



# Elections and political risk: New evidence from the 2008 Taiwanese Presidential Election

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## ABSTRACT

We examine the effects of party platforms on the economic opportunities of firms using a unique data set from a political prediction market in Taiwan, a country with two dominant parties whose political cleavage derives mainly from a single issue: the “One China Principle”. We find that during the 2008 Presidential campaign, the share price of Taiwanese firms with investments in the mainland responded strongly and positively to a positive electoral outlook for the KMT, the party which advocates lifting caps on cross-strait investment in mainland China. The response is strongest for those firms who have already hit their caps.

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## 1. Introduction

Because governments have discretionary power to levy taxes and impose burdensome regulation and because future policies are uncertain, private firms face political risk. Elections, as clearly defined opportunities for large, discrete changes in government and therefore in governing philosophy and resulting policy, constitute a moment when political risk is articulated and (partially) resolved. If political parties favor specific sectors or firms, individual businesses may have a lot at stake in a particular election. Given the implications for firms' incentives to engage in lobbying both legitimate and illegitimate—it is important to test for and quantify the magnitude of such partisan effects on firms' profitability.

Starting with Hibbs' seminal paper (1977), there is a very long literature testing for broad macroeconomic effects of partisan policy by relating macroeconomic outcomes to election results in both time-series and panel data.<sup>1</sup> Unfortunately, it is difficult to cleanly identify such effects both because election results could be plausibly influenced by unobservable shifts in the macroeconomic environment and because econometricians do not observe *ex-ante* expectations of election results. As a result, there remains a robust

debate over the existence of partisan effects on macroeconomic outcomes.<sup>2</sup>

Recent studies of partisan political effects attempt to resolve these problems by using high frequency data from political prediction markets or regularly repeated pre-electoral polls to capture *within election* variation in the expected future government (Snowberg et al., 2007a,b; Fuss and Bechtel, 2008; Shelton, forthcoming). Thus far, such studies have been supportive of a wide variety of partisan effects. Bechtel and Fuss (2008) find that German stock markets exhibit lower volatility during periods of divided government. Fuss and Bechtel (2008) and Snowberg et al. (2007a,b) find that stock markets perform better under right wing governments in Germany and the US respectively. Mukherjee and Leblang (2007) similarly find that left-wing governments have decreased both mean return and volatility of stock markets in the US and Great Britain during the 20th century.

Further evidence of partisan effects comes from Herron et al. (1999), Jayachandran (2006), and Knight (2007), each of whom find *heterogeneous* effects of the partisanship of government on firm-level stock market performance. Based on the surprise event in May 2001 when Senator James Jeffords left the Republican Party and tipped control of the U.S. Senate to the Democrats, Jayachandran shows that

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<sup>1</sup> See Drazen (2001) and Franzese (2002) for useful summaries.

<sup>2</sup> See Snowberg et al. (2007a) for detailed discussion of this identification problem and Heckelman (2006) for an example of the debate over whether the evidence supports or refutes partisan effects on macroeconomic outcomes.

the effects of partisan control on stock prices varies according to the firm's political contributions to each party. Herron et al. (1999) and Knight (2007) have found that specific policies in a party's platform are characterized into equity prices: stock prices of those industries favored by a party improve with the electoral prospects of that party. Specifically, Knight (2007) shows that the result of the election was estimated to have a 3–6% effect on the value of firms whom analysts had identified as politically sensitive based on the candidates' policy platforms. Furthermore, Roberts (1990) shows that shifts in political control matter not only at the party but even at the individual level. Using a similar event study, he demonstrated that the unexpected death of Washington Senator Henry "Scoop" Jackson, then very senior and influential, led to lower abnormal returns for firms located in the state of Washington and/or having donated to him, implying that both seniority and specific client relationships are important to firms.

Estimates of firm-specific effects provide particularly convincing evidence because they are less likely to be produced by reverse causality. Nonetheless, they are rare because it is usually difficult to map political platforms onto firm-level characteristics. As a result of the difficulties in obtaining high frequency data on expected political outcomes and the difficulties in mapping policy platforms to equity prices, the most convincing techniques for measuring partisan effects are rarely implemented, especially in developing countries.

But it is developing countries that are likely the most fruitful ground for inquiry into the partisan effects on firm profitability. First, because democratic institutions constraining the ruling party tend to be weaker in these countries, the stakes of the election are likely to be greater (Henisz, 2004). Second, given the simultaneous existence of both formal and informal venues for lobbying in developing countries, it is the incentives of firms in these countries which are most important for understanding corruption, bribery, and official lobbying (Campos and Giovannoni, 2007). Consistent with these views, a growing literature suggests that a political turnover (or the expectation of it) has substantial effects on the stock market performance of private (especially politically connected) firms in emerging markets (e.g., Fisman, 2001; Johnson and Mitton, 2003; Faccio, 2006; Claessens et al., 2008; Bunkanwanicha and Wiwattanakantang, 2009).

We contribute to this literature by measuring the economic impact of Taiwan's electoral shocks on Taiwanese firms' share prices in the context of the unresolved cross-strait issues between Taiwan and People's Republic of China. Taiwanese politics provides us with a unique research opportunity. It is a two-party system whose cleavage derives mainly from a single unresolved issue: diplomatic and economic relations with the People's Republic of China (PRC). On the one hand, the Chinese Nationalist Party (Kuomintang or KMT) favors eventual re-unification and thus advocates relatively unfettered commercial links with the mainland. On the other hand, the Democratic Progressive Party (DPP) was founded on the principle of Taiwanese independence and has thus been more reluctant about open economic relations with the mainland, fearing that economic dependence would in turn inhibit political independence.<sup>3</sup>

<sup>3</sup> Not surprisingly, the People's Republic of China (PRC) has been openly hostile to the DPP. The PRC has used a variety of tactics ranging from military exercises to television announcements to influence Taiwanese elections, attempting to intimidate voters against voting for the pro-independence DPP. More spectacularly, starting in April 2005 while the DPP held the Taiwanese Presidency, PRC President Hu Jintao held a series of talks with KMT party chairman Lien-Hu to establish common goals for direct transportation links and increased visitation rights, removal of restraints on Chinese investment in Taiwan, and deregulation of trade in agricultural goods. This so-called "cross-strait forum" constitutes a remarkable extra-legal dialogue over foreign policy in which the PRC went behind the back of the elected DPP government to negotiate independently with the out-of-power KMT and provides testament to the strong reluctance of the PRC to deal with the DPP.

