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► **To cite this version:**

Renaud Coulomb, Marc Sangnier. The Impact of Political Majorities on Firm Value: Do Electoral Promises or Friendship Connections Matter?. *Journal of Public Economics*, 2014, 115 (C), pp.158-170. 10.1016/j.jpubeco.2014.05.001 . halshs-00990241

HAL Id: halshs-00990241

<https://shs.hal.science/halshs-00990241>

Submitted on 13 May 2014

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The Impact of Political Majorities on Firm Value: Do Electoral Promises or Friendship Connections Matter?

Renaud Coulomb
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WP 2014 - Nr 14

The impact of political majorities on firm value: Do electoral promises or friendship connections matter?*

Renaud Coulomb[†] Marc Sangnier[‡]

May 2014

Abstract

This paper simultaneously estimates the impact of political majorities on the values of firms that would benefit from the platforms of the two main candidates at the 2007 French presidential election, Ségolène Royal and Nicolas Sarkozy, and of those that are ruled or owned by Sarkozy's friends. We use prediction-market data to track each candidate's victory probability, and investigate how this relates to firms' abnormal returns. Our estimates suggest that the value of firms that would likely benefit from the platforms of Royal and Sarkozy changed by 1% and 2%, respectively, with the candidates' victory probabilities, and that firms connected to Sarkozy out-performed others by 3% due to his election.

KEYWORDS: Political majority, prediction markets, firm value, abnormal returns, political connections.

JEL CODES: C58, D72, D84, G14, H50.

*We are grateful to Andrew Clark, Mathieu Couttenier, Quoc-Anh Do, Roger Guesnerie, Sophie Hatte, Christoph Moser, Thomas Piketty, Grigorios Spanos, David Thesmar, audiences at the PET 2012 and EPCS 2013 conferences, seminar participants at the Aix-Marseille School of Economics, and two anonymous referees for very helpful comments. We thank Emile J. Servan-Schreiber and Maurice Balick from NewsFutures Inc., and NYSE-Euronext for access to data.

[†]Paris School of Economics, and London School of Economics and Political Science (LSE), Grantham Research Institute. E-mail: r.coulomb@lse.ac.uk

[‡]Aix-Marseille Univ. (Aix-Marseille School of Economics), CNRS & EHESS. E-mail: marc.sangnier@univ-amu.fr

1 Introduction

Political majorities affect economic activity (see Alesina and Rosenthal 1995 and Alesina et al. 1997 for seminal surveys). Elected politicians implement industrial and fiscal policies, and have power over public expenditures and the design of institutions. The decisions they take may be driven by many factors, including promises embedded in campaign platforms, or personal connections. In this paper, we simultaneously estimate the returns from the policies announced by the two main candidates at the 2007 French presidential election, Ségolène Royal—the candidate of the largest leftist party—and Nicolas Sarkozy—the candidate of the largest rightist party, and the returns from friendship connections to Sarkozy.

We use information on the abnormal returns of French firms and prediction-market data relating to election to provide these estimates. We focus on the months preceding the election and correlate the daily abnormal stock returns of firms belonging to different groups to changes in each candidate’s victory probability, where the latter are measured using prediction-market prices. The returns of firms which would benefit from the platforms of Royal or Sarkozy are positively correlated with changes in “their” candidate’s probability of victory. Moreover, firms with top executives or major shareholders who are Sarkozy’s friends exhibit abnormal returns that are positively correlated with changes in his probability of winning the election. The effect of a Sarkozy victory on these firms is stronger than that for firms which would only benefit from his campaign platform.

While previous work has looked at how firms benefit from either platforms or connections, this paper is the first to jointly estimate the returns from platforms and the returns from connections to a candidate. As in existing work, we use changes in firm value to reflect the economic consequences of political majorities.¹ We estimate that the value of firms that would benefit from the platform of Sarkozy increased by 2% due to his election. The value of firms that would benefit from the platform Royal would have increased by 1% if Royal had been elected. These effects are of the same order of magnitude—but slightly smaller—than those found in Herron et al. (1999), Herron (2000), Knight (2007), Snowberg et al. (2007a) and

¹See Roberts (1990a,b) for an early study of market reactions to political outcomes, and Bernhard and Leblang (2006) for a thorough survey.

Mattozzi (2008), who estimated the value of policy platforms in Great Britain and the United States.² The estimates in this existing work range from 2% to 5%.

We also show that firms connected to Sarkozy out-performed other firms by 3% due to his election. Previous estimates of the value of political connections range from 0% for personal connections to the American Vice-President Cheney (Fisman et al. 2012), to 23% for connections to the Indonesian President Suharto (Fisman 2001). The estimated effects in the literature vary according to the political and historical context, and the nature of the connections. In the United States, Jayachandran (2006) and Goldman et al. (2009) find that firms that are connected to parties via donations or the political affiliation of board members are worth 1%–3% more than are others, Luechinger and Moser (2012) uncover an extra-return of 1% for firms connected to the Defense Department, while Do et al. (2012a,b) report returns of up to 3% for connections to the State governor or local politicians. Cingano and Pinotti (2013) consider the returns to being connected to local politicians in Italy and report a figure of 5%. A similar effect is found by Göktepe and Satyanath (2013) for firms which are financially connected to the military in Turkey. In a cross section of countries, Faccio (2006) estimates an average excess return of 4% for firms connected to Parliamentarians or Ministers in corrupt countries. Finally, Ferguson and Voth (2008) and Li et al. (2008) report effects of up to 8% for firms connected to the ruling party in Nazi Germany and China.³ The approach we take here contrasts with all previous work on personal connections, as we consider friendship-based connections to the politician rather than connections based on school history, party affiliation, or campaign contributions.

Work on the impact of political majorities on the economy suffers from the lack of the counterfactual. Event studies help alleviate this concern. This approach relies on the evaluation of firm performance following events that affect politicians but are as unexpected as possible. Traditional event studies suffer from two main weaknesses: (i) any event will arguably have a prior probability that is likely al-

²See also Imai and Shelton (2011) for an analysis of campaign platforms in Taiwan.

³See also Faccio and Parsley (2009), Cooper et al. (2010), and Acemoglu et al. (2013) for other studies of returns from connections in the United States, Fan et al. (2007) and Cheung et al. (2010) for the effect of political connections on firm management in China, Faccio et al. (2006) for political connections and corporate bailouts in a cross-section of countries, and Johnson and Mitton (2003), Khwaja and Mian (2005) and Claessens et al. (2008) for political connections and access to finance in Thailand, Pakistan and Brazil, respectively.

ready taken into account by agents; and (ii) the researcher has to decide both which events to use and the time windows to retain around the events. To overcome these problems, one can focus on close elections. But, such events may be infrequent in general, and very scarce for major political contests such as presidential elections. Another approach consists in prediction-market event studies. Prediction-market event studies overcome these drawbacks by letting the data determine both the relevant events and their prior probabilities (Snowberg et al. 2011). A prediction market is one in which Arrow-Debreu securities are traded, i.e. contracts that pay some pre-determined amount if and only if a certain event occurs at a certain point in time. When these contracts cover the election of a candidate, the prediction market provides expectations data concerning his chances of success.⁴

To track the victory probabilities of each candidate in the 2007 French presidential election, we use the prices of *winner-take-all* contracts linked to the victory of Royal or Sarkozy. These contracts were offered by NewsFutures.com, a prediction-market company. Under the efficient-market hypothesis, the prices of such winner-take-all contracts can be interpreted as the average probability of the candidate's victory as estimated by the market. This is the best prediction of future outcomes given the current stock of public information. Any change in the prices of these contracts then reflects the arrival of unexpected relevant political news.⁵

Our analysis is based on the 119 largest firms listed on the French stock market. We analyze the correlation between changes in a candidate's victory probability and the abnormal stock market returns of firms between January 1st 2007 and the day of the election, i.e. May 6th 2007. Abnormal returns are the part of its returns that are uncorrelated with average stock-market developments. Under the assumption that stock-market participants will use all available information, the abnormal returns of firms that are believed to benefit from the election of a precise candidate will be positively correlated with changes in that candidate's probability

⁴Prediction-market data have been used by Herron et al. (1999), Knight (2007), Snowberg et al. (2007a), Snowberg et al. (2007b), Mattozzi (2008), Fisman et al. 2012 and Imai and Shelton (2011), amongst others.

⁵See Snowberg et al. (2005) for a discussion of prediction-market efficiency, Manski (2006) and Wolfers and Zitzewitz (2004, 2006a) for the interpretation of prediction-market prices as probabilities, and Wolfers and Zitzewitz (2006b) and Snowberg et al. (2011) for recent advances in the use of prediction-market data.

of victory.

We propose an analysis of the impact of political majorities on particular groups of firms. This approach contrasts with that in Herron et al. (1999), who consider the effects of political majorities at the sectoral level, and Snowberg et al. (2007a,b) who analyze aggregate values (stock-market indexes, oil prices, bonds, the future price of dollars, etc.). We examine two potential transmission channels from politics to firm value: policy platforms and personal connections. To this end, we construct three different groups of firms. Two of these groups consists of firms that would benefit from the policies announced by Sarkozy and Royal. As in Knight (2007), we rely on the judgments of financial analysts to construct these groups. The third group consists of firms owned or managed by friends of Sarkozy. This group is constructed in two steps. First, we rely on two books written by journalists and political pundits (Chemin and Perrignon 2007, and Dély and Has-soux 2008) to establish a list of businessmen who are connected to Sarkozy. We then look for the firms that these businessmen owned or managed during the first few months of 2007. Friendships between Sarkozy and businessmen were widely-discussed in the French media, both before and after the election. As such, the network we analyze may be considered as more visible than one constructed from the analysis of *curricula vitae*.

