

Market Reactions to Quest for Decentralization and Independence: Evidence from Catalonia

Vincenzo Galasso¹

(Bocconi University)

November 2019

Abstract

Regions seeking more autonomy aim at making less (or no) fiscal transfers to central governments and at reaching more (or total) control on regional spending. However, decentralization may lead to joint central-regional responsibility that increases bureaucratic and fiscal burdens on firms. Moreover, quests for independence create political tensions and increase economic uncertainty. To evaluate economic costs and benefits for firms from decentralization or independence, we analyze the Catalan-Spanish negotiation leading to the 2006 Catalan Statute and the more recent quest for independence. We use an event approach methodology to estimate the immediate stock market reaction to new events. Our results suggest that the stock market had a conservative reaction both to more decentralization and to independence. The approval of the Catalan Statute was associated with negative returns for Catalan firms, particularly in the tradable sector. These firms later benefitted from the partial reversal imposed by the Spanish Constitutional Court ruling. The large increase in the political uncertainty that emerged at the referendum day had a strong negative effect on all Catalan firms and on Spanish firms in the tradable sector. This uncertainty was partially reduced when the Spanish Senate rejected the declaration of Catalan independence. Markets reacted positively, with Catalan, but also Spanish, firms in all sectors posting large gains that largely compensated the previous losses.

¹ Vincenzo Galasso, Department of Social and Political Sciences, Bocconi University, Via Roetgen 1, 20136 Milano, Italy, Vincenzo.galasso@unibocconi.it.

In 1945, only 74 nations were internationally recognized. By 2018, they had become 206. While historical political events contributed to this fractionalization – particularly in Eastern Europe, it is undeniable that a quest for independence surfaces in Western Europe.

Many factors drive this demand of self-determination: cultural, linguistic, religious, and of course economic. Economic trade-offs determine the incentives for regions with a strong cultural entity to secede. As part of a larger nation, smaller regions enjoy access to a larger domestic market and cost sharing in the provision of national public goods, but have to forgo some autonomy in targeting welfare and public programs, such as health and education, to the local needs and culture (Alesina and Spolaore, 1997 and 2003). Furthermore, even in federal states, richer regions tend to transfer part of their tax revenues to poorer regions (Bolton and Roland, 1997). Constitutions that can credibly commit the central government to “honor economic and political rights” help to keep together federal states (Weingast, 1995).

In the last two decades, globalization and economic crisis have modified these trade-offs perhaps reducing the economic cost of independence. Due to the existence of supranational institutions, such as the WTO and the EU, regions may aim at preserving their cultural homogeneity and at choosing their local policies, while still enjoying access to international markets in a low conflict environment (Alesina et al., 2000, Spolaore, 2009). Furthermore, the recent economic crisis has made fiscal transfers from richer to poorer regions even more salient. Central governments have reacted to these changing external conditions (de Figueiredo and Weingast, 2005) and to the quest for more independence by conceding more fiscal federalism and decentralization (Le Breton and Weber, 2003, Haimanko et al. 2005, and Desmet et al. 2011).¹

However, the transition towards more federalism or towards full independence has costs. More federalism typically requires sharing of legal and administrative responsibilities between central and regional authorities. As a result, more bureaucracy may arise (Rodrick, 2000), since double (regional and central) administrative requirements are imposed on the more productive sectors of the economy. At the same time, with more federalism, fewer fiscal revenues are transferred to the central government, and thus more economic and social services can be financed at regional level or lower taxes can be levied on citizens and firms. The move towards full independence creates strong political tensions and uncertainty. New economic institutions (Central Bank, a new currency, fiscal authorities) have to be established. Access to (previously) domestic markets has to be

¹ Whether this represents a halt to the process of independence or rather a step towards final independence remains an open question (Cederman et al, 2015)

negotiated with the central government, whereas access to foreign markets will depend on international treaties and will require negotiations with international organizations (the EU in the case of European countries or the WTO). Hence, unilateral quests for independence create large uncertainty on the future access for companies of the seceding region to both (previously) domestic and foreign markets. Of course, independence implies no more transfers to the (previously) central government and complete autonomy in the targeting of public programs.

To provide a quantitative assessment of the economic effects of moving respectively towards more federal autonomy or toward full independence in a globalized economic environment, we consider the sequel of political and legal events in the Catalan-Spanish relation over the last fifteen years (2003-2017). A new Statute regulating the Catalan-Spanish relation, negotiated between the Catalan and the Spanish (socialist) governments, characterized the 2003-06 events. Proposed by the Catalan parties and later emended but accepted by the Spanish Parliament (with the opposition of the People's Party), the Statute identified areas of joint Catalan-Spanish responsibility. In 2010, a ruling of the Spanish Constitutional Court limited the degree of autonomy provided by the Statute and the process towards more autonomy came to a sudden halt. Political tensions emerged and the course of action changed. Furthermore, economic benefits from independence became more salient, since transferring fiscal revenues to the central government was more painful during the economic crisis. In 2012, a party coalition supporting independence won the Catalan regional elections. In 2014, a non-binding informal referendum on the political future of Catalonia was held, despite the opposition of the Spanish government, led by the People's Party. The demand for Catalan independence mounted and political tensions with Spain increased. In 2017, the Catalan parties decided to promote a formal referendum on independence. The Spanish government, still led by the People's Party, was fiercely hostile. The referendum was declared unconstitutional and, on the referendum day, the national police forced Catalan voters out of the electoral booths. Few weeks later, the Catalan Parliament declared independence and the Spanish Senate made use of a Constitutional article to transfer all powers on Catalonia to the Spanish Government.

The Catalan-Spanish relation represents the perfect environment to study the economic costs and benefits of a moving towards more federalism or towards independence. First, Spain belongs to a highly integrated economic area – the EU and the Eurozone. Catalonia seeking independence from Spain could – although perhaps in vain – expect to keep its access to the EU market and to maintain the common currency – the Euro. Second, the long sequel provides periods associated with different types of economic and political costs and benefits. We can exploit this variation in our estimates. In

2003-06, the new Statute provided more fiscal autonomy to Catalonia and a wider sharing of legal and administrative responsibilities between Catalonia and Spain. Limited political tension surfaced, but no economic uncertainty regarding the access to domestic or foreign markets emerged. At this stage, economic costs for (Catalan) firms could arise from more bureaucracy, for instance related to the joint Catalan-Spanish responsibility over ports and airports or to the double tax collection. Benefits would come from more resources for local spending. The 2010 ruling of the Spanish Constitutional Court emended the Statute. Few articles – mostly related to the judiciary system – were dropped and others were modified. The creation of a Catalan tax authority – and hence the possibility of a double tax collection, was rejected. The last sequence of events was characterized by strong political tensions reaching the climax at the 2017 referendum day. Economic costs were driven by the uncertainty, for Catalan firms, regarding their future access to the Spanish and EU market in case of independence. The political uncertainty on the future of the Catalan-Spanish relation affected all firms.