Given that the central issue of unification/independence continues to divide voters and political parties in Taiwan, the profit opportunities of Taiwanese firms in the mainland are likely to be quite sensitive to election outcomes. Investors might expect that a DPP victory would lead to a worsening of Taiwan's relations with the PRC and, as a consequence, raise the risk of expropriation or other discriminatory policies against Taiwanese firms operating in mainland China. In her recent discussion of economic interdependence between Taiwan and mainland China, Whited (2008) summarized, "risk of political factors disrupting economic ties has remained an omnipresent concern... with Taiwanese investors almost certainly having more to fear than other foreign investors in mainland China." Moreover, they might expect that the DPP government would further restrict investment of domestic Taiwanese firms in the mainland. Since the fortunes of Taiwanese firms with significant investment in the mainland depend on friendly diplomatic relations with the People's Republic of China and the liberal economic policy of the home government that permits financial investment in the mainland, the valuation of these firms' mainland ventures, and thus the value of their equity shares likely depend, critically, on which party controls the government. There is thus a clear-cut partisan divide with important implications for a highly visible specific policy question which we can exploit to cleanly estimate the effects of government policy on private business in general.

The Taiwanese case also has methodological advantages emanating from the availability of data from a prediction market for the 2008 Presidential Election in Taiwan. In this political prediction market, developed only recently in Taiwan, investors purchased securities linked to the electoral performance of each candidate. Specifically, the owner of a security tied to candidate X receives a payoff based on the vote share of candidate X on Election Day. Thus, the price of the security on any given day reflects the market's evaluation, on that day, of the expected performance of the relevant candidate. That is, these data provide a real-time, market-based prediction of electoral outcomes, allowing us to capture unexpected shifts in the electoral outlook.<sup>4</sup> If investors are concerned about political risk, then information about the political fortunes of the parties, and thus the likely post-electoral course of policy, should affect the valuation of firms, in particular, those firms which earn significant portion of their profits from the mainland-related commercial activities.

To briefly preview our results, we find the share prices of Taiwanese firms with mainland investment respond negatively to a rise in the expected vote share of the DPP during the presidential election campaign of 2008, while those of firms without mainland investment were largely unaffected. These effects are also economically important: a 10 percentage point increase in the DPP's expected vote share is, on average, associated with a 1.4% decline in the share price of firms with investment in the mainland. Moreover, the statistical association of share price to the DPP's expected vote share is stronger for those firms that (i) have a greater value of assets at stake or (ii) are closer to the regulatory limit on cross-strait investment which the KMT had credibly promised to relax. That is, these partisan effects are strongest for Taiwanese firms whose profit opportunities depend crucially on friendly diplomatic relations with PRC and unfettered commercial activity in the mainland economy. The case thus delivers compelling evidence that elections and the attendant possibility of regime change pose considerable political risk to private firms in Taiwan.

Finally, in addition to bearing on the consequences of elections for the economic wellbeing of domestic firms, our findings are relevant to the recent literature on geopolitics and economic integration. In a careful historical study of global economic integration, Findlay and

<sup>4</sup> Similar data in the US have been shown to be more accurate than polling data (Wolfers and Zitzewitz, 2004).

O'Rourke (2007) show that geopolitical factors have been the most important driving force behind waves of economic integration (and disintegration) over the past thousand years. Looking at more recent data on trade and military conflicts, several studies also show that war has large negative effects on international trade (e.g., Blomberg and Hess, 2004; Glick and Taylor, 2010). Most recently, Acemoglu and Yared (2010) show that militarism (i.e., an increase in military spending) disrupts economic integration *even in the absence of actual military conflicts*. Our paper builds on this Acemoglu and Yared result by confirming that financial markets impute political risk and by showing that these effects can be large even during peacetime. We thus provide direct evidence of the channel by which diplomatic instability inhibits economic integration.

This paper is organized as follows: Section 2 summarizes the political cleavage at the time of the election. Section 3 discusses the data. Section 4 describes our methodology. Section 5 presents the empirical findings. Concluding remarks follow.

## 2. The political cleavage of the 2008 Presidential Election

By the time of the Presidential elections in 2008, the Taiwanese political system was dominated by two parties, the Kuomintang (KMT) and the Democratic People's party (DPP), whose primary distinction concerned cross-strait economic policy.<sup>5,6</sup> The Taiwanese government has long restricted movement of people, goods, and money between Taiwan and the mainland (see Chang and Goldstein, 2007 for a brief history of cross-strait trade and investment). Most notably, the Taiwanese government imposed stringent limits on Taiwanese investment in mainland China: at the time of the election, Taiwanese firms were allowed to invest no more than 20–40% of net worth.<sup>7</sup>

There had been a long-running debate over the degree to which economic relations should be liberalized. On the one hand, Taiwanese see incredible business opportunities and seek access to the Chinese market. On the other hand, they worry that developing such ties will necessarily endanger their political independence by rendering them vulnerable to economic pressure. The relative positions of the candidates in the 2008 Presidential elections were quite clear. Ma (KMT) advocated immediate negotiation with China towards a broad set of liberalizing measures including direct transportation, increased visitation, raising of investment caps, and even the eventual establishment of a common market. Unusually for campaign promises, the scope and content of the measures Ma proposed was already clearly defined and their feasibility established because they had already been detailed and discussed in an extraordinary set of cross-strait dialogues between the KMT and the People's Republic of China (PRC) in 2005–06 while the KMT was out of power. Thus Ma's campaign promises constituted a detailed and credible commitment to liberalize cross-strait economic relations should the KMT be returned to executive power.