We find that changes in the probability of a Sarkozy victory are positively associated with the abnormal returns of both firms belonging to his personal network, and those that are expected to benefit from his political platform. These two effects are independent of each other, and the former is about half as large as the latter. The probability of a Royal victory is also associated with abnormal returns for the firms which would benefit from her platform, but not significantly so. We also provide some evidence that the abnormal returns of firms in Sarkozy's personal network fall with the probability of a Royal victory. Finally, we disaggregate the Sarkozy network by proximity to the candidate, and find that the correlation between his victory probability and firm abnormal returns is stronger for firms owned or managed by his closest friends. Various empirical strategies underline the robustness of our identification method and the causal interpretation of the estimated correlations. For example, we control for firm size, industries to which firms belong, and state ownership.

The remainder of the paper is organized as follows. Section 2 presents prediction-market data for the 2007 French presidential election, the way in which the different groups are constructed, and our identification strategy. The baseline empirical results, robustness checks, and additional results are then presented in Section 3. Last, Section 4 briefly concludes.

2 Data and estimation strategy

This section first presents the data used in this paper with respect to political expectations, firm values, and the construction of firm groups. We then explain our estimation strategy.

2.1 Prediction-market data for the 2007 French presidential election

French citizens elect their president for a five-year term by direct universal suffrage. For the past two terms, the presidential election has immediately preceded parliamentary elections, and perfectly forecasted the future political majority in the French parliament. In the 2007 election, the two main political candidates running for office were known by the beginning of January of that year. Ségolène Royal was declared as the official candidate of the largest leftist party—the “*Parti Socialiste*”—after primaries on November 16th 2006. Although the primaries of the largest rightist party—the “*Union pour un Mouvement Populaire*”—only ended on January 14th 2007, it had already been clear for quite some time that Nicolas Sarkozy would be the party’s candidate.⁶ The 2007 French presidential election was held on April 22nd. As no candidate received a majority of votes, a run-off between the two top vote-getters was held on May 6th. This second run-off was between Sarkozy and Royal, with the former finally winning with 53.06% of the votes.

We use data from a prediction market—NewsFutures.com—to measure daily changes in each candidate’s victory probability over the pre-election period. In this

⁶Sarkozy became the only candidate for the primaries after Michelle Alliot-Marie withdrew on December 27th 2006.

prediction-market, people buy and sell winner-take-all contracts linked to Royal or Sarkozy. These contracts offer a 100-unit payoff if and only if the associated candidate wins the election. The exchange price of these contracts depends on the instantaneous matching of demand and supply through a limit-order-book. Once two opposite orders match, a transaction takes place. The history of prices, bid and ask orders, and the number of contracts in circulation are common knowledge among bettors. Until the outcome of the election is known, the trading prices reflect the collective opinion of bettors about the expected value of the contracts, i.e. the average probability of each candidate's victory as estimated by market participants. Under the efficient-market hypothesis, prices reflect all information about the expected probability of each candidate's victory.⁷

Prediction markets have advantages over opinion polls and pundits: they provide high-frequency data and are designed to incorporate uncertainty. Moreover they are also known to predict political outcomes accurately. The forecast capacity of prediction markets is based on their three key characteristics: they create incentives to seek information; they provide incentives to truthfully reveal information; and they offer an algorithm with which to aggregate beliefs (Wolfers and Zitzewitz 2004).⁸

The NewsFutures.com prediction market was active 7 days a week and 24 hours a day from the end of 2005 to May 6th 2007. We collected the entire history of transactions of the winner-take-all contracts linked to Royal and Sarkozy and reconstructed the opening and closing prices to match French stock-market opening times.⁹ We then define the daily change in percentage of each candidate's probability of election as the ratio of the gap between the closing and opening prices to the opening price.

Figure 1 plots opening prices of winner-take-all contracts tied with Royal and Sarkozy from September 1st 2006 up to the second round of the French presidential

⁷See Wolfers and Zitzewitz (2004, 2006a), Manski (2006), and Gjerstad (2004) for the relationship between equilibrium price, the distribution of beliefs, and risk aversion.

⁸The forecast accuracy of opinion polls and prediction markets is compared in Berg et al. (2003, 2008a,b), Kou and Sobel (2004) and Lee and Moretti (2009). Equally, Wolfers and Leigh (2002) and Rhode and Strumpf (2004) show that prediction markets provide accurate forecasts of electoral outcomes in contexts where no scientific opinion polls are available.

⁹For each contract, we define the opening price as the price of the closest transaction to 9am, and the closing price as the price of the closest transaction to 5.30pm French legal time.

election, together with some campaign events. It shows that these prices responded quickly to relevant campaign events, and not at all to non-events. This supports the idea that they are accurate assessments of each candidate's probability of victory. First, the price of the contract linked to Sarkozy is around 50 from the beginning of the series. The official end date of the Right-wing primaries is not associated with any sizable rise in this contract price. This echoes the fact that there was not much uncertainty that Sarkozy would be the Right-wing candidate. By way of contrast, the price of the Royal contract steadily converges toward 50 as we approach the date of the Left-wing primaries. Over this period, we can also see a large residual price—the difference between 100 and the sum of Sarkozy's and Royal's contracts prices—that drops as it becomes clearer that Royal is going to be the Left-wing candidate. Second, the only real bump observable in the residual price series occurs in March 2007, the period during which a third candidate appeared as a credible alternative.¹⁰ Third, some uncertainty about the candidacy of Jacques Chirac, the former Right-wing President, persisted until he publicly withdrew on March 11th. This event is linked to a clear rise Sarkozy's probability of victory, as measured in the prediction-market prices. Fourth, we see no noticeable changes in prices at the official dates of the electoral campaign (i.e. the official release of the list of candidates, and the start of the period during which candidates' media time is more strictly controlled). This is consistent with the fact that no meaningful information was revealed on those dates. Fifth, contract prices correctly predict the two "winners" of the first round (the sum of both prices equals 100 at this date). Sixth, the most important event between the two rounds of the election was the televised debate between Royal and Sarkozy on May 2nd. Pundits expressed mixed feelings about the outcome of the debate, but an immediate opinion poll revealed that 53% of viewers considered that Sarkozy had been "more convincing" than his

¹⁰This third candidate was François Bayrou. He declared himself as candidate for the presidential election on December 2nd 2006. He ran for the main centrist party: the "*Mouvement Démocrate*". According to different opinion polls, his expected share of the first-round vote rose from 14% mid-February to 20% by the beginning of March and peaked at around 25% during the rest of the month. Over the same period, opinion polls predicted that Sarkozy and Royal would obtain respectively around 28% and 25% of the first-round votes. Bayrou finally received 18.57% of first-round votes, while the figures for Sarkozy and Royal were respectively 31.18% and 25.87%.

opponent during the debate, as opposed to 31% for Royal.¹¹ The prices reflect this information, with this date corresponding to the final divergence between both prices. Finally, contract prices correctly predict the final election outcome.

We note that our NewsFutures.com data share several weaknesses with other prediction markets. For instance, NewsFutures.com has a small number of participants. This small size may hamper the accurate aggregation of information. To mitigate this problem, we will only use data from January 1st 2007 onwards, where Figure 2 shows this market had reached a reasonably high volume. Moreover, by this time the main candidates were already known.¹²

Another potential weakness of NewsFutures.com data is that this website used virtual currency, as required by French law. Each bettor initially received a free endowment of play-money. The lack of a monetary payoff may cast doubt on whether this market can effectively aggregate information regarding the election outcome. Three remarks help alleviate this concern. First, bettors are ranked on the website according to their virtual wealth, which is also displayed. This symbolic payoff creates incentives to predict well, according to the enthusiastic comments of bettors on the website forum. Moreover Luckner and Weinhardt (2007) find that a rank-order tournament leads to better predictions than an individual-performance-related payoff. Second, the virtual-money rewards allow players to participate auctions for real goods such as TVs, which creates real incentives. Third, play-money prediction markets have been shown to be as accurate as real-money prediction markets (Servan-Schreiber et al. 2004, Gruca et al. 2008, and Slamka et al. 2008). These remarks, and the price movements discussed above, make us confident that NewsFutures.com data accurately reflect changes in the winning probabilities of the two main candidates, despite the clearly-identified drawbacks and limitations of prediction-market data.

¹¹This opinion poll was carried out by Opinion Way on May 2nd (after the debate) and May 3rd 2007.

¹²Note that even if there is little or no exchange activity during a day, this does not necessarily mean that the prediction market is inefficient: if no relevant information is revealed, no price changes should occur.

2.2 Stock-market returns and groups of firms

The SBF 120 is a reference index composed of the 120 most actively-traded stocks on the Paris Stock Exchange. In this paper, we use daily stock values of 119 of the firms that made up the index from mid-2006 to mid-2007. We exclude Eurotunnel as its trading was suspended for a large part of the period. We obtain detailed daily stock data—corrected for mergers and acquisitions—from Euronext and calculate the daily return of each firm as the percentage change between the opening and closing prices. We then construct three different groups of firms: two groups of firms expected to benefit from the platforms of Sarkozy or Royal, and a third group of firms managed or owned by individuals who are connected to Sarkozy. The full list of firms included in the different groups can be found in Table A1 in the Online Appendix, and the distribution of firms across groups is shown in Figure 3.