Not surprisingly, these events raised much concern and generated a heated debate in Catalonia and Spain. Yet, besides the opposite rhetoric by sovereignist and unionist movements and the large use of cultural and political arguments (Martinez-Herrera, 2002, Bourne, 2014), little agreement has been reached on whether the Catalan independence would bring a net economic cost or benefit to Catalonia and to Spain (Castells, 2014).²

To evaluate the economic effects of the Catalan-Spanish long dispute, we use an event approach methodology that estimates the immediate stock market reaction to the occurrence of new events. Under the assumption of efficient capital markets, any new information provided by these events on the future economic perspectives of Catalan and Spanish (i.e., non-Catalan) firms should immediately be reflected in their stock market prices. Several important events have occurred during these fifteen years. Some of them were largely anticipated and should thus not affect markets at impact, since expectation should have already been incorporated. We identify four events, which were unanticipated (or uncertain) and thus provided new and relevant information on the Catalan-Spanish negotiation process. We measure the market reaction of Catalan and Spanish listed companies to these events. This event methodology has been used in finance to evaluate the effects of acquisitions (Loughran and Vijh, 1997), strategic alliances (Chan et al., 1997),

² De la Fuente et al. (2014) and Comerford and Rodriguez Mora (2019) point out that the reduction in trade towards Spain and the EU that would follow the Catalan independence would largely reduce GDP both in Catalonia and Spain.

earning releases (Henry, 2008) or natural disasters (Shelor et al., 1992). And it has then gained popularity also in other fields to assess the impact of gender quotas (Ahern and Dittmar, 2012; Ferrari et al., 2016), political connections (Acemoglu et al., 2016) civil wars (Guidolin and La Ferrara, 2007) and terrorist attacks (Abadie and Gardeazabal, 2003). This methodology uses standard single-factor market models (Kothari and Warner, 2007) to estimate the returns that companies would obtain in absence of these events. The abnormal returns – defined as the difference between the actual and the estimated returns – during an event window measure the market reaction to the news conveyed by the event for a specific firm. To evaluate the possible different effects for Catalan and Spanish listed companies, we thus calculate their cumulated abnormal returns during specific event windows and test whether they are significantly different from zero. Clearly, positive (negative) deviations identify a positive (negative) response to new information for the Catalan and Spanish firms.

We select four milestone events over these fifteen years, which represented crucial steps on the path towards Catalan autonomy or independence. The first event is the approval of the new Statute by the Spanish Parliament on May 2006. Despite the long negotiation process, the result of the ballot in the Spanish Senate was very close: 128 votes in favor, 125 votes against (from the People's Party) and 6 abstentions, including members of the radical Catalan party, ERC. Catalan autonomy increased, joint Catalan-Spanish responsibilities were identified in some important areas, but no major political tension emerged. The second event is the 2010 ruling of the Constitutional Court, which emended the Statute reducing the Catalan autonomy and represented a turning point in the Catalan-Spanish relation. The third event is the Catalan referendum of independence held on October 1st 2017. The Catalan authorities announced the referendum already in June. Yet, the Constitutional Court ruled it unconstitutional and the Spanish government urged the Catalan government to stop. Uncertainty lingered on the intentions of the Catalan authorities. The final decision to hold the referendum was therefore crucial, since it provided additional information on the intention to move forward with a claim of independence. The fourth crucial moment occurred on October 27th. Two events took place contemporaneously: based on the results of the referendum, the Catalan Parliament declared independence and the Spanish Senate enforced Article 155 of the Spanish Constitution, which transferred powers on Catalonia to the Spanish government – thereby putting a halt to the process toward independence. Again, uncertainty had been lingering for three weeks on the intentions of the Catalan Parliament. Hence, these two events

were crucial, as they certified the strong intention by the Catalan government to push forward with independence and by the Spanish government to stop the process.

Our empirical evidence suggests that the stock market had a conservative reaction both to more decentralization and to independence. A negative effect emerged after the initial approval of the Catalan Statute by the Spanish Parliament, in particular for Catalan and Spanish firms in the tradable sectors. The ruling of the Constitutional Court, which emended the previous Statute eliminating the possibility of double tax collection, was instead associated with positive abnormal returns among Catalan – but not Spanish – firms, particularly in the tradable sectors. The two most political tense events occur in October 2017 and prompted strong market reactions, as shown in Figure 1. The events of the day of the referendum led to strong negative abnormal returns for Catalan firms, in both tradable and non-tradable sectors, and for Spanish firms in tradable sector. The contemporaneous declaration of independence and the use of article 155 induced large positive abnormal returns for Catalan firms – of similar magnitude as the previous event, and still positive, but smaller returns for Spanish firms.

Taken together, these evidences suggest that, in absence of strong political tensions, markets judged negatively the approval of the Catalan Statute, particularly for firms in the tradable sectors. This is in line with the likely increase in the bureaucratic burden for firms using Catalan ports or airports and with the possibility – introduced by the Statute, of double tax collection in Catalonia. The Constitutional Court ruling that voided a Catalan tax authority, and thus reduced the possibility of double taxation, instead obtained a positive market reaction for Catalan firms. As expected, the political tensions that exploded at the referendum day and the resulting political and economic uncertainty induced by these events plumed the market returns for all firms. The subsequent halt to the independence process led to stock market gains of similar magnitude as the previous losses. The paper proceeds as follows: section 2 provides a brief presentation of the recent Spanish-Catalan relation. Section 3 introduces the theoretical arguments used to identify the possible economic effects of further decentralization and of a quest for independence. Our methodological framework is presented in section 4. Section 5 discusses the results, while section 6 concludes.

Recent History of the Catalan-Spanish Relation

After Franco dictatorial regime, the relation between Catalonia and Spain was regulated by the Statute of Autonomy – approved on October 1979 with a referendum held in Catalonia. The Catalan population was identified as a "nationality" and Catalan became an official language in the region

along with Spanish. In the next twenty years, Catalonia used its increased political and economic power and the pivotal role occasionally played in the formation of the Spanish government by the Catalan (moderate) political coalition “Convergència i Unió” to bargain with the central government in Madrid. These negotiations led to more fiscal autonomy and to gain exclusive competences on issues such as culture, local administration, environment and transport.