On the other hand, the DPP vehemently opposed most of the KMT's proposals and mutual antagonism between the PRC and the DPP ensured that the DPP would be less capable of negotiating even the steps toward liberalization with which they agreed, such as the

resumption of direct flights. For instance, the PRC had already rebuffed DPP President Chen's early efforts to improve cross-strait relations citing the DPP's pro-independence platform as an impediment to progress. As a result, the policy implications of the election were remarkably clear *ex ante*. In the end, KMT candidate Ma Ying-jeou defeated DPP candidate Frank Hsieh, winning the popular vote 58–41%. After the elections, these predictions have been rapidly born out *ex-post*. During the first fifteen months since the election, the Ma government has taken advantage of the huge KMT majority in the legislature to quickly implement the major planks of the KMT platform.<sup>8</sup>

## 3. Data

### 3.1. Political market data<sup>9</sup>

The political markets for the 2008 Presidential Election are run by the Taipei Political Exchange (TPE).<sup>10</sup> The market opened on December 17, 2007 and closed on March 22, 2008, the day of the 2008 Presidential Election. There were 1985 traders participating in the market. Although the market opened on December 17, 2007, actual trading did not take place until the next day, December 18, 2007. Since March 22, 2008 was a Saturday, when the Taipei Stock Exchange is closed, the usable data that can match the data on the share price of Taiwanese firms for statistical analysis span from December 18, 2007 to March 21, 2008.<sup>11</sup>

The TPE is closely modeled on its older, better known American predecessor, the Iowa Electronic Markets (IEM), and shares many of its operating characteristics. As per the IEM, the TPE issues bundled contracts which participants then unbundle and trade, contracts pay out according to the realized vote-shares of the candidates, and prices are determined via a continuous double-auction conducted at a single website with zero transaction cost of trading.<sup>12</sup> There is, however, one major difference between the IEM and the TPE. While the IEM is a real money market in which participants wager up to \$500 of their own money when purchasing contracts, the TPE is a “play-money” exchange in which participants may open an account endowed with an initial balance of 10,000 units for free and do not risk their own money. Trading and account balances are tracked as per real-money exchanges but balances are not convertible to real money; instead, the ten participants with the highest balances at the end of the market are awarded cash prizes. Rewards for 1st through 7th place were 10,000,

<sup>8</sup> Direct flights began July 5, 2008 and the number of Chinese visiting Taiwan from January–May 2009 was 2.8 times higher than the same period a year earlier (Taiwan News). Limits on Taiwanese investment in mainland China were increased from 40% to 60% of the company's net value beginning August 1, 2008 (China Daily). On June 5, 2009, the economics ministry announced the imminent opening of 100 sectors of the Taiwanese economy to FDI from mainland China (Economic Daily News).

<sup>9</sup> This section is based on Tseng et al. (2009).

<sup>10</sup> [http://socioecono.phys.sinica.edu.tw/exchange/exchange\\_eng.html](http://socioecono.phys.sinica.edu.tw/exchange/exchange_eng.html).

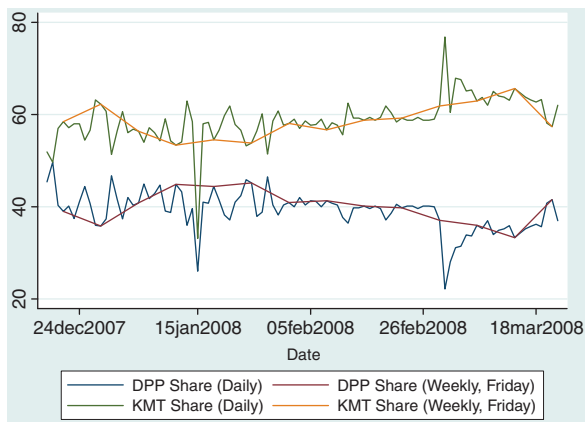
<sup>11</sup> In addition, we look into a second prediction market, which is managed by the Center for Prediction Markets (CPM) at the National University for Politics in Taiwan. The data cover roughly the same time period as the Taipei Political Exchange (TPE) data. This market was run with a continuous double auction as per IEM and TPE. We obtain the data from the CPM and yet choose not to use it for empirical analysis on two counts. First, the total of the day-end share prices frequently deviates from the total payout (i.e. implied vote shares don't sum to 1), suggesting arbitrage opportunities. In itself this is not unusual and can be seen on both the IEM and TPE as well. However, such opportunities on IEM and TPE are closed within days whereas deviations in the CPM persist throughout the election. Second, the CPM data display extremely weak correlation with polling data. In fact, there is remarkably little variation of any sort in the CPM prices, despite what was a rather heated campaign with several significant events. In sum, while the volume looks quite impressive, the combination of persistent arbitrage opportunities and lack of responsiveness make us question whether the market efficiently aggregates information and thus reluctant to use it.

<sup>12</sup> For detailed explanation of the operation, efficiency, and accuracy of the IEM, see Berg et al. (2000), Forsythe et al. (1999), Wolfers and Zitzewitz (2004), Oliven and Reitz (2004), and Rhode and Strumpf (2007).