To construct the groups of firms that would benefit from the victory of each of the candidates, we refer to a report produced by experts from La Société Générale, a leading French bank. To produce this report, the experts analyzed the electoral platforms of Sarkozy and Royal. They defined two portfolios composed of selected firms which would benefit from the reforms announced by each of the two candidates. That experts focus on these two candidates, rather than any other platforms, reflects the two-horse nature of the electoral race. The technical information relating to the selection of firms is not available, but, according to La Société Générale (2007), the experts paid particular attention to reforms concerning the labor market, the housing sector, corporate taxes, environmental questions, and health and pension systems. They also took into account the financial situation of each firm, as well as the industrial sector in which it operates, to determine whether they would benefit from each platform. Experts may thus have considered that one firm would benefit from a platform while another firm in the same industry would not. An important feature of the analysis conducted by La Société Générale’s experts is that it is qualitative. As such, there is *a priori* no reason to expect the same return from both portfolios under their particular favorable state of nature. Of the 41 firms identified as benefiting from the platforms of one or the other candidate, 35 are listed in the SBF 120. Of these 35, 12 were thought to benefit only from Royal’s platform, 14 from that of Sarkozy, and 9 from both, as

illustrated by Figure 3.

Before and after the 2007 election, French media reported a number of connections between Sarkozy and prominent businessmen, while no such connections were reported for Royal. For example, the term “*valeurs Sarkozy*” (“Sarkozy Index”) has sometimes been applied to firms like Dassault, Lagardère, and Bouygues. We construct a list of businessmen connected to Sarkozy using the information in Chemin and Perrignon (2007) and Dély and Hassoux (2008). These are books written by journalists and political pundits after the 2007 French presidential election, but the information contained therein was publicly-known before the election. We avoid judgment calls as far as possible and consider all individuals presented as Sarkozy associates by the authors. The unbridled French passion for this question during the years that preceded and followed the election makes us confident that these two books contain the most important connections between the Right-wing candidate and businessmen. To the best of our knowledge, none of these connections have ever been publicly denied.¹³

Some of these connections were definitely in evidence on the evening of May 6th 2007, the night immediately following the election. Before addressing the French people, Sarkozy invited a group of his friends to Le Fouquet’s, a famous high-class restaurant in Paris, to celebrate his victory. The guests were artists, politicians, and businessmen.¹⁴ Among the latter group, the names of 11 individuals appear and all 11 are contained by our list of Sarkozy-connected businessmen.¹⁵ According to the sources we use, 10 other businessmen were connected to the recently-elected President but did not attend the dinner.¹⁶ We looked for SBF 120 firms that these businessmen managed or owned in the first few months of 2007. To assess

¹³Confirmatory additional information is contained in Pinçon and Pinçon-Charlot (2010).

¹⁴This dinner and the guest list represented a founding moment of Sarkozy’s term. Both have been extensively discussed by French media.

¹⁵The businessmen connected to SBF 120 firms and who attended the dinner at Le Fouquet’s are: Bernard Arnault, Nicolas Bazire, Vincent Bolloré, Martin Bouygues, Serge Dassault, Jean-Claude Decaux, Paul Desmarais, Albert Frère, Pierre Giacometti, Patrick Kron, and Henri Proglia (Chemin and Perrignon 2007, pp. 11-16).

¹⁶The businessmen connected to SBF 120 firms and who did not attend the dinner at Le Fouquet’s but who are known to be connected to Sarkozy are: Daniel Bouton (Dély and Hassoux 2008, p. 99), Henri De Castries (Ibid., p. 116), Jean-René Fourtou (Ibid., p. 116), Arnaud Lagardère (Ibid., p. 118), Anne Lauvergeon (Ibid., p. 121), Michel Pébereau (Ibid., p. 116), Gilles Pélisson (Le Point 2008), François Pinault (Dély and Hassoux 2008, p. 99), Franck Riboud (Les Echos 2007) and Jean-Philippe Thierry (Dély and Hassoux 2008, p. 116).

ownership, we checked whether an individual holds—directly or through another firm—over 5% of firm shares or voting rights.¹⁷

We can illustrate the public nature of the connections between Sarkozy and the businessmen we identified as being in his network by counting the number of times each of them was cited jointly with Sarkozy in the French press from September 2006 to August 2007. We compare these numbers to those for a randomly-selected group of businessmen who were chief executive officers or chairmen of other SBF 120 firms at that time.¹⁸ As shown in Table 1, the businessmen listed in Sarkozy’s network appear on average 28 times in the press jointly with the candidate from September 1st to December 31st 2006. On the contrary, the analogous figure for the randomly-selected businessmen is only 8. The two figures are statistically different from each other, and this gap grows over time, reaching a maximum of around 102 in the four months after the election.

This difference might reflect composition. For example, the businessmen connected to Sarkozy might attract more cites in any case just because they are more important in the French economy. To investigate this possibility, we count the total number of cites of each businessman’s name. Those linked to Sarkozy are more likely than others to have their name in the press, but the difference between the two groups is barely different from zero when we consider the cites without “Sarkozy”. A second confounding factor could be that the businessmen in Sarkozy’s network differ from others due to their particular relations to politicians. To test this hypothesis, we consider the number of times each businessman’s name appeared in the press jointly with “Royal” over the same period. The businessmen in Sarkozy’s network have significantly more cites with “Sarkozy” than with “Royal”, which likely reflects their particular relationship with the Right-wing candidate. We think this is strong evidence that these businessmen are personally connected to Sarkozy and that this was public information.

Table 2 shows the descriptive statistics for the average returns of firms in the different groups from January 1st to May 6th 2007. The upper part of the table displays standard returns. Firm performance differs by group, although many of

¹⁷The detailed matches between businessmen and firms appear in the Online Appendix.

¹⁸The data were retrieved from Factiva.com. See the Online Appendix for technical information and the raw data.

these differences are not statistically significant. Firms that would benefit from Royal's platform out-perform all other firms, with the notable exception of those that would benefit from Sarkozy's platform. The lower part of the table displays compound abnormal returns and dilutes the former observation. Only firms that belong to none of our three groups slightly under-perform others over the campaign period.

Figure 4(a) provides a visual representation of the correlation between the probability of a Sarkozy victory and the difference between the log prices of firms listed in his network and those of all other firms in the SBF 120. The correlation is positive, suggesting that connections to Sarkozy matter for firm value. Figures 4(b) and 4(c) replicate this figure for firms that would benefit from the two policy platforms. While the correlation is clearly positive for firms that would benefit from the Sarkozy platform, the analogous relationship for Royal is less clear. Our regression analysis below will formally analyze the size and the significance of these correlations.

2.3 Estimation strategy

We now describe the empirical strategy used to estimate the market value of policy platforms of the two 2007 French presidential election candidates, as well as that of a personal connection to Sarkozy. To this end, we examine the correlation between changes in the candidates' victory probabilities and the abnormal returns of firms listed on the French stock market. These abnormal returns represent the part of returns that cannot be simply explained by the overall movement in the stock market. Using abnormal returns allows us to look directly at the over- or under-performance of firms under each possible outcome of the election (Knight 2007).

We follow MacKinlay (1997) in constructing firm abnormal returns. We first estimate the relationship between the firm's return and that of the market before the period under consideration. We then predict a firm's returns from the market returns observed each day during the event window. Specifically, we run the following regression for each firm i using daily returns between September 1st and

December 31st 2006:

$$\mathbb{R}_{it} = \alpha_i + \beta_i \times \bar{\mathbb{R}}_t + \varepsilon_{it},$$

where \mathbb{R}_{it} is firm i 's stock return on day t , $\bar{\mathbb{R}}_t$ is the market return on day t , and ε_{it} is the error term.¹⁹ We estimate this expression separately for each firm, which yields firm-level estimated parameters $\hat{\alpha}_i$ and $\hat{\beta}_i$. These are used to compute the abnormal returns of each firm from January 1st 2007 to the election date using the following formula:

$$\tilde{\mathbb{R}}_{it} = \mathbb{R}_{it} - \left\{ \hat{\alpha}_i + \hat{\beta}_i \times \bar{\mathbb{R}}_t \right\},$$

where $\tilde{\mathbb{R}}_{it}$ is the abnormal return of firm i on day t .

To understand the relationship between changes in candidates probabilities of victory and firm abnormal returns, we estimate the following equation using daily firm-level observations from January 1st to May 6th 2007:

$$\begin{aligned} \tilde{\mathbb{R}}_{it} &= \beta_S \times \Delta\text{Sarkozy}_t + \gamma_S \times \mathbb{1}\{\text{Group}_g\}_i \times \Delta\text{Sarkozy}_t \\ &\quad + \beta_R \times \Delta\text{Royal}_t + \gamma_R \times \mathbb{1}\{\text{Group}_g\}_i \times \Delta\text{Royal}_t \\ &\quad + \alpha + \mathbb{I}_i + \varepsilon_{it}, \end{aligned} \tag{1}$$

where $\Delta\text{Candidate}_t \in [0, 1]$ denotes the daily relative change in Royal's or Sarkozy's victory probability, $\mathbb{1}\{\text{Group}_g\}_i$ is 1 if firm i belongs to group g (either the *Sarkozy network*, the *Sarkozy platform* or the *Royal platform*), \mathbb{I}_i is a firm fixed effect, ε_{it} is the error term, and α is a constant. The parameters β_S and β_R capture the effects of changes in the winning probability of both candidates on all firms' abnormal returns. The parameters γ_S and γ_R then capture any additional effects of changes in both candidates' victory probabilities on firms in group g compared to a hypothetical, counterfactual, third-party administration. The difference $\gamma_S - \gamma_R$ can be directly interpreted as the gap in the returns of firms in group g under a Sarkozy as opposed to a Royal administration. We estimate expression (1) for all firms listed in the SFB 120 using ordinary least squares and White heteroskedasticity-consistent standard errors.