On *October 2003*, several Catalan parties proposed to draft a new Statute to redefine the political status of Catalonia. After almost two years, on *September 30th 2005*, the Catalan Parliament approved (with a 120 to 15 majority) a proposal of the new Statute, which included the official recognition of Catalonia as a nation, a clear and definitive division of competence, and greater control over fiscal matters. A year later, on *May 10th 2006*, the Spanish Parliament approved an amended version of the new Statute. Despite a long negotiation between the Spanish socialist government and the Catalan parties, the final ballot in the Spanish Senate was close: 128 votes in favor, 125 against (mostly from the People's Party) and 6 abstentions, including the Catalan separatist Esquerra Republicana de Catalunya (ERC). On *June 18th 2006*, the emended version of the statute obtained the popular approval with a 78.1% majority in a referendum in Catalonia.

Demand for more fiscal autonomy came with the 2008 Great Recession that required a harsh fiscal restructuring in Catalonia (and in all other Spanish regions) and made the fiscal transfer from Catalonia to the central government more salient. The independent movements gained momentum and symbolic votes of independence took place in the small municipality of Arenys de Munt on September 2009, immediately followed by other 167 municipalities. This demand was largely frustrated. In fact, on *June 28th 2010*, the Spanish Constitutional Court ruled on an appeal made by the People's Party and restrictively emended the Catalan Statute approved in 2006. Articles on the definition of a Catalan judiciary system were rewritten or reinterpreted. The reference to a Catalan authority for fiscal collection was also cancelled. The verdict created a strong sense of resentment and many people took the streets in Barcelona.

In the following years, the political tensions between the Catalan independence movements and the Spanish central government increased, particularly after 2011, when the People's Party gained the absolute majority in the Spanish elections and set an agenda to re-centralize powers. On November 25th 2012, early regional elections were held in Catalonia in an attempt to obtain a popular mandate to seek independence. Parties supporting Catalan self-determination obtained a

majority of seats in the Catalan parliament, albeit not a majority of the votes.³ The new Catalan Parliament issued a declaration of sovereignty and a statement on the right to decide by the Catalan people. When, on May 8th 2013, this declaration was suspended by the Spanish Constitutional Court (and ruled unconstitutional), the Catalan Parliament sent a formal petition to Spanish government asking to hold a referendum on independence, which was rejected. On *November 9th 2014*, a non-binding informal consultation took place in Catalonia. The pro-independence side won, but the results were largely disregarded at the national level.

Early elections were held in Catalonia on September 27th 2015, in a new attempt to obtain a stronger popular mandate to seek independence. Again, pro-independence parties won a majority of seats in the Catalan Parliament (72 out of 135), albeit not a majority of votes (47.8%). The new head of the Catalan government, the separatist Carles Puigdemont, promised to prioritize Catalonia's path towards independence. Meanwhile, the Spanish central government kept its hard line. Between November 2016 and March 2017, more than 400 legal proceedings against pro-independence officials were initiated and the former president of Catalonia, Artur Mas, was excluded from public office for two years for allowing the 2014 consultation.

Political hostilities reached a new level on *June 9th 2017*, when the Catalan Prime Minister, Carles Puigdemont, announced a referendum on the self-determination of Catalonia for October 1st. The law allowing for the referendum was passed by the Catalan Parliament on *September 6th 2017*, but it was immediately suspended by the Spanish Constitutional Court that prohibited public officials from taking part in the organization of the referendum. In the following weeks, a criminal probe of more than 700 mayors was ordered and a dozen of high-ranking officials were arrested.

Despite the rising tension and the ruling of unconstitutionality, on *October 1st 2017*, Catalan voters massively tried to cast a ballot in the referendum on Catalan independence. But the national police broke into voting centers, seized ballots boxes and repressed manifestations. At the end of one of the most conflictive day in the history of the Catalan-Spanish relation, the registered turnout at the referendum was 43%, with 90.2% of the voters in favor of independence. The results had no legal bearing, but carried strong political valence. In the following days, demonstrations took place in Catalonia and in the rest of Spain. Many supported the result of the referendum and denounced the police violence. Others defended the national unity or asked for a dialogue and for a rapid resolution of the controversy. Political uncertainty on the future of Catalonia was reaching unseen levels. Pro-

³ This voting result is in line with the discussion of the ethnic vote in Huber (2012) that has a specific reference to the Catalan case.

independence parties signed a declaration of independence, but refrained from bringing it to the Catalan Parliament. The Spanish Prime Minister, Mariano Rajoy, imposed a deadline for the Catalan government to clarify its official position on independence. Meanwhile, some Catalan companies started to relocate their headquarters outside of Catalonia.

On *October 27th 2017*, in a plenary session of the Catalan Parliament, with a majority of 70 votes to 10, the declaration of independence was ratified and unilaterally announced. Few hours later, the Spanish Senate approved, with a majority of 214 votes to 47, the enforcement of Article 155 of the Spanish Constitution, which empowered the Spanish central government to dismiss the Catalan Parliament and to appoint a Spanish representative to restore the rule of law in Catalonia. Snap local elections were called for December 22nd. Few days later, the Spanish Constitutional Court suspended the declaration of independence and the Spanish attorney general charged several Catalan politicians, including the Catalan Prime Minister, Carles Puigdemont, with alleged sedition and rebellion.

To carry out our event studies, we select events that were directly related to the Catalan Statute or to the quest for independence, as shown in Table 1. The former five events refer to the drafting and approval of the Catalan Statute between 2003 and 2006 and to the ruling of the Spanish Constitutional Court in June 2010. The latter five episodes belong to the quest for independence: from the 2014 informal referendum in Catalonia to the October 27th 2017 events that stopped the process of Catalan independence. The former five events feature the release of information on the likely approval and implementation of the Catalan Statute, which has economic consequences due to the introduction of joint fiscal and bureaucratic responsibilities. These episodes created little political tensions. The latter five events, instead, relate to the political feasibility of the process of Catalan independence and are characterized by strong political and economic uncertainty.

However, not all events provided new information. In some cases, information could easily be anticipated and thus no stock market reaction should be expected, since the information was already incorporated in the stock market prices. We thus concentrate on four events, which can be argued to be ex-ante uncertain or unanticipated. The first one is the approval of the Catalan Statute by the Spanish Senate (event III in Table 1). Despite the long negotiation, in fact, the Statute was approved by a very small margin. The second event (event V in Table 1) is the Constitutional Court ruling, which came long after the appeal by the People's Party. The third crucial event is the referendum on October 1st 2017 (event IX in Table 1). In this case, the magnitude of the popular turnout for a (unconstitutional) referendum and the violent reaction by the national police were

largely unexpected. The final event(s) took place on October 27th 2017 (event X in Table 1), when the Catalan Parliament made its declaration of independence and the Spanish Senate reacted with the use of Article 155. Also in this case, there were many doubts on the final decision by the Catalan Parliament – albeit perhaps less so on the Spanish reaction.