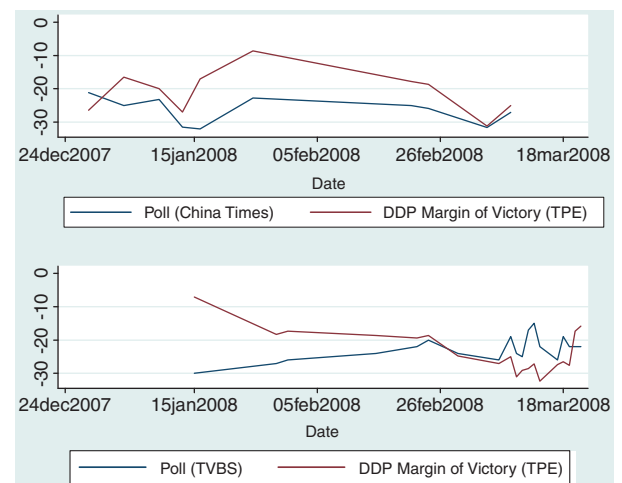
<sup>5</sup> There were actually five parties that won seats in the 2004 legislative election but since 2001 they have been organized into two durable coalitions along the all-important issue of approaches to Taiwan's national identity. Furthermore, each coalition is increasingly dominated by its main member. In the 2008 elections, the two main parties won 108 of the 113 Congressional seats. As a result, the political space is effectively dominated by two parties.

<sup>6</sup> In the longer working paper, we explain how the primary axis of partisan competition in Taiwan has evolved from political independence to cross-strait economic relations. Fell (2005) is a good source on this matter.

<sup>7</sup> The exact limit depends on the net worth of the firm and has varied over time.



**Fig. 1.** Expected DPP vote share and KMT vote share (daily). The figure displays (1) the prices of two candidates, Ma Ying-jeou (KMT) and Frank Hsieh (DPP) from the Taiwan Political Exchange (TPE), which capture their expected vote share. Occasionally, the sum of the prices, which are supposed to capture the expected vote shares of all candidates, do not sum to 1. To make a fair inter-temporal comparison of these prices over time, we normalize by dividing each price by the sum of prices. The figure also connects the prices prevailing on Friday which we use for the subsequent empirical analysis of weekly data.



**Fig. 2.** Co-movement of opinion polls (China Times and TVBS) and Taiwan Political Exchange (TPE). We choose only those dates corresponding to poll dates.

8000, 6000, 5000, 4000, 2500, and 1500 (real) NT dollars, respectively. Those placing 8th through 10th each received 1000 NT dollars.<sup>13</sup> It is in essence a tournament with a market mechanism for scoring.<sup>14</sup>

The raw data from the TPE record (1) the prices of two candidates, Ma Ying-jeou (KMT) and Frank Hsieh (DPP), which in principle capture their expected vote share, (2) the time of transaction, and (3) cumulative transaction volume from the opening of the market to the time of transaction.<sup>15</sup> To match the frequency of share price data from the Taipei Stock Exchange, we extract the last transaction of each day to find the “closing price” as of 1:30 pm, the time at which the Taipei Stock Exchange closes. Occasionally, the sum of the prices, which are supposed to capture the expected vote shares of all candidates, do not sum to 1. To make a fair inter-temporal comparison of these prices over time, we normalize by dividing each price by the sum of prices.<sup>16</sup> For use in robustness checks, we also calculate the expected DPP margin of victory,  $(\text{DPP share} - \text{KMT share}) / (\text{KMT share} + \text{DPP share} + \text{other shares})$ .

One concern with political market data is that the data might be noisy as uninformed traders drive prices away from “fundamental

values” in the very short-run. Such short-run diversions may endure for a significant period before informed traders reestablish an efficient price. As a result, we are uncertain as to how much of the observed day-to-day fluctuation in these prices represents a meaningful shift in expectations of the electoral performance of each political party. If the noise-to-information ratio is high, our estimation of partisan effects will suffer from a well-known attenuation bias. Knight (2007) deals with this source of measurement error by converting the data to a weekly frequency and looking at the price at the end of Friday. Following his methodology, we extract the Friday prices from the daily data and use both daily and weekly series.<sup>17</sup> Fig. 1 displays the evolution of the adjusted prices of the DPP and KMT candidates over time for both daily and weekly frequency.

The TPE exhibits relatively high liquidity; Table A2 shows that the TPE actually surpasses the IEM in trading volume. In addition, as a simple check of the credibility of the TPE data, we compare its movement with opinion poll results from two major media outlets: China Times and TVBS. Fig. 2 shows co-evolution of prediction market and opinion poll results.<sup>18</sup> Although the correlation is not perfect, these series appear to move in synchronicity, confirming that prediction markets incorporate some of the information contained in the opinion polls.

### 3.2. Share price

We use Taipei Stock Exchange data recording the daily closing share price for 700 firms.<sup>19</sup> We restrict our sample to the period (December 18, 2007–March 21, 2008) to match the political prediction market data. During our sample period, the market was closed, in addition to weekends, on Tuesday, January 1, 2008 (New Year Holiday), from Monday, February 4, 2008 to Monday, February

<sup>13</sup> The average exchange rate over the period during which the political market was open was 1 USD = 31.8 NT dollar. The winners were also publicly acknowledged and given certificates.

<sup>14</sup> Many economists believe the demonstrated superior accuracy of prediction markets when compared to polls and pundits is due in large part to the fact that market participants must put their money where their mouth is, providing strong incentives for information discovery and truthful revelation. This line of reasoning would imply that play-money markets are less accurate and thus less useful for predictive purposes. Servan-Schreiber et al. (2004) test this hypothesis with a careful comparison of two established prediction markets which are identical—same subject, sample period, contract structure, trading mechanism, and scoring rules—except that one is a real-money exchange, the other a play-money exchange. Subjecting the data to a battery of tests, they conclude that not only do both of these markets beat 99% of the individual experts, but “the predictive accuracies of the two markets are indistinguishable.”