For our empirical approach to be valid, we require that the prediction and

¹⁹We use the average daily return of stocks in the SBF 120 as the market return. Results using the SBF 120 index, which takes relative firm sizes into account, to calculate the market return are very similar.

stock markets incorporate new political information similarly. For this to hold, investors and bettors should have access to the same information, use the same implicit model to infer victory probabilities from political news, and react at the same speed. Fama (1970) categorizes market efficiency into three forms: strong, semi-strong and weak, according to the set of information already embedded in current prices (respectively: all of the public and private information, all the public information, and the whole history of prices). In the Online Appendix to this paper, we test the weak and semi-strong efficiency hypotheses for our prediction-market data: the results of these tests do not encourage us to reject these hypotheses and we thus consider them to hold.²⁰

3 Results

This section first presents the main results on the effect of changes of candidates' victory probabilities on firm abnormal returns. We then appeal to various strategies to demonstrate the robustness and causal interpretation of these correlations. Finally, we provide complementary results about the value of Sarkozy's personal network by disaggregating the effect according to proximity to the candidate. The period used for the analysis runs from January 1st to May 6th 2007. The latter is the date of the second round of the 2007 French presidential election.²¹ We interpret the estimated effects as impacts as perceived by equities traders—which may be incorrect—under the assumption that changes in the winner-take-all prices reflect movements in the candidate's probability of victory.

3.1 Baseline results

Table 3 presents the estimated coefficients from equation (1). The interaction terms of changes in victory probabilities with the firms that are identified in the

²⁰The semi-strong efficiency hypothesis is explicit or implicit in most prediction-market event studies (see Knight 2007 and Snowberg et al. 2007a,b, among others). In addition, private information concerning presidential-election outcomes can be considered to be so scarce that it is not worth analyzing the strong efficiency hypothesis.

²¹The results are very similar if we limit the period up to the first round of the 2007 French presidential election. They are presented in Coulomb and Sangnier (2012).

different groups appear separately in the first three columns. In column 1, the group of interest is the Sarkozy network, and in columns 2 and 3 the firms that would benefit from the platforms of Sarkozy and Royal, respectively. In column 4 all interactions are entered jointly.

The estimated coefficients in column 1 of Table 3 show that changes in Sarkozy's probability of winning are positively associated with abnormal returns for the firms in his personal network. This effect is statistically significant at the 1% level. The abnormal returns of these firms also appear to be negatively correlated with changes in Royal's victory probability, although this correlation is less significant. The second column shows a positive and statistically significant relationship between changes in Sarkozy's probability of winning and the abnormal returns of firms that would benefit from his platform. These firms are not estimated to suffer particularly from the election of Royal. Column 3 shows that the correlation between changes in Royal's victory probability and the abnormal returns of firms that would benefit from her platform is positive, but at just above the traditional 10% statistical significance threshold. The results in the last column of Table 3, where all interactions appear together, are consistent with the separate results in the first three columns.

The estimated coefficients suggest that the firms in Sarkozy's network are worth around 3% more due to his election. Similarly, firms that are thought to benefit from his platform outperform others by around 2%. Although less statistically-significant, the estimated coefficient of the effect of Royal's victory probability on firms that would benefit from her platform suggests that these firms would have enjoyed a 1% performance premium had she been elected. A back-of-the-envelope calculation yields an intuition of the economic importance of these effects by computing absolute changes in stock-market capitalization of the different groups due to the realization of their favorable political scenario. Taking firms' stock-market capitalization at the end of December 2006 as the starting point, the total excess value of each of the three groups due to the changes in victory probabilities provides an approximate value for the candidates' platforms and Sarkozy's network. This gives a figure for the latter of 16.29 billion euro, and that of the Sarkozy platform of 5.92 billion euro, whereas that of Royal's platform is 3.55 billion euro.²²

²²The detailed calculation is as follows. By the end of December 2006, the total stock-market

As a comparison, French GDP was equal to 1886.8 billion euro in 2007, including 497.2 billion euro of government final consumption and investment expenditure.

That changes in Royal's victory probability have a smaller effect on returns of firms that would benefit from her platform can be interpreted in two, not necessarily contradictory, ways. First, assuming that market participants believe that the Left-wing candidate would effectively have implemented the reforms she announced, the lower point estimate may reflect a smaller expected economic value of these reforms. It is worth recalling that the analysis from La Société Générale's experts separated firms into qualitative rather than quantitative groups, so that the change in portfolio returns under their favorable states of nature need not be the same. Second, it is also possible that uncertainty was at play: there may have been doubts about whether the reforms announced in Royal's platform would really be carried out, or about the details of their implementation.

The point estimates on the interaction terms of interest suggest that the effect of Sarkozy's election on firms in his network is about fifty percent larger than that on firms that would benefit from his platform. However, the formal test of the null hypothesis that the coefficient of *Sarkozy platform* \times Δ *Sarkozy* is larger than the coefficient of *Sarkozy network* \times Δ *Sarkozy* yields a p-value of only 0.21. We therefore cannot be sure that the effect of friendship connections to Sarkozy is larger than the expected effect of his platform.²³

capitalization of firms in the Sarkozy network amounted to 499.62 billion euro. From January 1st 2007 to the election, the probability of victory of this candidate went from 0.5 to 1, which represents a total relative increase of 100 percent. According to estimates of the fourth column of Table 3, the effect of changes in this candidate's probability of victory on abnormal returns of firms belonging to his network equals 0.033, we obtain a total excess value of $0.033 \times 499.62 = 16.29$ billion euro due to the election of Sarkozy for this group of firms. As by the end of December 2006 the total market capitalization of firms that would benefit from the platforms of Sarkozy and Royal were 289.47 and 361.40 billion euro, respectively, we obtain $0.020 \times 289.47 = 5.92$ billion euro for the value of Sarkozy's platform and $0.010 \times 361.40 = 3.55$ billion euro for that of Royal's platform.

Note that this back-of-the-envelope calculation applies the three average estimated effects on firms of different size. As such, it neglects potential issues related to heterogeneity in firms' reactions to changes in victory probabilities depending on their size. Such issues will be discussed later on.

²³Similarly, the test of the null hypothesis that *Royal platform* \times Δ *Royal* is larger than *Sarkozy platform* \times Δ *Sarkozy* provides a p-value of 0.20, whereas the test of the null hypothesis that *Royal platform* \times Δ *Royal* is larger than *Sarkozy network* \times Δ *Sarkozy* yields a p-value of 0.02.

3.2 Robustness checks

This subsection discusses the inter-related issues of identification and causal interpretation, and our strategies to tackle these issues.

A first concern is that there may be a daily co-movement between a given candidate's probability of winning the election and aggregate stock market returns. This would be the case were market participants to expect that the election of a specific candidate would affect the whole economy in a certain way. The regression of SBF 120 daily returns on changes in the two candidates' victory probabilities provides White heteroskedasticity-consistent p-values of 0.174 for $\Delta Sarkozy$ and 0.925 for $\Delta Royal$. However, any such co-movements have already been washed out by the use of daily abnormal returns rather than standard stock returns.

A second concern is reverse causality. Here, stock-market returns (our left-hand side variable) could influence the election probabilities of the different candidates as measured by winner-take-all contracts (our right-hand side variables of interest). This may come about because either (i) stock-market returns affect the election probabilities of the two candidates, or (ii) prediction-market participants make their decisions as a function of stock returns. A related issue reflecting the relatively small size of the prediction market is that political information may be incorporated more quickly in stock markets than prediction markets. A first response to these issues is to note that we regress individual stock returns on each candidate's victory probability. It seems unlikely that the performance of a single stock would significantly affect the election outcome. A second response relies on regressions using lags and leads in information (Knight 2007). Table 4 presents the estimated coefficients on the interactions using the lag and lead of the change in prediction-market prices and the associated interaction terms. If the relevant political information is used more quickly in the stock than the prediction market, lagged prediction-market price changes should explain stock returns better than contemporaneous changes. If stock-market prices were to explain the candidates' election probabilities, then the introduction of lead information should reduce the explanatory power of contemporaneous information. The estimated coefficients in Table 4 do not support these hypotheses. Although some of the lag and lead terms are statistically significant, their introduction does not dramatically affect the size

or the statistical significance of the interaction terms with the contemporaneous changes in prediction-market prices.

A third robustness issue concerns common shocks to candidates and firms. Two types of shocks may produce our baseline results: (i) a slow-moving omitted variable that simultaneously pushes up (down) certain firms' abnormal returns and Sarkozy's (Royal's) chances of being elected over the whole period preceding the election; (ii) daily shocks that simultaneously affect firms with common characteristics and the candidates' daily victory probabilities. We tackle the first issue by including firm-specific time trends, and the second by introducing a large set of interactions between changes in political expectations and observable firm characteristics. This latter approach also takes into account the potential overlap of the candidates' platforms and Sarkozy's network with particular industries.

The first column of Table 5 adds firm-specific time trends to the baseline empirical specification. The estimated interaction terms of interest are unaffected in both sign and significance. The second column presents the baseline interaction terms alongside interaction terms between the changes in prediction-market prices and the following observable firm characteristics: size, industry, and state ownership. As a proxy for size, we use a dummy variable for firms belonging to the CAC 40—the index of the 40 largest firms listed on the French stock market.²⁴ We allocate firms to ten different industries using the Euronext classification. Finally, we assess state ownership using Ernst & Young (2007). The third column of Table 5 displays the estimated coefficients when including both time trends and the additional interaction terms. Controlling for all observable characteristics simultaneously barely affects the baseline estimates. However, the estimated returns of personal connections and the policy platform of Sarkozy are now remarkably close to each other. These results also show that the effect of different political majorities does not operate primarily via state ownership of firms.