Theoretical Background

The demand of self-determination by (small or large) regions of national countries may be driven by several factors: cultural, linguistic, religious and economic. Being part of a larger nation has clear economic benefits. It provides an insurance against idiosyncratic local economic shocks, it allows a fair sharing of the financial burden of providing national public goods and it gives access to larger markets. Moreover, in international negotiations, large countries have more bargaining power (Abbott, 1975, and Schneider, 2011). However, it entails also important costs. Regions have less autonomy to target welfare and public programs, such as health and education, to local needs, customs and culture. Furthermore, richer regions may consistently have to transfer part of their tax revenues to poorer regions.⁴

In this paper, we examine the short run effects of a path towards more autonomy within a federal state and of a bolder quest for independence.

A negotiated pattern towards more autonomy should help to minimize political tensions between the region seeking autonomy and the central government, thereby creating little uncertainty for firms. Moreover, to the extent that more fiscal autonomy leads to lower business taxes, firms located in autonomous regions may benefit from this process. The main risk of a negotiated decentralization process rests in the definition of joint responsibility – at regional and central level – over bureaucratic procedures and fiscal revenue collection. Any increase in bureaucracy or taxation would be detrimental to firms that are fiscally located or operate in the autonomous region. A harsh political negotiation for independence has economic consequences due to the political tensions it creates between the region seeking autonomy and the national state. According to a realist perspective, this political hostility may have negative economic consequences, particularly

⁴ An economic literature (Alesina and Wacziarg, 1998, Alesina and Spolaore, 2003) has focused on the pros and cons for a region with a strong cultural identity of being part of a larger nation. However, besides the economic factors, cultural aspects also matter. Nationalist and sovereignist movements sometimes criticize the attention given to the economic consequences of their political actions, particularly when they involve the reactions from the financial markets that are often portrayed as being under the control of the international elites.

on trade flows, as regions may decide to boycott each other products (Pollins, 1989) or may choose not to strengthen the enemy by continuing valuable trade exchanges (Gowa and Mansfield, 1993).⁵ This political tension is thus detrimental for firms, particularly for those in the tradable sector. Independence may harm the economy of the region seeking autonomy and potentially of the national state, even in absence of political tension. This will happen if the negative effects deriving from having access to smaller markets and from facing the full cost of the public good provision outweigh the positive outcomes stemming from the reduction in the monetary transfer to the central government.

The latest political events in Catalonia represent an excellent field where to test these two different processes. The 2003-06 events took place in the context of a negotiation between the Catalan and the Spanish (socialist) government for more autonomy. Among these events, the most significant was the approval of the Catalan Statute by the Spanish Senate in May 2006. Since political tension was limited, the stock market reaction for Catalan and Spanish firms to this step towards more autonomy identifies the economic effect of the provisions established by the Catalan Statute. Particularly relevant is thus the introduction of a joint responsibility over Catalan infrastructures, such as ports and airports, and the reference to a Catalan fiscal authority for fiscal collection. Both provisions may create additional costs to firms operating or paying taxes in Catalonia. The Spanish Constitutional Court ruling in June 2010 partially reverted this process. Besides emending the judiciary system, the Constitutional Court removed the mention to a Catalan fiscal authority.

A new set of events have taken place since then, with the political tensions between Catalonia and the Spanish central government – led by the People’s Party – mounting to unprecedented levels. The two most crucial episodes occurred in October 2017. On October 1st, a referendum on Catalan independence was held in Catalonia, despite being ruled unconstitutional by the Spanish Constitutional Court. The Spanish central government sent the national police to (unsuccessfully) prevent elections from taking place. Political uncertainty thus reached its climax, as it was unclear how the Catalan-Spanish relation would evolve. Was Catalonia about to declare independence? How was Spain reacting to it – politically, judiciary and militarily? After more than three weeks, on October 27th, part of this uncertainty was solved. Based on the results of the referendum, the Catalan government declared independence and the Spanish Senate immediately reacted by

⁵ Liberal theories suggest instead that economic interdependence reduces the risk of political conflicts across countries (Maoz, 2009). Parties would thus employ soft bargaining strategies to avoid clashes that may lead to inefficient economic consequences.

activating Article 155 of the Spanish Constitution, which allowed the central government to take control over the governing of Catalonia. Although further political uncertainty remained on the future of the Catalan-Spanish relation, the process of Catalan independence had received a clear stop.

Methodology and Data

To evaluate the market reactions to the different milestones in the recent path towards more autonomy or towards independence in Catalonia, we use an event study approach. In the previous section, we identified four events in the last fifteen years that revealed crucial information on the future of the Catalan-Spanish relation (see events III, V, IX and X in Table 1). The objective of this event study approach is to examine the market reactions to these events – separately for Catalan and Spanish listed companies. This event study approach relies on calculating the abnormal returns of securities in the financial market. They are measured as the deviations of the actual returns from the normal (i.e., estimated) returns. Positive (negative) abnormal returns identify favorable (unfavorable) news – for instance on economic and political stability or on firms' future market prospects – that lead to positive (negative) market reactions.

Our main data consists of daily market closing prices for all Catalan and Spanish companies listed in the Madrid Stock Exchange, as well as of the IBEX35 index closing price, from 2003 to 2017. Data are available on Datastream. Companies are categorized as Catalan, if their headquarter is in Catalonia and/or they have a considerable portion of their economic activity in Catalonia. Over our period of analysis, new companies were listed, while some old ones abandoned the Madrid Stock Exchange. Moreover, the daily price of some of these companies' stocks did not change, perhaps due to few market transactions been made. We decided to drop those companies, whose stocks experienced no price change during more than one third of our period of interest. The final number of listed companies used in the analysis ranges from 90 to 101. A complete list of the companies is in the appendix.

In order to estimate the abnormal returns during the different event periods, we first need to calculate the normal returns. We follow a standard approach in this literature (Kothari and Warner, 2007) and use a single-factor market model, in which the daily returns of each stock are assumed to be linearly related to the market return. For each company i , we thus estimate the following equation:

$$R_{i,t} = \alpha_i + \beta_i R_{M,t} + \varepsilon_{i,t} \quad (1)$$

where $R_{i,t}$ and $R_{M,t}$ represent respectively the daily stock return of company i and the market return at time t . The market index is represented by the IBEX-35. These daily returns are calculated from the daily closing prices of the stocks as follows:

$$R_{i,t} = \log(P_{i,t}) - \log(P_{i,t-1}) \quad (2)$$

where $P_{i,t}$ represents the daily closing price at time t for the stock of company i and analogously for the IBEX-35.