<sup>15</sup> The data also contain the price of invalid votes, which remained stable (1–2%) throughout the period.

<sup>16</sup> The observed divergence between the adjusted and unadjusted turns out to be minimal with the exception of January 15 when the price of “invalid of votes” went up from 2 to 69 from 1:00 to 1:30 pm, thereby pushing down the values of adjusted shares as shown in Fig. 1. We have rerun our basic regressions with raw, un-normalized, data and find the results are essentially unchanged (Table A3).

<sup>17</sup> In addition, Knight (2007) uses opinion polls as an instrument to extract meaningful variation in prediction market movement in a robustness check. We attempt to replicate his results. In the Taiwanese case, however, we find that the opinion polls are not frequent enough and also the correlation between polls and the prediction market price is not strong enough to use the former as an instrument (see Stock and Yogo, 2005, for discussion of the weak instrument problem).

<sup>18</sup> The results of opinion polls are taken from two sources: United Daily News ([http://mag.udn.com/mag/vote2007-08/storypage.jsp?\\_ART\\_ID=109235](http://mag.udn.com/mag/vote2007-08/storypage.jsp?_ART_ID=109235)) and TVBS ([http://www.tvbs.com.tw/FILE\\_DB/DL\\_DB/rickliu/200803/rickliu-20080323100704.pdf](http://www.tvbs.com.tw/FILE_DB/DL_DB/rickliu/200803/rickliu-20080323100704.pdf)).

<sup>19</sup> The Taipei Stock Exchange closes at 1:30. Thus, the closing price is the last price prevailing at 1:30 on every trading day. [http://www.twse.com.tw/en/trading/exchange/STOCK\\_DAY\\_AVG/STOCK\\_DAY\\_AVGMAIN.php](http://www.twse.com.tw/en/trading/exchange/STOCK_DAY_AVG/STOCK_DAY_AVGMAIN.php).

11, 2008 (Chinese Lunar New Year Holiday), and on Thursday February 28, 2008 (Peace Memorial Day), which leaves 61 trading days in our sample.<sup>20</sup>

### 3.3. Market index (TAIEX and SHCOMP)

The daily data on Taiwan Stock Exchange Capitalization Weighted Stock Index (TAIEX) and Shanghai Stock Exchange Composite Index (SHCOMP) are taken from the Taipei Stock Exchange and Shanghai Stock Exchange, respectively. Since the Shanghai Stock Exchange was closed on two days, Monday, December 31, 2007 (New Year Holiday) and Tuesday, February, 2008, New Year Holiday and Chinese Lunar New Year Holiday, the analysis that incorporate SHCOMP is based upon a slightly smaller sample size.

### 3.4. Data on investment in mainland

The Taipei Stock Exchange lists 517 firms with investment in the mainland as of the first quarter of 2008, the campaign period for the 2008 presidential election. To construct a proxy for the reliance of a firm's earnings on mainland assets, we also divide total cumulative investment in China by total assets. In addition, the Taipei Stock Exchange disseminates the information about the maximum regulatory limit on the amount of investment in China that each firm is allowed to undertake. We identify those firms whose actual investment is in excess of 90% of their legal limit as particularly likely to be constrained by the regulatory limit and thus most likely to benefit from a KMT government.<sup>21</sup> It is widely known that Taiwanese firms invest in the mainland through subsidiaries based in a third country such as Hong Kong or the British Virgin Islands. Our investment data do include indirect investments and show that, as of the first quarter of 2008 (i.e., the period of the elections), Taiwanese firms directly invest in a mainland company in only 28 out of 2384 cases.<sup>22</sup>

## 4. Empirical strategy

The richness of the political market data enables a simple econometric methodology. Following Knight (2007), we relate the share price of firms to the share price (i.e., expected vote share) of the DPP candidate, Frank Hsieh, while allowing the relationship to vary

with firms' exposure to political risk. The basic empirical specification is:

$$R_{it} = \alpha_i + \gamma_1 DPP_t + \gamma_2 CHINA_i * DPP_t + \varepsilon_{it} \quad (1)$$

For firms listed on the Taipei Stock Exchange,  $R_{it}$  is the return on firm  $i$ 's shares on day  $t$ .  $DPP$  is the change in the expected performance of the DPP candidate. The firm-specific intercept  $\alpha_i$  captures the average return of firm  $i$ .  $CHINA$  is a set of variables that includes a binary indicator of firms with investment in the mainland, a continuous measure of the ratio of assets in the mainland to total assets, and an indicator of those firms whose total mainland investment is more than 90% of the maximum legal limit. If investors anticipated that the DPP government would reduce Taiwanese firms' profit opportunities in the mainland by either worsening diplomatic relations with the PRC or maintaining rigid limits on the mainland investment, the coefficient on  $CHINA$   $DPP$  should be negative; that is the partisan effects should be larger for firms whose investment in the mainland is larger and/or closer to the maximum limit, relative to a similar firm that has no investment in the mainland. The coefficient,  $\gamma_1$ , on (un-interacted)  $DPP$  serves as a placebo (or falsification) test. While we expect partisanship in the Taiwanese government to affect the prospects of Taiwanese firms with investments in the mainland, it ought *not* affect Taiwanese firms with no such investments. Thus, we are able to see if the correlation exists where it should not.