²⁴Using firm stock-market capitalization rather than a dummy variable yields to identical results. Yet, the dummy facilitates coefficients' interpretation.

3.3 Additional results

We here first investigate whether policy and personal effects are independent of each other. We then propose a disaggregation of the Sarkozy’s personal network into close friends and other members of his personal network. We also refine the previous back-of-the-envelope calculation made to assess the total value of platforms and connections to Sarkozy.

Figure 3 shows that six firms are both listed in the Sarkozy network and supposed to benefit from his platform. We thus create a dummy for the firm belonging to both groups. We interact this dummy with changes in the Sarkozy and Royal winning probabilities and add this to the other interaction terms. In column 1 of Table 6, the estimated coefficient on this interaction is not statistically significant, and its introduction does not change the other coefficients of interest. In other words, we find no evidence of any additional effect or attenuation for the few firms belonging to both groups. The network and platform effects are thus independent of each other, and the positive return for firms in the Sarkozy network does not reflect the presence in this group of firms which are expected to benefit from his platform.²⁵ The estimated coefficients presented in the second column confirm this conclusion when we take observable firm characteristics into account.

We next decompose the Sarkozy network into firms owned or managed by close friends and other firms that belong to his network. Indeed, some of the businessmen in Sarkozy’s personal network are known to be very close friends. For example, Bernard Arnault and Martin Bouygues were Sarkozy’s witnesses at his wedding with Cécilia Attias; Bouygues is also the father-in-law of Sarkozy’s youngest son.²⁶

²⁵This result raises the question of how firms connected to Sarkozy will benefit from his election: from the reforms that will be implemented during his term but were not announced during the electoral campaign, or other channels such as targeted public subsidies or discretionary public procurement contracts? Answering this question is beyond the scope of this paper.

²⁶Other individuals we considered as close friends of Sarkozy are: Vincent Bolloré is known to be a close friend of Sarkozy who spent some days on his yacht just after the election; Serge Dassault makes no secret of his support and friendship for Sarkozy and is a member of the French parliament under the banner of Sarkozy’s party; Jean-Claude Decaux and Sarkozy share a passion for cycling and used to cycle together; Paul Desmarais gave advice to Sarkozy regarding gaining power when he went to Sagard in 1995; Arnaud Lagardère went to Sarkozy’s political meetings to publicly support his “friend” (in his own words); and François Pinault is often presented as a good friend of Sarkozy and his ex-wife Cécilia Attias.

We should warn readers that the construction of this subgroup is ultimately more debatable

We construct a dummy variable for firms owned or managed by close friends, and another for other firms of Sarkozy's network. The estimated coefficients on the interactions between these variables and changes in the candidates' victory probabilities appear in column 3 of Table 6. The effect of changes in Sarkozy's winning probability on the abnormal returns of firms owned or managed by Sarkozy's close friends is larger than all previous estimates. In particular, it is larger than the effect changes in Sarkozy's winning probability on the abnormal returns of firms belonging only to his network. In column 4, we reintroduce variables for firms that would benefit from platforms. This leaves the estimated effect on close friends virtually unchanged. We consider interactions between personal connections and the Sarkozy platform in column 5. Finally, we introduce the larger set of additional interactions with firm characteristics in column 6. The estimated coefficients are not affected by these additional variables. This suggests that distance to the candidate matters in market participants' evaluations of Sarkozy's election on firms' returns.

A concern about the back-of-the-envelope calculation made to assess the total value of platforms and Sarkozy's network is that it uses average returns for a firm to belong to a specific group, whatever the size of the firm. Indeed, there may be heterogeneity in firms' reactions to changes in candidates' victory probabilities depending on their size and the previously used CAC 40 dummy might not be sufficient to correct for such heterogeneity. This might bias the result of the back-of-the-envelope calculation. A way to overcome this issue consists in weighting the regression by firm stock-market capitalization. Column 7 of Table 6 displays such weighted estimates. Using these estimates to compute the value of candidates' platforms and Sarkozy's network, we obtain a figure for the latter of 11.63 billion euro, and for Sarkozy's and Royal's platforms, 2.38 and 5.30 billion euro, respectively.²⁷

than that of Sarkozy's network used above, mostly because it is difficult to draw a precise line between friends and close friends. The analysis of press citations of these businessmen's names reveals that they are cited on average 49 times jointly with "Sarkozy" between September 1st and December 31st 2006, which is 36 more times than those that are only listed in Sarkozy's network. These two numbers are respectively 361 and 271 over the one-year period from September 1st 2006 to August 31st 2007.

²⁷The detailed calculation is identical to the first back-of-the-envelope calculation except that we now use estimates displayed in column 7 of Table 6.

Changes in relative economic importance of the different groups are echoed by changes in point estimates and standard errors with respect to those obtained without weights. This reflects to a large extent the fact that there are important differences in firm size across our sample. For instance, despite that the sample is composed of the 120 largest French firms, the 6 largest firms (i.e. the top 5% of the size distribution) represent 32% of SBF 120's total capitalization. These 6 firms are on average about 9 times larger than other firms and more than 15 times larger than the median firm. As a consequence, weighted estimates mostly reflect the reaction of the few largest firms to changes in political expectations. A simple solution to circumvent this issue is to drop from the sample these 6 firms. As shown by the last column of Table 6, removing these firms produces weighted estimates that are very close to unweighted ones for both the platform and the network of Sarkozy. In contrast, the estimate effect of changes in Royal's victory probability on firms which would benefit from her campaign platform is revised upward. Using these new weighted estimates and excluding the 6 largest firms from the calculation, we obtain a figure of 10.48 billion euro for the economic value of Sarkozy's network, whereas the associated figures are 5.62 and 5.13 billion euro for Sarkozy's and Royal's platforms, respectively.²⁸

Finally, we briefly check how firms listed in the different groups performed after the election of Sarkozy. Table 7 presents the average standard returns and compound abnormal returns of firms from the second round of the presidential election to August 31st 2007 (this period is of approximately the same length as the campaign period used previously). As this period corresponds to a global market downturn, all returns are negative. But no group seems to perform significantly differently from the market. Thus, during the first months of Sarkozy's term, there is no revision in the market's expectations of the over-performance of firms listed in the two Sarkozy groups.

²⁸The detailed calculation is similar to the previous ones except that we use estimates displayed in column 8 of Table 6 and that initial stock-market capitalization of groups exclude the 6 largest firms of the sample. Accordingly, these capitalizations amount to 308.80, 230.80, and 268.56 billion euro for the Sarkozy's network, Sarkozy's platform, and Royal's platform, respectively.

4 Conclusion

We use information on the abnormal returns of firms and prediction-market data relating to the 2007 French presidential election to provide simultaneous estimates of the returns from the policies announced by the candidates and the returns from connections to Sarkozy. We reveal a robust relationship between changes in the probability of a Sarkozy victory and the abnormal returns of two types of firms: those that would benefit from his platform, and those owned or managed by businessmen who are personally connected to him. These two effects are independent, with the connections return being around fifty percent larger than that of the campaign platform (although this gap is not statistically significant). Analogously, the abnormal returns of firms which were supposed to benefit from the Royal platform are positively correlated with changes in her victory probability. This effect is smaller in size and less significant than the two associated with Sarkozy.

Overall, our estimates suggest that the stock prices of firms which would benefit from the platforms of Royal and Sarkozy changed by 1% and 2%, respectively, due to changes in the two candidates' probabilities of election victory, and that firms connected to Sarkozy out-performed others by 3% due to his election. The main implication of these results is that, from the perspective of an individual firm, the returns from connections to politicians are at least as large, if not larger, than the returns from the policies announced by the candidates.