The estimated parameters $\hat{\alpha}_i$ and $\hat{\beta}_i$ at equation (1) for each company i are then used to calculate the abnormal returns according to the following equation:

$$AR_{i,t} = R_{i,t} - \hat{\alpha}_i - \hat{\beta}_i R_{M,t} \quad (3)$$

where $AR_{i,t}$ represents the abnormal return at time t for the stock of company i .

Finally, for each firm, we obtain the cumulated abnormal returns by summing the corresponding abnormal return over the relevant event window:

$$CAR_{i,S,F} = \sum_{t=S}^F AR_{i,t} \quad (4)$$

where $CAR_{i,S,F}$ represents the cumulative abnormal return for the stocks of company i over an event window that begins at day S and finishes at day F .

An important decision in these event studies is to establish the time period, which precedes the time of the event, over which to estimate the parameters $\hat{\alpha}_i$ and $\hat{\beta}_i$ at equation (1) for each firm i . We use a period of 200 days prior to the event for the estimation of the relevant parameters in order to reduce the overlapping between the estimation period for an event and the event window of previous events. Another crucial choice is about the event window $[S,F]$ over which to calculate the abnormal returns and the cumulative abnormal returns. This is the timespan believed to be relevant for the market reaction, over which the prices of securities are expected to adjust. This window contains the event date, but includes also periods before and after the event. We use three different event windows: a symmetric three-day period $[-1,+1]$ around the date of the event, meant

to capture the effect of the event on impact, an asymmetric seven-day period [-1,+5] that puts more emphasis on the post-event period and a symmetric eleven-day period [-5,+5]. A clear trade-off emerges in selecting these windows. Large periods allow our estimates to capture more news, which may spread immediately before and after the occurrence of the event. Smaller – and asymmetric – periods, on the other hand, are more precise in identifying the actual effect of the event. In session 4, we show our empirical results for all three windows.

To evaluate the economic impact of our crucial events, we run the following OLS regression:

$$CAR_{i,S,F} = \gamma CAT_i + \delta SP_i + \rho_j \sum_j I_{j,i} + \varepsilon_{i,t} \quad (5)$$

where $CAR_{i,S,F}$ represents the cumulative abnormal return for the stocks of firm i for an event period that begins at day S and finishes at day F , CAT_i and SP_i are dummies respectively for Catalan and Spanish companies and $I_{j,i}$ are industry fixed effects. Firms may belong to one of ten industries: basic material, consumers' good, industrials, oil and gas, technology, consumers' services, financial, health care, telecoms and utilities, according to the Industry Classification Benchmark (ICB). The former five industries constitute the tradable sector, the latter five the non-tradable. Hence, positive (negative) values of γ and δ indicate respectively positive (negative) cumulative abnormal returns for Catalan and Spanish firms following an event, after controlling for industry specific characteristics.

As discussed in the previous section, the economic effects of these events may differ across sectors. In particular, large difference may emerge between tradable and non-tradable sectors, for instance if the information pertains access to foreign markets or increased bureaucracy in the use of transportation infrastructures. To account for these possible differences, we run also the following OLS specification, separately for tradable and non-tradable:

$$CAR_{i,S,F} = \gamma CAT_i + \delta SP_i + \varepsilon_{i,t} \quad (6)$$

Results

The empirical results on the economic impact of the four main events in the Catalan-Spanish relation, estimated according to eq. (5), are shown in Table 2. For each of the four episodes, we report the average cumulative abnormal returns (CARs) for Spanish and Catalan companies for the

three event windows, which measure the effect on impact [-1,+1], the evolution in the post-event period [-1,+5] and the average pre and post-event effect [-5,+5].⁶

The approval of the Catalan Statute by the Spanish Senate on *May 10th 2006* (event III) is associated with a reduction in the CAR of both Catalan and Spanish firms on impact and in the post-event period. The average effect on the larger event window is instead not statistically significant, suggesting positive excessive returns in the pre-event period.⁷ According to the theoretical arguments provided in section 3, this negative effect may be due to the additional bureaucracy or to the possible double fiscal collection induced by the Statute. In particular, joint Catalan-Spanish responsibility on Catalan ports and airports should increase the bureaucratic burden for Catalan firms in the tradable sector and for Spanish (tradable) firms using Catalan infrastructures. Table 3 reports the estimates according to eq. (6) separately for Catalan and Spanish firms in tradable and non-tradable sectors for our three event windows. As expected, the negative effect is driven by firms in the tradable sector and emerges mainly in the post-event period [-1,+5].

The ruling of the Spanish Constitutional Court (event V) on *June 28th 2010* changed the course of action in the Catalan-Spanish negotiation. Specifically, it eliminated the possibility of creating a Catalan authority for fiscal collection. Table 2 (event V) shows that the CAR of Catalan firms increased on impact (+2.7%), in the post-event period (+3.7%) and also in the longer window (+5.5%); whereas the no statistically significant effect emerged for Spanish firms. Table 4 provides a closer look at this event and suggests that, also in this case, the (positive) effect on Catalan firms was entirely due to firms in the tradable sector.

Unlike the episodes associated with the Catalan Statute, the October 2017 events related to the Catalan independence increased political and economic uncertainty and sent ripples through the Spanish financial market (see Figure 1). As suggested by the results in Table 2 (event IX), the episodes of the *October 1st 2017* referendum largely reduced the CAR of Catalan firms on impact (-3.3%), in the post-event period (-5.1%) and in the longer window (-6.1%). Spanish firms were also affected, but the impact was of a lower magnitude: -1.3%, -2.8% and -3.6%, depending on the event window. Unlike in the previous episodes, the results in Table 5 show that a negative impact of similar

⁶ Table A.1 in the appendix presents the estimates of eq (5) for all ten events described in Table 1 using the [-1,5] event window.

⁷ Estimates on the [-5,1] window, available upon request, are positive (albeit not statistically significant) for both Catalan (+2.4%) and Spanish (+1.6%) firms, thereby confirming this interpretation.

magnitude occurred for Catalan firms in both tradable and non-tradable sectors. Among Spanish firms, instead, the negative effect emerged only in the tradable sector.