The main advantage of this basic specification is its simplicity, but a disadvantage is that the estimate of  $\gamma$  could be contaminated by a third (unobserved) factor that drives both political and financial markets in Taiwan. For example, negative news about the state/prospect of the Taiwanese economy could adversely affect the share prices of Taiwanese firms while at the same time damaging the electoral prospects of the incumbent party (the DPP in the case of the 2008 presidential election). More importantly, negative news about the state/prospect of the mainland economy could adversely affect the share prices of Taiwanese firms with mainland investments while undermining the popularity of the KMT's openness policies which hinges critically on the perceived benefit from economic integration with the booming mainland economy. To overcome this possible endogeneity bias, we extend the basic specification to control for market return in the Taiwan Stock Exchange and market return in the Shanghai Stock Exchange:

$$R_{it} = \alpha_i + \beta_i TAIEX_t + \theta_i SHCOMP_t + \gamma_1 DPP_t + \gamma_2 CHINA_i * DPP_t + \varepsilon_{it} \quad (2)$$

where  $TAIEX$  is the return on Taiwan Stock Exchange Capitalization Weighted Stock Index and  $SHCOMP$  is the return on Shanghai Stock Exchange Composite Index. This specification also allows us to test whether abnormal returns were systematically related to the performance of DPP's share in Taiwan Political Exchange.

Lastly, because our key independent variable,  $DPP$ , varies over time ( $t$ ), but not across firms ( $i$ ) at a point in time, the usual standard errors are invalid if returns are contemporaneously correlated across firms. Thus we correct standard errors for arbitrary contemporaneous correlation across firms.

## 5. Results

### 5.1. Basic results

As per Knight (2007), the daily and weekly data generate starkly different results. The results based on daily data are characterized by small coefficients that are not statistically distinguishable from zero (Table 1). As discussed in Section 3.1, we suspect that the political markets data are noisy at high frequencies; as a result, the results using daily data suffer serious attenuation bias. Knight documents

<sup>20</sup> The data are an unbalanced panel because the price of a security is recorded only when that security is traded and not every security is traded on every trading day.

<sup>21</sup> Theoretically, the constraint binds when a firm is close enough to the cap that it cannot undertake an investment project on the Mainland without exceeding the cap. Practically, this point will vary from firm to firm but firms closer to their investment limits are more likely to be constrained. We chose a cutoff of 90% as a round number that seemed reasonable. But, given the arbitrary nature of the choice, we have checked other cutoffs as well. We discuss this issue in Section 5.2.

<sup>22</sup> One concern with the prevalence of indirect investment via a third country is that there might still be "hidden mainland investment" even though firms are obligated by law to report all investment in the mainland via a third country. Unmeasured mainland investment might lead to complex econometric issues. On the one hand, if it is successfully diverted and thus hidden from both the authorities and financial market participants, it is thus not subject to the political risk and has no influence on our market-based estimate of partisan effects. On the other hand, the results are biased if the market participants have information about the extent of underreporting. If underreporting (or the market's perception of it) is purely random, then the results suffer from the traditional attenuation bias which is likely to go against finding significant partisan effects. However, if the (perceived) underreporting is related to the size of reported mainland investment as firms try to hide some of its mainland investment to evade regulation or reduce expropriation risk in the mainland, then the estimated partisan effect is likely to be "too large". In reality, measurement error is likely to have both random components and components related to the relevant firm characteristics. Unfortunately, in the absence of the data on true mainland investment, we are not able to evaluate the nature of measurement error and assess the severity and direction of bias that stem from it.

**Table 1**  
Basic results (daily data).

Variables	(1)	(2)	(3)	(4)
	Dependent variable: abnormal returns			
Change in DPP vote share	−0.00815 (0.0294)	0.00537 (0.0203)		
Mainland investment dummy Change in DPP vote share	0.0151 (0.0307)			
Mainland investment Change in DPP vote share		−0.0353 (0.0900)		
Change in DPP margin of victory			−0.0112 (0.0196)	−0.00630 (0.0156)
Mainland investment dummy Change in DPP margin of victory			0.00211 (0.0161)	
Mainland investment Change in DPP margin of victory				−0.0474 (0.0521)
Constant	−0.0270 (0.117)	−0.0271 (0.117)	−0.0345 (0.118)	−0.0345 (0.118)
Observations	36,925	36,925	36,925	36,925
R-squared	0.377	0.376	0.377	0.377
Number of firms	700	700	700	700

Robust standard errors in parentheses.

Daily data cover the period: December 18, 2007 to March 21, 2008. Change in DPP Vote Share is daily change in the price of a Democratic Progressive Party (DPP) contract in Taiwan Political Exchange. Mainland investment dummy equals 1 if a firm has subsidiaries in the People's Republic of China. Mainland investment is the ratio of mainland assets to total assets. All specifications include firm-specific intercepts and controls for both Taiwan Stock Exchange Capitalization Weighted Stock Index (TAIEX) and Shanghai Stock Exchange Composite Index (SHCOMP). To do so, the percentage change in TAIEX is interacted with a firm-specific dummy variable to allow for firm specific market risk (beta). Similarly for SHCOMP, standard errors are adjusted for contemporaneous correlation across firms.

\*\*\*  $p < 0.01$ .

\*\*  $p < 0.05$ .

\*  $p < 0.1$ .

similar behavior using IEM data and the TPE is characterized by a similar design and comparable volume.

The results based on weekly data are reported in Table 2. The results shows that firms with no Mainland investment are insignificantly affected by changes in the expected DPP vote share while firms with any Mainland investment at all suffer significant negative effects as a group. The average weekly fluctuation in expected vote share was 3.6 percentage points,<sup>23</sup> which would result in 45–52 basis points change in the share prices of firms with mainland investment, based on the coefficient estimates in columns (1) and (3). Given that the average weekly return during our sample period for TAIEX listed firms is 90 basis points, partisan political effects are large compared to the background of other factors which drive firm returns.<sup>24</sup> When we rerun the regressions replacing the dummy variable for mainland investment with a continuous measure of the ratio of mainland assets to total assets, the results, reported in columns (2) and (4), show that where mainland investment is a greater fraction of total assets, returns are more sensitive to the political campaign. These results are robust to re-estimation using the difference between DPP vote share and KMT vote share (columns 5–8).