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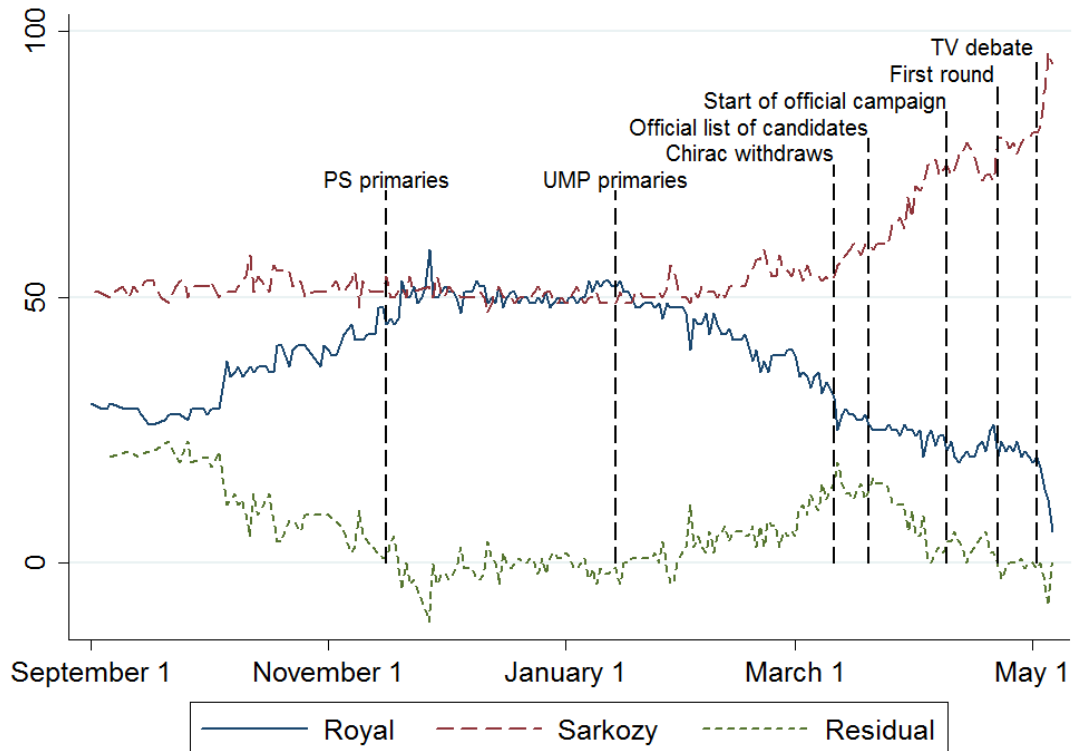
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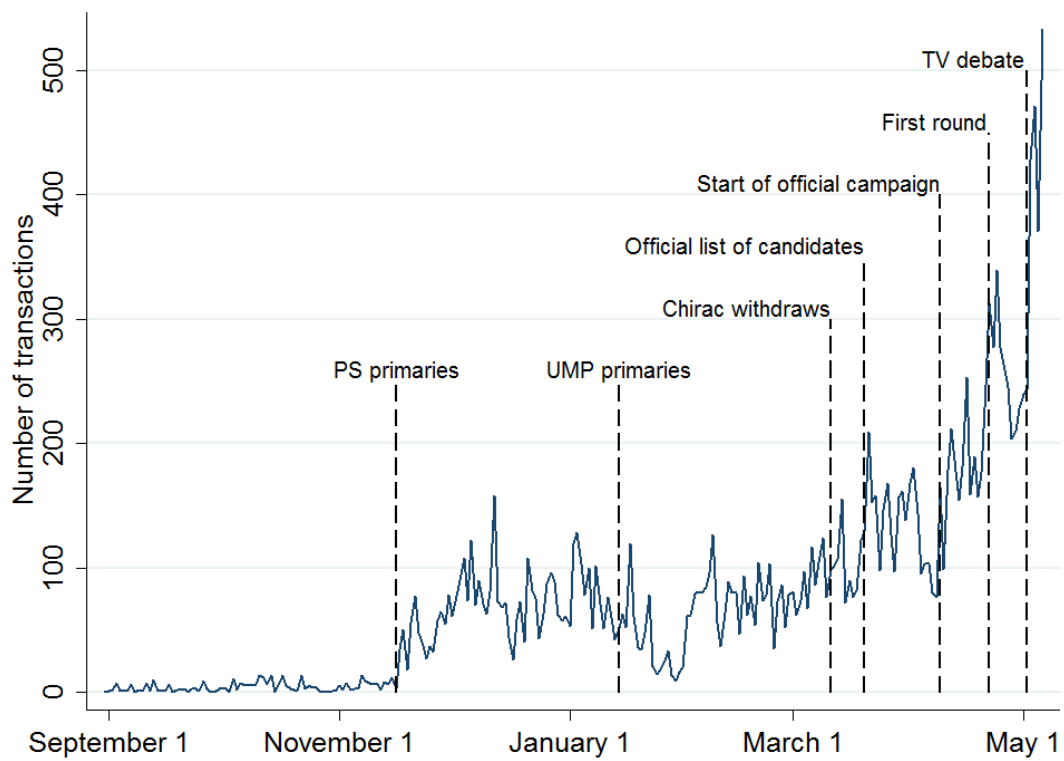
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Figure 1: Winning probabilities of Royal and Sarkozy in the 2007 French presidential election.



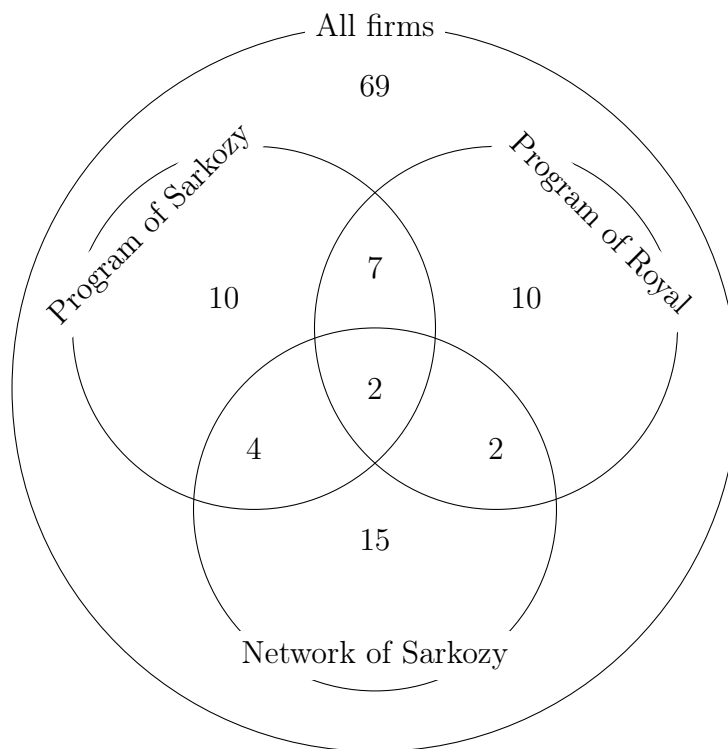
The data are from NewsFutures.com. Each line represents the winning probability of a different candidate. The lines of Royal and Sarkozy are the prices of winner-take-all contracts at 9 a.m. French legal time. The line *Residual* is constructed as $100 - P_{\text{Royal}} - P_{\text{Sarkozy}}$, where $P_{\text{Candidate}}$ is the price of winner-take-all contract linked to the victory of *Candidate*.

Figure 2: Number of daily transactions on the prediction market from September 1st 2006 to May 6th 2007.



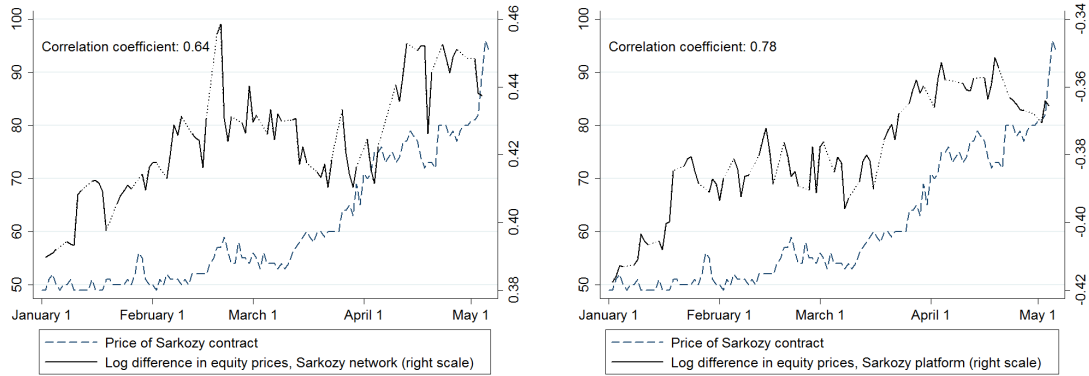
The data are from NewsFutures.com. The line represents the number of daily transactions in winner-take-all contracts linked to the victory of Sarkozy or Royal in the 2007 French presidential election.

Figure 3: The distribution of firms between the three different groups.



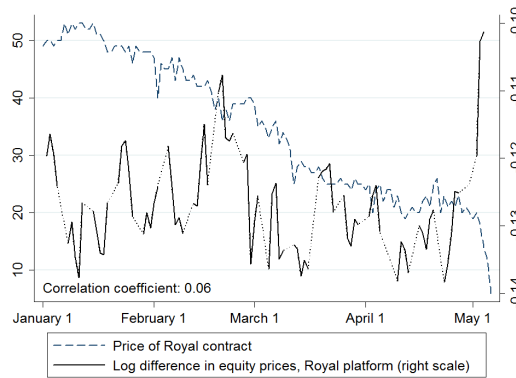
See the text for information about the composition of each group, and Table A1 in the Online Appendix for the list of firms in each group.

Figure 4: Correlations between candidates' winning probabilities and group average stock prices.



(a) Firms listed in Sarkozy's network.

(b) Firms that would benefit from Sarkozy's platform.



(c) Firms that would benefit from Royal's platform.

The prices of Royal and Sarkozy contracts are from NewsFutures.com, and correspond to the price of the corresponding winner-take-all contract at 9 a.m. French legal time. Each sub-figure plots the log difference between the average opening price of firms belonging to the specified group and all other firms listed in the SBF 120. The implicit graphical stock prices on Saturdays and Sundays are not used to calculate correlation coefficients between the series.

Table 1: Press citations of businessmen's last names.