Also the last episode analyzed in the Catalan-Spanish relation, the declaration of independence by the Catalan Parliament on *October 27th 2017* and the immediate enforcement of Article 155 by the Spanish Senate affected the average cumulative abnormal returns of Spanish and Catalan companies. As shown in Table 2 (event X), the CAR of Catalan firms increased on impact (+2.7%), in the post-event period (+4.8%) and in the longer window (+5.6%) – thereby compensating almost exactly the losses suffered with the referendum (event IX). Spanish firms also enjoyed positive CARs: +1%, +3.7% and +5% depending on the event window. As in the previous episode related to the Catalan independence (i.e., event IX), for the Catalan firms the (positive) effect was present both in the tradable and non-tradable sector (see Table 6), whereas it emerged mostly from the tradable sector for Spanish firms.

Conclusions

Even in Western Europe, a heated debate is taking place on the economic costs of peaceful, non-violent quest for independence. Scotland, Catalonia, South Tirol are few examples of regions that have peacefully tried to become autonomous countries. This quest for independence may seem anachronistic in an ever more integrated world, in which supranational institutions, such as the EU, provide access to larger markets and contribute to equalize legislations. Instead, the existence of institutions that provide some of the economic benefits previously associated with being part of a nation, such as the access to large markets, may create more demand of independence. Faced with this quest, central governments respond by conceding more fiscal federalism and decentralization. Transitions towards more decentralization or outright independence entail economic costs and benefits. Decentralization may increase the amount of resources available to a region, if fiscal transfers to the central government are reduced. Yet, the establishment of joint responsibility over bureaucratic and fiscal procedures may increase the managing costs to firms fiscally located or operating in the autonomous region. A quest for full independence poses additional political issues, since tensions will mount between the region seeking independence and the national state. This political uncertainty has clear economic costs.

To evaluate these channels, we studied the recent Catalan-Spanish relation featuring a negotiation for more autonomy that led to the Catalan Statute and a more recent request for independence. Estimates using an event study methodology show that economic costs emerged – particularly for

firms in the tradable sector – from the approval of the Catalan Statute, which increased the bureaucratic procedures for firms using Catalan infrastructures. Instead, the ruling of the Constitutional Court that eliminated some features introduced by the Statute – such as a possible Catalan authority for fiscal collection – was associated with a positive stock market reaction for Catalan firms – again in the tradable sector. The same effects, but of a lower magnitude, emerged from these two episodes also for Spanish firms in the tradable sector.

The events related to the Catalan independence were largely surrounded by political tensions. With the October 1st referendum, the political confrontation between Catalonia and Spain reached unprecedented levels. Uncertainty grew huge, as it became increasingly more difficult to predict whether the Catalan government was about to declare independence and, in this case, how Spain would react politically and even militarily. Our empirical results show that this episode indeed imposed large economic costs on all firms. The negative stock market reaction was particularly strong for Catalan firms but – unlike in the previous episodes – no difference emerged between firms in tradable and non-tradable sectors. On October 27th, part of this political uncertainty was solved: the Catalan government declared independence and the Spanish Senate reacted by blocking the independence process. These joint events were met with a positive stock market reaction, particularly for Catalan firms.

Taken together, our results suggest that the stock market had a conservative reaction to both patterns towards more decentralization and towards independence. In the former case, the negative market evaluation of the approval of the Catalan Statute is likely to emerge in response to the increase in the number of bureaucratic and fiscal procedures associated with the newly drafted joint Catalan-Spanish responsibilities. In fact, the negative impact mostly affected Catalan firms and firms in the tradable sector. The partial reversal imposed by the Spanish Constitutional Court ruling – particularly on the joint fiscal collection – was associated with a positive effect again for Catalan firms in the tradable sector. In the latter case, markets reacted negatively to the large increase in the political uncertainty on the Catalan-Spanish controversy that occurred at the referendum day. Catalan firms were hit strongly – regardless of their sector. Among Spanish firms the effect was more concentrated in the tradable sector. The unravel of the event on October 27th certainly did not reduce the political tension between Catalonia and Spain, but it did reduce the uncertainty on the future evolution of the events. Markets reacted positively to this new information, with Catalan firms in all sectors posting large gains.

References

- Abadie, Alberto and Javier Gardeazabal. 2003. "The Economic Costs of Conflict: A Case Study of the Basque Country". *American Economic Review* 93(1): 113-132.
- Abbott, Frederick M. 1975. "Bargaining Power and Strategy in the Foreign Investment Process: a current Andean Code Analysis". *Syracuse Journal of International Law & Commerce*, 3(2): 319-358.
- Acemoglu, Daron, Simon Johnson, Amir Kermani, James Kwak, and Todd Mitton. 2016. "The value of connections in turbulence times: evidence from the United States". *Journal of Financial Economics*, 121: 368–391.
- Ahern, Kenneth R. and Amy K. Dittmar. 2012. "The changing of the boards: the impact on firm valuation of mandated female board representation". *The Quarterly Journal of Economics*, 127(1): 137-197.
- Alesina, Alberto. and Enrico Spolaore. 2003. "The Size of Nations". Cambridge (Massachusetts): MIT Press.
- Alesina, Alberto and Enrico Spolaore. 1997. "On the number and size of nations". *Quarterly Journal of Economics*, 112: 1027–1056.
- Alesina, A., E. Spolaore and R. Wacziarg (2000), Economic Integration and Political Disintegration, *American Economic Review*, 90(5): 1276-1296.
- Alesina, Alberto and Romain Wacziarg. 1998. "Openness, country size and the government". *Journal of Public Economics*, 69: 305–322.
- Bolton, Patrick, and Gerard Roland. 1997. "The breakup of nations: a political economy analysis." *The Quarterly Journal of Economics* 112(4): 1057-1090.
- Bourne, Angela K. 2014. "Europeanization and Secession: The Cases of Catalonia and Scotland". *Journal on Ethnopolitics and Minority Issues in Europe*, 13(3): 94-120.
- Castells, Antoni. 2014. "Catalonia and Spain at the crossroads: financial and economic aspects". *Oxford Review of Economic Policy*, 30(2): 277–296.
- Cederman, L. E., Hug, S., Schädel, A., & Wucherpfennig, J. 2015. "Territorial autonomy in the shadow of conflict: Too little, too late?" *American Political Science Review*, 109(2), 354-370.
- Chan Su Han, John W. Kensinger, Arthur J. Keown and John D. Martin. 1997. "Do strategic alliances create value?". *Journal of Financial Econometrics*, 46(2): 199-221.
- Chaytor, Henry J. (1933). "A History of Aragon and Catalonia". London: Methuan Publishing Ltd.
- Comerford, D, and José V Rodríguez Mora, The gains from economic integration, *Economic Policy*, Volume 34, Issue 98, April 2019, Pages 201–266

de Figueiredo Jr, R. J., and Weingast, B. R. (2005). Self-enforcing federalism. *Journal of Law, Economics, and Organization*, 21(1), 103-135.