One notable feature of these results is that as we add both TAIEX and SHCOMP to control for overall market risk, the goodness of fit

improves dramatically (i.e., these indexes provide relevant information to the valuation of Taiwanese firms). However, the estimates of coefficients on *DPP* and the interaction of *DPP* with relevant firm characteristics are insensitive to the inclusion of these control variables. While this does not constitute a formal test of the identifying assumption, it does give us some confidence that unmeasured economic shocks are unlikely to play a major role in driving our main results.

Overall, our analyses show clear evidence of partisan effects in Taiwan: financial markets fear that the DPP government would reduce the profit opportunity of Taiwanese firms with investment in the mainland directly by continuing to impose stringent limits on mainland investment or indirectly by worsening the diplomatic relation with the PRC thus raising expropriation risk in the mainland.<sup>25</sup>

<sup>25</sup> Thus far, we have shown that the expected vote share of the DPP has linear effects on the share prices of firms that have high stakes in the election outcome. The relationship, however, might well be nonlinear because a small shift of votes from the KMT to the DPP has negligible effects on the probability of the KMT victory if the KMT is expected to win landslide, whereas the same shift can cause a sizable change in the probability if the race is neck-to-neck. Ideally, we would like to quantify the difference in firm value that would result from having one government vs. the other. To correctly estimate the total value of the DPP platform, we should look at the marginal effect as the expected probability of DPP victory goes from 0 to 1. However, because the TPE traded only securities paying based on vote shares, this requires estimating the (nonlinear) mapping of expected vote share into expected probability of victory. To do so we have used IEM data—where both vote share and winner take all markets exist—to estimate the relationship for US Presidential elections and used the estimated relationship to convert the Taiwanese data into expected probability of victory at which point the original analysis is rerun. The coefficient on DPP's probability of victory is negative and statistically significant (columns 1–6) for firms with mainland investment. It is also economically important as it suggests that if this probability increases from zero to one, the stock price of firms with mainland investment drops 8% relative to those without mainland investment. These effects are comparable to the estimated partisan effects in the US (Knight, 2007). Nonetheless, we refrain from reporting these results in the body of the paper as there are several strong reasons to believe that Taiwan Presidential elections and US Presidential elections are characterized by different mappings between expected vote-share and expected probability of victory.

<sup>23</sup> See Table A1 for summary statistics.

<sup>24</sup> These point estimates might be too conservative if the firms that are more sensitive to tight regulation failed during 8 years of DPP (and as a result are not a part of our sample). We made an attempt to examine whether there were differential failure rates for firms with mainland investment and those without it under the DPP government prior to 2008. Unfortunately, firm-level data set on investment in the mainland extend back only to 2003 (1st quarter). With that caveat in mind, we found that, as of 2003, there were 637 firms listed on TSE, out of which 232 firms had investment in the mainland. We then went to the list of firms in TSE in 2008 and found that all of these 637 firms continued to be listed. Thus, as far as the listed firms are concerned, there does not seem to be any pattern of failure that is systematically related to policy shocks, although this observation is based on the period of so called "Great Moderation" that also coincided with rapid economic growth in China (i.e., it would have taken much larger negative shocks for listed Taiwanese firms to fail).

**Table 2**  
Basic results (weekly data).

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Ri	Ri	Ri	Ri	Ri	Ri	Ri	Ri
Change in DPP vote share	−0.0769 (0.236)	−0.129 (0.244)	−0.0882 (0.143)	−0.143 (0.101)				
Mainland investment dummy Change in DPP vote share	−0.125** (0.0458)		−0.144** (0.0649)					
Mainland investment Change in DPP vote share		−0.558* (0.277)		−0.732*** (0.171)				
Change in DPP margin of victory					−0.0389 (0.117)	−0.0644 (0.121)	−0.0389 (0.0764)	−0.0654 (0.0548)
Mainland investment dummy Change in DPP margin of victory					−0.0597** (0.0225)		−0.0687** (0.0305)	
Mainland investment Change in DPP margin of victory						−0.258 (0.149)		−0.341*** (0.0880)
Constant	0.934 (1.216)	0.934 (1.215)	0.944 (0.735)	0.943 (0.735)	0.923 (1.209)	0.923 (1.209)	0.922 (0.742)	0.921 (0.742)
TAIEX controls	No	No	Yes	Yes	No	No	Yes	Yes
SHCOMP controls	No	No	Yes	Yes	No	No	Yes	Yes
Observations	7866	7866	7866	7866	7866	7866	7866	7866
R-squared	0.010	0.010	0.484	0.484	0.010	0.009	0.483	0.483
Number of firms	700	700	700	700	700	700	700	700

Robust standard errors are in parentheses.

Weekly data cover the period: December 18, 2007 to March 21, 2008. Change in DPP Vote Share is weekly change in the price of a Democratic Progressive Party (DPP) contract in Taiwan Political Exchange. Mainland investment dummy equals 1 if a firm has subsidiaries in the People's Republic of China. Mainland investment is the ratio of mainland assets to total assets. Specifications in columns 3–4 and 7–8 include firm-specific intercepts and controls for both Taiwan Stock Exchange Capitalization Weighted Stock Index (TAIEX) and Shanghai Stock Exchange Composite Index (SHCOMP). To do so, the percentage change in TAIEX is interacted with a firm-specific dummy variable to allow for firm specific market risk (beta). Similarly for SHCOMP, standard errors are adjusted for contemporaneous correlation across firms.

\*\* p<0.05.

