition and climate change skeptic agenda was simply yet to appear.

Second, Trump was still polling low at this point of the race. To illustrate the trends

[1]"Donald Trump announces US presidential run with eccentric speech." *The Guardian.* June 16, 2015https://www.theguardian.com/us-news/2015/jun/16/donald-trump-announces-run-president.

[2]For a full transcript of his June 2015 speech: "Here's Donald Trump's Presidential Announcement Speech". *The Times.* June 16, 2015 https://time.com/3923128/donald-trump-announcement-speech/.

Figure D.5: *US Republican candidates' primary polling over the year 2015.* Individual polling and two-week moving averages.



of public polling at the time of the encyclical, we retrieved the polling percentages by the 11 individual Republican primary candidates computed by independent pollsters and gathered by FiveThirtyEight.[3] Figure D.5 shows these data and a two-week moving average support for each Republican candidate (weighted by the polling quality measure proposed by FiveThirtyEight). We make data relative to Donald Trump's polling more evident for visualization purposes (solid thick line). The dashed vertical line indicates Trump's announcement of June 16, for reference. At the time of Trump's announcement, which just predates the *Laudato Si* of two days, he was polling lower than Ben Carson and similarly to Jeb Bush. It would not be until August of that year that Trump would affirm himself as the leader of the primary Republican race.[4] At this stage, energy market investors had very little elements to anticipate that he would win the primary race (let alone the presidential one) and that he would run on a platform including vocal climate skepticism and anti-energy transition.

To back up our argument against an early "Trump effect" confounding our estimates, we also re-estimate our models of Table 3 after including a binary variable taking a value of 1 after Trump's primary announcement. We run this analysis exclusively on the US sample of energy firms (renewable and fossil fuel ones). Consistently with our observations above that Trump's primary announcement did not, at this stage, provide any particular information that should have concerned energy investors, the estimates relative to this variable are positive across the board (for renewable energy firms, too), small, and never

[3] Data retrieved from: https://projects.fivethirtyeight.com/election-2016/national-primary-polls/republican/.

[4] "Looking Back at Donald Trump's 2015." *The New York Times*. December 31, 2015: https://www.nytimes.com/2015/12/31/us/politics/donald-trump-moments.html.

statistically significant. Instead, we still detect a negative and statistically significant effect on abnormal and cumulative abnormal returns for the publication of the encyclical, solely on the renewable energy sample.

Table D.6: The effect of the *Laudato Si* encyclical on energy firms' Abnormal and Cumulative Abnormal Returns, controlling for Trump's primary announcement effect

	Renewable Energy				Fossil fuel			
	AR		CAR		AR		CAR	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Post-encyclical	-0.542*	-0.540*	-2.133**	-2.151**	-0.078	-0.094	-0.292	-0.280
	(0.256)	(0.256)	(0.745)	(0.754)	(0.061)	(0.063)	(0.246)	(0.242)
Post-announcement	0.037	0.037	0.215	0.215	0.023	0.023	0.117	0.117
	(0.348)	(0.348)	(0.422)	(0.422)	(0.080)	(0.080)	(0.172)	(0.172)
Num.Obs.	524	524	524	524	486	486	486	486
R2	0.054	0.011	0.913	0.007	0.064	0.003	0.891	0.001
R2 Adj.	0.004	0.007	0.908	0.003	0.013	-0.001	0.885	-0.003
Std.Errors	by: firm	by: firm	by: firm	by: firm	by: firm	by: firm	by: firm	by: firm
FE: country		X		X		X		X
FE: firm	X		X		X		X	

+ p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001

Notes:
Linear fixed-effect models. Standard errors are clustered at the firm-level. Event windows span over 10 days before and after the event. Only US firms