De la Fuente, Ángel, José Luis Feito Higuera, Guillem López-Casasnovas, Clemente Polo and Joan Rossello' Villalonga. 2014. "The Political Economy of Catalan Independence". Instituto De Estudios Económicos. Available at

[https://www.ieemadrid.es/wpcontent/uploads/THE POLITICAL ECONOMICS OF CATALAN INDEPENDENCE.pdf](https://www.ieemadrid.es/wpcontent/uploads/THE_POLITICAL_ECONOMICS_OF_CATALAN_INDEPENDENCE.pdf)

Desmet, K., Le Breton, M., Ortuño-Ortín, I., & Weber, S. 2011. "The stability and breakup of nations: a quantitative analysis." *Journal of Economic Growth*, 16(3), 183.

Ferrari, Giulia, Valeria Ferraro, Paola Profeta and Chiara Pronzato. 2016. "Gender quotas: Challenging the boards, performance and the stock market", IZA working paper 10239. Available at <http://ftp.iza.org/dp10239.pdf>

Gowa, Joanne, and Edward D. Mansfield. 1993. "Power Politics and International Trade." *American Political Science Review* 87(June): 408–20.

Guidolin, Massimo and Eliana La Ferrara. 2007. "Diamonds Are Forever, Wars Are Not. Is Conflict Bad for Private Firms?". *American Economic Review*, 97(5), 1978-1993.

Haimanko, Ori, Michel Le Breton, and Shlomo Weber. 2005. "Transfers in a polarized country: bridging the gap between efficiency and stability." *Journal of Public Economics* 89(7): 1277-1303.

Henry, Elaine. 2008. "Are investors influenced by how earnings press releases are written?". *Journal of Business Communication*, 45(4): 363-407.

Huber, John. 2012. "Measuring Ethnic Voting: Do Proportional Electoral Laws Politicize Ethnicity?" *American Journal of Political Science*, 56(4): 986-1001

Kothari, S.P. and Jerold B. Warner. 2007 "Econometrics of Event Studies" In *Handbooks of Empirical Corporate Finance*, Elsevier, 3-36.

Le Breton, Michel, and Shlomo Weber. 2003. "The art of making everybody happy: how to prevent a secession." *IMF staff papers* 50(3): 403-435.

Loughran, Tim and Ananad M. Vijh. 1997. "Do Long-Term Shareholders Benefit from Corporate Acquisitions?". *Journal of Finance*, 52 (5): 1765-1790.

Maoz, Zeev. 2009. "The Effects of Strategic and Economic Interdependence on International Conflict across Levels of Analysis." *American Journal of Political Science* 53(January): 223–40.

- Martínez-Herrera, Enric. 2002. "From nation-building to building identification with political communities: Consequences of political decentralisation in Spain, the Basque Country, Catalonia and Galicia, 1978–2001." *European Journal of Political Research* 41 (4): 421-453.
- Pollins, Brian M. 1989. "Conflict, Cooperation, and Commerce: The Effect of International Political Interactions on Bilateral Trade Flows." *American Journal of Political Science* 33(August): 737–61.
- Rodrik, Dani. 2000. "How far will international economic integration go?." *Journal of Economic Perspectives* 14(1): 177-186.
- Schneider, Christina J. 2011. "Weak States and Institutionalized Bargaining Power in International Organizations". *International Studies Quarterly*, 55(2): 331-355.
- Shelor, Roger, Dwight C. Anderson and Mark L. Cross. 1992. "Gaining from loss: Property-liability insurer stock values in the aftermath of the 1989 California earthquake". *The Journal of Risk and Insurance*, 59 (3): 476-488.
- Spolaore, Enrico. 2009. "National borders, conflict and peace". NBER No. w15560.
- Weingast, B. R. (1995). The economic role of political institutions: Market-preserving federalism and economic development. *Journal of Law, Economics, & Organization*, 1-31.

Table 1

Event	Date	Description
I	<i>October 31st 2003</i>	Catalan parties propose to draft a new Statute to redefine the political status of Catalonia
II	<i>September 30th 2005</i>	Catalan Parliament approves a proposal of the new Statute
III	<i>May 10th 2006</i>	Spanish Parliament approves an emended version of the new Statute
IV	<i>June 18th 2006</i>	emended version of the Statute approved in a referendum in Catalonia
V	<i>June 28th 2010</i>	Spanish Constitutional Court emends the new Statute
VI	<i>November 9th 2014</i>	informal consultation on the political future of Catalonia takes place. Results are largely disregarded at the national level
VII	<i>June 9th 2017</i>	Catalan government Prime Minister announces a formal referendum on the self-determination of Catalonia to be held on October 1 st
VIII	<i>September 6th 2017</i>	Catalan parliament approves a law allowing the referendum to take place
IX	<i>October 1st 2017</i>	Unconstitutional referendum on independence held in Catalonia. National police forcefully tries to stop the vote
X	<i>October 27th 2017</i>	Catalan Parliament declares independence based on the referendum results. Spanish Senate enforces Article 155 of the Spanish Constitution and dismisses the Catalan government

Table 2

			[-1,1]	[-1,5]	[-5,5]
Event III	Spanish Government	CAT	-2.6%**	-5.4%***	-0.5%
	Approval	No-CAT	-2%**	-4.5%***	-1%
		# obs			
Event V	Constitutional	CAT	2.7%***	3.7%**	5.5%**
	Court Ruling	No-CAT	1.2%	1.2%	2.3%
		# obs			
Event IX	Referendum	CAT	-3.3%**	-5.1%***	-6.1%**
		No-CAT	-1.3%	-2.8%*	-3.6%*
		# obs			
Event X	Declaration of	CAT	2.7%**	4.8%***	5.6%***
	Independence & art 155	No-CAT	1.0%	3.7%**	5%***
		# obs			

Table 3 (Event III)

		[-1,1]	[-1,5]	[-5,5]
Catalan Firms	Tradable	-0.0150	-0.0556***	-0.0241
		(0.0137)	(0.0203)	(0.0160)
	Non Tradable	0.00361	-0.00278	0.0420*
		(0.0111)	(0.0181)	(0.0235)
Non Catalan Firms	Tradable	-0.00335	-0.0340***	-0.00723
		(0.00553)	(0.00817)	(0.00644)
	Non Tradable	-0.00231	-0.00930	-0.00128
		(0.00420)	(0.00684)	(0.00890)