From September 1 st to December 12 th 2006		From January 1 st to May 6 th 2007		From September 1 st 2006 to August 31 st 2007	
	Cites with Sarkozy	Cites with Royal	Difference	Total cites without Sarkozy	
Sarkozy network	28.29 (9.41)	24.00 (6.85)	4.29 (3.06)	446.65 (138.16)	Sarkozy network 48.82 (17.48)
Random businessmen	7.64 (2.58)	9.40 (2.99)	-1.76 (1.90)	270.18 (70.02)	Random businessmen 13.68 (4.16)
Difference	20.65*** (6.85)	14.60** (6.37)	6.05*** (0.63)	176.47 (142.13)	Difference 35.14*** (12.05)
From May 7 th to August 31 st 2007		From September 1 st 2006 to August 31 st 2007			
	Cites with Sarkozy	Cites with Royal	Difference	Total cites without Sarkozy	
Sarkozy network	117.06 (42.83)	26.29 (8.19)	90.76** (34.09)	361.59 (102.25)	Sarkozy network 201.94 (70.47)
Random businessmen	14.24 (4.39)	7.58 (2.73)	6.66** (2.71)	216.34 (60.31)	Random businessmen 33.48 (9.93)
Difference	102.82*** (25.01)	18.71*** (6.52)	84.10*** (4.79)	145.25 (117.63)	Difference 168.46*** (42.76)
		Difference		Total cites without Sarkozy	
		102.82** (39.72)		1297.88 (379.60)	
		2.82 (4.10)		752.98 (200.97)	
		100.00*** (5.62)		544.90 (402.90)	

This table shows the average numbers of citations of businessmen's last names retrieved from Factiva.com. The group *Sarkozy network* is constituted of 17 individuals. The group *Random businessmen* is constituted of the chief executive officers or chairmen (as from mid-2006 to mid-2007) of 50 randomly-selected firms. See the Online Appendix for data construction. The columns labeled *Difference* show the difference between citations with Sarkozy and citations with Royal. The lines labeled *Difference* show the difference between citations of individuals belonging to Sarkozy's network and citations of random businessmen. For the lines and columns labeled *Difference*: *** p<0.01, ** p<0.05, * p<0.1. Standard errors in parentheses.

Table 2: Returns of firms from January 1st to May 6th 2007.

	Standard returns					P-value against...			
	Obs.	Mean	Std. Dev.	Min	Max	All other firms	Sarkozy platform	Royal platform	None
Sarkozy network	23	0.085	0.102	-0.126	0.325	0.456	0.298	0.054	0.865
Sarkozy platform	23	0.128	0.167	-0.287	0.467	0.281		0.588	0.230
Royal platform	21	0.153	0.123	-0.287	0.319	0.044			0.038
None	69	0.090	0.118	-0.287	0.404	0.189			
All firms	119	0.103	0.125	-0.287	0.467				

	Abnormal returns					P-value against...			
	Obs.	Mean	Std. Dev.	Min	Max	All other firms	Sarkozy platform	Royal platform	None
Sarkozy network	23	-0.029	0.163	-0.293	0.543	0.288	0.171	0.104	0.833
Sarkozy platform	23	0.068	0.292	-0.293	0.890	0.213		0.984	0.118
Royal platform	21	0.067	0.216	-0.187	0.437	0.253			0.102
None	69	-0.019	0.205	-0.418	0.423	0.046			
All firms	119	0.016	0.223	-0.418	0.890				

This table shows the descriptive statistics for firm average returns in the different groups from January 1st 2007 to the second round of the presidential election. Standard returns over the period correspond to the ratio of the difference between the opening price on January 2nd and the closing price on May 4th over the opening price on January 2nd. Abnormal returns over the period correspond to the compound abnormal return between January 2nd and May 4th. *None* corresponds to firms not listed in any of *Sarkozy network*, *Sarkozy platform* or *Royal platform*. See the text for the definitions of the different groups. The p-values refer to tests of the equality of means between the groups, treating firms belonging to two groups as independent observations.

Table 3: Effect of changes in the two candidates' victory probabilities on abnormal returns of firms belonging to particular groups.

Dependent variable: daily abnormal return.				
	(1)	(2)	(3)	(4)
Δ Sarkozy	-0.007 (0.005)	-0.004 (0.005)	0.000 (0.005)	-0.009* (0.005)
Δ Royal	0.001 (0.003)	0.001 (0.003)	-0.001 (0.003)	0.000 (0.003)
Sarkozy network \times Δ Sarkozy	0.034*** (0.009)			0.033*** (0.009)
Sarkozy network \times Δ Royal	-0.007 (0.005)			-0.006 (0.005)
Sarkozy platform \times Δ Sarkozy		0.021** (0.010)		0.020* (0.011)
Sarkozy platform \times Δ Royal		-0.003 (0.006)		-0.005 (0.007)
Royal platform \times Δ Sarkozy			-0.002 (0.010)	-0.008 (0.011)
Royal platform \times Δ Royal			0.008 (0.006)	0.010 (0.007)
Adjusted R-squared	0.025	0.024	0.024	0.025

*** p<0.01, ** p<0.05, * p<0.1. White heteroskedastic standard errors in parentheses. OLS regressions with 119 firm fixed effects and a constant term. Each column presents estimates from a separate regression. 10,180 observations in each regression. Δ *Sarkozy* and Δ *Royal* are the daily changes in the percentage probability of a Royal or Sarkozy victory in the 2007 French presidential election. The variables *Sarkozy network*, *Sarkozy platform* and *Royal platform* equal 1 for firms belonging to that group. See the text for the definitions of the different groups. The period under consideration runs from January 1st to May 6th 2007.

Table 4: Effect of changes in the two candidates' victory probabilities on abnormal returns of firms belonging to particular groups, controlling for leads and lags in prediction-market data.

Dependent variable: daily abnormal return.				
	(1)	(2)	(3)	(4)
Δ Sarkozy	-0.007 (0.005)	-0.003 (0.005)	0.001 (0.005)	-0.008 (0.005)
Δ Sarkozy t_{-1}	0.003 (0.006)	-0.000 (0.006)	0.001 (0.006)	0.003 (0.007)
Δ Sarkozy t_{+1}	-0.002 (0.005)	0.004 (0.005)	0.002 (0.005)	0.003 (0.005)
Δ Royal	0.002 (0.003)	-0.000 (0.003)	-0.002 (0.003)	-0.000 (0.003)
Δ Royal t_{-1}	0.001 (0.002)	0.001 (0.002)	-0.000 (0.002)	0.001 (0.003)
Δ Royal t_{+1}	0.001 (0.003)	0.001 (0.003)	0.003 (0.003)	0.004 (0.003)
Sarkozy network \times Δ Sarkozy	0.035*** (0.010)			0.033*** (0.010)
Sarkozy network \times Δ Sarkozy t_{-1}	-0.013 (0.012)			-0.013 (0.012)
Sarkozy network \times Δ Sarkozy t_{+1}	0.010 (0.009)			0.012 (0.009)
Sarkozy network \times Δ Royal	-0.008 (0.006)			-0.007 (0.006)
Sarkozy network \times Δ Royal t_{-1}	-0.003 (0.005)			-0.003 (0.005)
Sarkozy network \times Δ Royal t_{+1}	-0.004 (0.005)			-0.004 (0.005)
Sarkozy platform \times Δ Sarkozy		0.018* (0.011)		0.018 (0.011)
Sarkozy platform \times Δ Sarkozy t_{-1}		0.001 (0.013)		0.003 (0.014)
Sarkozy platform \times Δ Sarkozy t_{+1}		-0.022** (0.010)		-0.021** (0.011)
Sarkozy platform \times Δ Royal		0.001 (0.007)		-0.002 (0.007)
Sarkozy platform \times Δ Royal t_{-1}		-0.003 (0.005)		-0.004 (0.006)
Sarkozy platform \times Δ Royal t_{+1}		-0.005 (0.006)		-0.001 (0.006)
Royal platform \times Δ Sarkozy			-0.005 (0.011)	-0.009 (0.011)
Royal platform \times Δ Sarkozy t_{-1}			-0.003 (0.013)	-0.004 (0.014)
Royal platform \times Δ Sarkozy t_{+1}			-0.013 (0.010)	-0.007 (0.011)
Royal platform \times Δ Royal			0.013* (0.007)	0.013* (0.007)
Royal platform \times Δ Royal t_{-1}			0.001 (0.005)	0.002 (0.006)
Royal platform \times Δ Royal t_{+1}			-0.015** (0.006)	-0.015** (0.007)
Adjusted R-squared	0.024	0.024	0.024	0.025

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. White heteroskedastic standard errors in parentheses. OLS regressions with 119 firm fixed effects and a constant term. Each column presents estimates from a separate regression. 10,180 observations in each regression. Δ Sarkozy and Δ Royal are the daily changes in the percentage probability of a Royal or Sarkozy victory in the 2007 French presidential election. The variables *Sarkozy network*, *Sarkozy platform* and *Royal platform* equal 1 for firms belonging to that group. See the text for the definitions of the different groups. The period under consideration runs from January 1st to May 6th 2007.

Table 5: Effect of changes in the two candidates' victory probabilities on abnormal returns of firms belonging to particular groups, including firm-specific time trends, and controlling for industry, State ownership, and firm size.