Table 4 (Event V)

		[-1,1]	[-1,5]	[-5,5]
Catalan Firms	Tradable	0.0192**	0.0411***	0.0618***
		(0.00886)	(0.0133)	(0.0184)
	Non Tradable	0.00100	0.000240	0.0126
		(0.00984)	(0.0120)	(0.0192)
Non Catalan Firms	Tradable	-0.000415	0.000990	0.0175**
		(0.00410)	(0.00618)	(0.00850)
	Non Tradable	-0.00633	-0.00930	-0.00915
		(0.00477)	(0.00580)	(0.00933)

Table 5 (Event IX)

		[-1,1]	[-1,5]	[-5,5]
Catalan Firms	Tradable	-0.0259**	-0.0320	-0.0661**
		(0.0117)	(0.0196)	(0.0252)
	Non Tradable	-0.0310***	-0.0417***	-0.0448***
		(0.00881)	(0.0115)	(0.0165)
Non Catalan Firms	Tradable	-0.0100*	-0.0205**	-0.0358***
		(0.00542)	(0.00909)	(0.0116)
	Non Tradable	-0.00678	-0.0101	-0.0231**
		(0.00481)	(0.00627)	(0.00902)

Table 6 (Event X)

		[-1,1]	[-1,5]	[-5,5]
Catalan Firms	Tradable	0.0172	0.0322*	0.0342*
		(0.0123)	(0.0161)	(0.0196)
	Non Tradable	0.0158**	0.0293**	0.0241
		(0.00764)	(0.0129)	(0.0157)
Non Catalan Firms	Tradable	0.00427	0.0254***	0.0277***
		(0.00570)	(0.00747)	(0.00906)
	Non Tradable	0.000708	0.0123*	0.0241
		(0.00417)	(0.00703)	(0.0157)

Figure 1

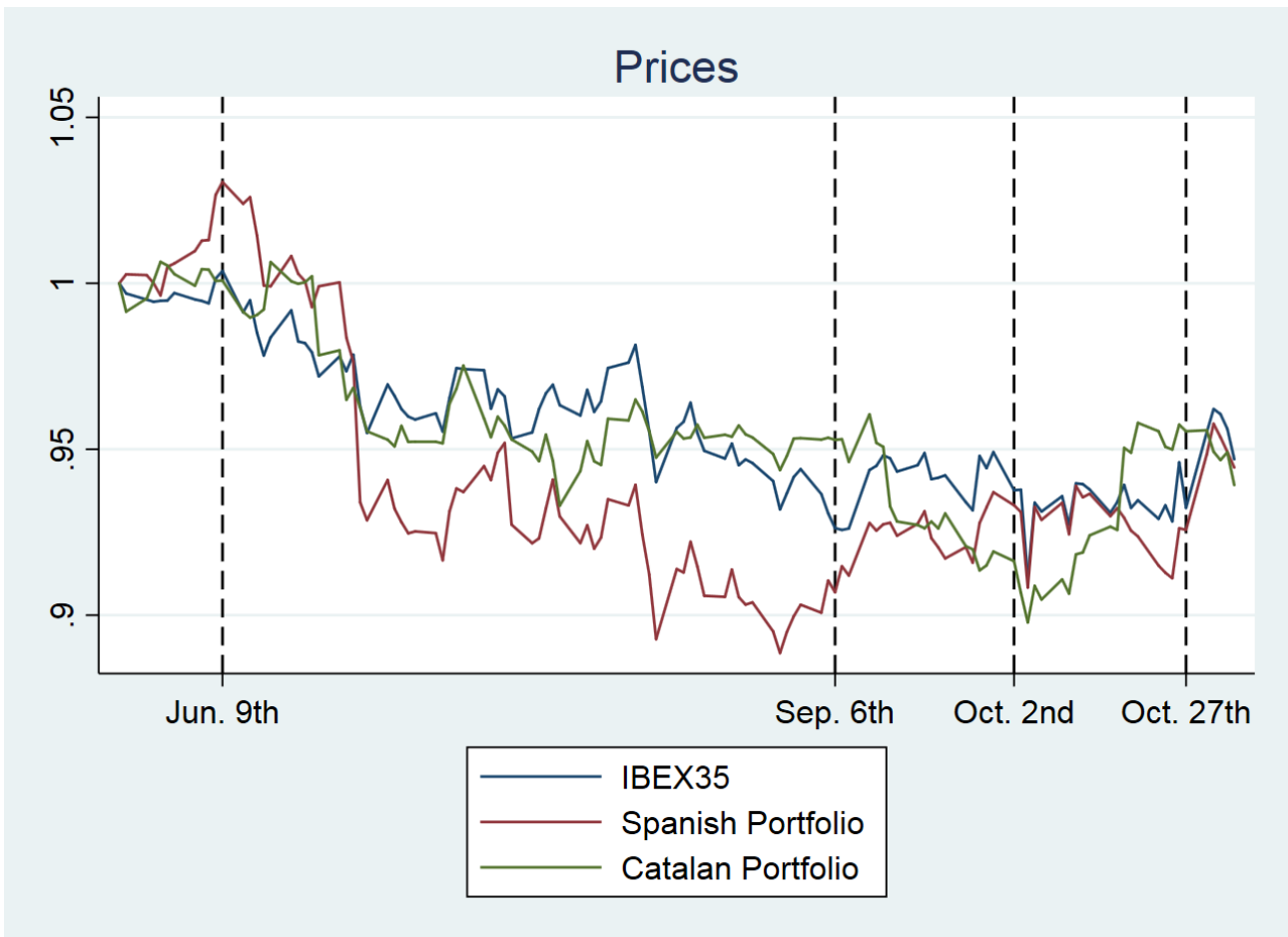


Table A.1

Event	Catalan Firms	Non Catalan Firms	# Obs
I	0.00713 (0.00965)	0.0165** (0.00720)	101
II	-0.00363 (0.0178)	-0.00679 (0.0139)	93
III	-0.0540*** (0.0197)	-0.0449*** (0.0155)	90
IV	0.0142 (0.0128)	0.00549 (0.0102)	93
V	0.0374** (0.0143)	0.0121 (0.0119)	93
VI	0.0102 (0.0257)	0.00602 (0.0214)	94
VII	0.0265 (0.0195)	0.00834 (0.0165)	99
VIII	0.00921 (0.0203)	0.00103 (0.0171)	99
IX	-0.0514*** (0.0175)	-0.0279* (0.0148)	99
X	0.0477*** (0.0172)	0.0371** (0.0145)	99

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1