Dependent variable: daily abnormal return.			
	(1)	(2)	(3)
Δ Sarkozy	-0.009* (0.005)	-0.018 (0.026)	-0.019 (0.027)
Δ Royal	0.000 (0.003)	0.006 (0.016)	0.006 (0.016)
Sarkozy network \times Δ Sarkozy	0.032*** (0.009)	0.026** (0.011)	0.025** (0.011)
Sarkozy network \times Δ Royal	-0.006 (0.005)	-0.007 (0.006)	-0.008 (0.006)
Sarkozy platform \times Δ Sarkozy	0.021** (0.011)	0.023** (0.011)	0.024** (0.011)
Sarkozy platform \times Δ Royal	-0.005 (0.007)	-0.004 (0.007)	-0.003 (0.007)
Royal platform \times Δ Sarkozy	-0.008 (0.011)	-0.012 (0.012)	-0.012 (0.012)
Royal platform \times Δ Royal	0.010 (0.007)	0.012 (0.008)	0.012 (0.008)
Cac 40 \times Δ Sarkozy		0.012 (0.010)	0.012 (0.010)
Cac 40 \times Δ Royal		-0.004 (0.006)	-0.004 (0.006)
Oil and gas \times Δ Sarkozy		0.029 (0.024)	0.026 (0.024)
Basic materials \times Δ Sarkozy		-0.020 (0.025)	-0.019 (0.025)
Industrial \times Δ Sarkozy		0.011 (0.018)	0.010 (0.018)
Consumer goods \times Δ Sarkozy		0.003 (0.017)	0.003 (0.018)
Health care \times Δ Sarkozy		-0.015 (0.024)	-0.015 (0.024)
Consumer services \times Δ Sarkozy		0.012 (0.017)	0.012 (0.017)
Telecommunications \times Δ Sarkozy		-0.050 (0.046)	-0.052 (0.046)
Utilities \times Δ Sarkozy		0.023 (0.029)	0.022 (0.029)
Financial \times Δ Sarkozy		0.016 (0.018)	0.017 (0.018)
Oil and gas \times Δ Royal		-0.014 (0.016)	-0.015 (0.016)
Basic materials \times Δ Royal		-0.038*** (0.014)	-0.038*** (0.014)
Industrial \times Δ Royal		-0.021* (0.012)	-0.021* (0.012)
Consumer goods \times Δ Royal		-0.013 (0.011)	-0.013 (0.011)
Health care \times Δ Royal		-0.004 (0.015)	-0.005 (0.016)
Consumer services \times Δ Royal		-0.014 (0.011)	-0.014 (0.011)
Telecommunications \times Δ Royal		-0.004 (0.025)	-0.004 (0.024)
Utilities \times Δ Royal		0.006 (0.017)	0.006 (0.017)
Financial \times Δ Royal		-0.007 (0.011)	-0.007 (0.011)
No state ownership \times Δ Sarkozy		-0.001 (0.023)	-0.000 (0.023)
State ownership (0,5) \times Δ Sarkozy		0.006 (0.024)	0.006 (0.025)
State ownership [5,10) \times Δ Sarkozy		-0.016 (0.029)	-0.014 (0.029)
State ownership [10,25) \times Δ Sarkozy		-0.034 (0.028)	-0.033 (0.029)
State ownership [25,40) \times Δ Sarkozy		0.047 (0.032)	0.048 (0.032)
No state ownership \times Δ Royal		0.011 (0.013)	0.012 (0.013)
State ownership (0,5) \times Δ Royal		0.010 (0.014)	0.010 (0.014)
State ownership [5,10) \times Δ Royal		-0.016 (0.017)	-0.016 (0.017)
State ownership [10,25) \times Δ Royal		0.013 (0.016)	0.013 (0.016)
State ownership [25,40) \times Δ Royal		-0.005 (0.019)	-0.005 (0.019)
Firm-specific time trends	Yes		Yes
Adjusted R-squared	0.030	0.025	0.030

*** p<0.01, ** p<0.05, * p<0.1. White heteroskedastic standard errors in parentheses. OLS regressions with 119 firm fixed effects and a constant term. Each column presents estimates from a separate regression. 10,180 observations in each regression. Δ Sarkozy and Δ Royal are the daily changes in the percentage probability of a Royal or Sarkozy victory probability in the 2007 French presidential election. The variables *Sarkozy network*, *Sarkozy platform* and *Royal platform* equal 1 for firms belonging to that group. See the text for the definitions of the different groups. *Cac 40* equals 1 for the 40 largest firms. Industries follow Euromex classification. The reference industry is "technology". *State ownership* dummies indicates the share of a firm's capital that is owned by the state. The reference category is [40,100]. The period under consideration runs from January 1st to May 6th 2007.

Table 6: Effect of changes in the two candidates' victory probabilities on abnormal returns of firms belonging to particular groups, additional results.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Δ Sarkozy	-0.010* (0.005)	-0.021 (0.026)	-0.006 (0.005)	-0.009* (0.005)	-0.009* (0.005)	-0.020 (0.026)	-0.005 (0.007)	-0.014* (0.008)
Δ Royal	0.000 (0.003)	0.006 (0.016)	-0.000 (0.003)	0.000 (0.003)	0.000 (0.003)	0.007 (0.016)	-0.003 (0.004)	-0.005 (0.005)
Sarkozy network \times Δ Sarkozy	0.036*** (0.011)	0.030** (0.012)					0.023** (0.010)	0.034*** (0.012)
Sarkozy platform \times Δ Sarkozy	0.024* (0.013)	0.028** (0.013)		0.021** (0.011)	0.025* (0.013)	0.027** (0.013)	0.008 (0.013)	0.024* (0.014)
Sarkozy network \times Sarkozy platform \times Δ Sarkozy	-0.016 (0.023)	-0.018 (0.024)						
Royal platform \times Δ Sarkozy	-0.008 (0.011)	-0.013 (0.012)		-0.009 (0.011)	-0.009 (0.011)	-0.015 (0.012)	0.007 (0.016)	-0.001 (0.016)
Sarkozy network \times Δ Royal	-0.005 (0.006)	-0.007 (0.007)					0.002 (0.006)	0.003 (0.007)
Sarkozy platform \times Δ Royal	-0.004 (0.008)	-0.003 (0.008)		-0.006 (0.007)	-0.004 (0.008)	-0.003 (0.008)	-0.008 (0.007)	-0.012 (0.008)
Sarkozy network \times Sarkozy platform \times Δ Royal	-0.004 (0.013)	-0.001 (0.014)						
Royal platform \times Δ Royal	0.010 (0.007)	0.012 (0.008)		0.011 (0.007)	0.010 (0.007)	0.013 (0.008)	0.015* (0.008)	0.019** (0.009)
Sarkozy close friends \times Δ Sarkozy			0.042*** (0.012)	0.041*** (0.012)	0.043*** (0.013)	0.043*** (0.014)		
Sarkozy network only \times Δ Sarkozy			0.024* (0.013)	0.021 (0.013)	0.026 (0.016)	0.007 (0.019)		
Sarkozy close friends \times Δ Royal			-0.012* (0.007)	-0.012* (0.007)	-0.008 (0.008)	-0.009 (0.008)		
Sarkozy network only \times Δ Royal			0.001 (0.008)	0.002 (0.008)	-0.001 (0.009)	-0.003 (0.011)		
Sarkozy close friends \times Sarkozy platform \times Δ Sarkozy					-0.010 (0.031)	-0.010 (0.031)		
Sarkozy network only \times Sarkozy platform \times Δ Sarkozy					-0.018 (0.029)	-0.007 (0.032)		
Sarkozy close friends \times Sarkozy platform \times Δ Royal					-0.016 (0.018)	-0.014 (0.018)		
Sarkozy network only \times Sarkozy platform \times Δ Royal					0.007 (0.017)	0.012 (0.019)		
Industry, State-ownership, and Cac 40 interactions		Yes			Yes	Yes	Yes	Yes
Weighting by firm capitalization								
Excluding the 6 largest firms								
Adjusted R-squared	0.025	0.025	0.025	0.025	0.025	0.025	0.018	0.024

*** p<0.01, ** p<0.05, * p<0.1. White heteroskedastic standard errors in parentheses. OLS regressions with a constant term and 119 firm fixed effects, except in column 7 where only 113 firms are used. Each column presents estimates from a separate regression. 10,180 observations in each regression, except in column 7 where only 9,664 observations are used. Δ Sarkozy and Δ Royal are the daily changes in the percentage probability of a Royal or Sarkozy victory in the the 2007 French presidential election. The variables *Sarkozy network*, *Sarkozy network only*, *Sarkozy close friends*, *Sarkozy platform*, *Royal platform* equal 1 for firms belonging to the group. See the text for the definitions of the different groups. The period under consideration runs from January 1st to May 6th 2007.

Table 7: Returns of firms from May 7th to August 31st 2007.

Standard returns						P-value against...			
	Obs.	Mean	Std. Dev.	Min	Max	All other firms	Sarkozy platform	Royal platform	None
Sarkozy network	23	-0.061	0.076	-0.258	0.158	0.917	0.256	0.606	0.975
Sarkozy platform	23	-0.092	0.101	-0.289	0.158	0.161		0.176	0.281
Royal platform	21	-0.046	0.121	-0.289	0.158	0.406			0.575
None	69	-0.062	0.116	-0.309	0.290	0.877			
All firms	119	-0.064	0.107	-0.309	0.290				

Abnormal returns						P-value against...			
	Obs.	Mean	Std. Dev.	Min	Max	All other firms	Sarkozy platform	Royal platform	None
Sarkozy network	23	0.058	0.436	-0.518	1.408	0.857	0.937	0.277	0.587
Sarkozy platform	23	0.071	0.588	-0.529	2.314	0.963		0.376	0.548
Royal platform	21	0.230	0.589	-0.529	1.874	0.107			0.046
None	69	0.006	0.390	-0.598	1.269	0.067			
All firms	119	0.075	0.484	-0.598	2.314				

This table shows the descriptive statistics for firm average returns in the different groups from the presidential election to August 31st 2007. Standard returns over the period correspond to the ratio of the difference between the opening price on May 7th and the closing price on August 31st over the opening price on May 7th. Abnormal returns over the period correspond to the compound abnormal return between May 7th and August 31st. *None* corresponds to firms not listed in any of *Sarkozy network*, *Sarkozy platform* or *Royal platform*. See the text for the definitions of the different groups. The p-values refer to tests of the equality of means between the groups, treating firms belonging to two groups as independent observations.