\* p<0.1.

\*\*\* p<0.01.

## 5.2. Firms close to the limit

To distinguish between these two channels, we examine whether the partisan effects are particularly large for firms that are close to the regulatory constraints (Table 3). As discussed in Section 3.4, we define firms likely to be constrained as those with mainland investments in excess of 90% of the legal limit.<sup>26</sup> We find that a dummy variable for firms whose investment is close to the limit is negative and significant even after controlling for investment presence in the mainland (columns 1 and 3). That is, the magnitude of the partisan effects are larger on a firm that is facing tight regulatory constraint even compared to a subset of other Taiwanese firms that have active mainland investment.

The results also show that even after controlling for an indicator of firms that are constrained by the legal limit, the coefficient on the dummy for firms with mainland investment remains negative and statistically significant. That is, even those firms with ample room to expand their operation in the mainland were negatively affected by the possible electoral victory of the DPP, which might suggest that market participants feared diplomatic instability between the PRC and Taiwan under the DPP government and imputed expropriation risk into equity price of firms with active investment in the mainland.

In fact, once the continuous measure of mainland investment is used, being close to the investment cap results in no additional vulnerability to policy changes (columns 2 and 4). These results suggest that the negative effects of the DPP on Taiwanese firms might be less a function of the anticipated relaxation of investment limits under a KMT government and more a function of the improved profitability of current investments due

to lower transactions costs and/or the lessening of the risk to these investments from future cross-strait political conflicts. However, we cannot measure the relative importance of these two channels with precision because the nature of the regulation itself gives rise to a severe multicollinearity problem: firms that are likely to face binding constraints tend to be those firms with large investments.

## 5.3. Trade effects

In addition to raising the investment cap, the KMT also advocated fewer travel restrictions, reducing the lists of banned imports and exports, and the eventual realization of common markets between the mainland and Taiwan, each of which would have reduced transaction costs associated with cross-strait trade.<sup>27</sup> Thus, one would expect that a DPP victory would have had negative effects on firms exporting finished products to or importing intermediate goods from the mainland. Unfortunately, there are no firm-level data on imports and exports between Taiwan and the PRC. However, in the firm-level description, Worldscope reports whether the firm exports to Asia. Feeling this would reasonably capture those firms who either already export to China or could readily do so, we use this descriptor to identify a group of Taiwanese firms that are likely to benefit from a liberalization of cross-strait trade relations. Needless to say, these results must be interpreted with caution because some of the firms that export to Asia do not export to the PRC but our measure nonetheless groups them with those that do. Moreover, Worldscope's coverage of Taiwan is limited to 512 of the 700 publicly traded firms.

Despite the crudeness of our measure, we find significant effects. The share prices of firms that export to Asia react negatively to improvements in the expected DPP performance as per firms with mainland investment (Table 4). Moreover, the negative coefficient on

<sup>26</sup> Presumably the level that is binding—preventing the marginal investment opportunity—depends on the firm's menu of projects and thus varies from firm to firm. Because of this heterogeneity, we face an important trade-off. We needed a cutoff high enough for the constraint to be binding; i.e., lowering the cutoff adds more firms for whom the constraint is not binding and thus for whom the partisan effects are weaker. At the same time, if it is too high, then we have too few firms in the treated group and thus no statistical leverage to test the partisan effects. We rerun the analysis with 87%, 90%, and 93% (see Table A4). Our estimates are generally robust, with the caveat that as the cutoff declines, the point estimates move toward zero as anticipated.

<sup>27</sup> Whited (2008) notes that “direct trade and transport ties to replace indirect shipping via Hong Kong or, to some extent, Japan... would significantly add to the attractiveness of cross-strait trade” and cites figures that transshipping via a third area adds as much as 5% of the total value of cross-strait trade to the cost (p192).

**Table 3**  
The effects of the investment limit.

Variables	(1)	(2)	(3)	(4)
	<i>Ri</i>	<i>Ri</i>	<i>Ri</i>	<i>Ri</i>
Change in DPP vote share	−0.0882 (0.143)	−0.126 (0.103)		
Mainland investment dummy Change in DPP vote share	−0.146* (0.0687)			
Indicator investment within 90% of limit Change in DPP vote share	−0.110* (0.0529)	−0.00121 (0.0406)		
Mainland investment Change in DPP vote share		−1.116*** (0.226)		
Change in DPP margin of victory			−0.0389 (0.0764)	−0.0575 (0.0556)
Mainland investment dummy Change in DPP margin of victory			−0.0699* (0.0327)	
Indicator investment within 90% of limit Change in DPP margin of victory			−0.0519* (0.0285)	−0.000626 (0.0198)
Mainland investment Change in DPP margin of victory				−0.527*** (0.110)
Constant	0.922 (0.717)	0.921 (0.717)	0.900 (0.725)	0.899 (0.725)
Observations	7638	7638	7638	7638
R-squared	0.484	0.484	0.482	0.483
Number of firms	678	678	678	678

Robust standard errors are in parentheses.

Weekly data cover the period: December 18, 2007 to March 21, 2008. Change in DPP Vote Share is weekly change in the price of a Democratic Progressive Party (DPP) contract in Taiwan Political Exchange. Mainland investment dummy equals 1 if a firm has subsidiaries in the People's Republic of China. Mainland investment is the ratio of mainland assets to total assets. Indicator investment within 90% of limit is a dummy variable for firms whose total mainland investment is in excess of 90% of legal limit. All specifications include firm-specific intercepts and controls for both Taiwan Stock Exchange Capitalization Weighted Stock Index (TAIEX) and Shanghai Stock Exchange Composite Index (SHCOMP). To do so, the percentage change in TAIEX is interacted with a firm-specific dummy variable to allow for firm specific market risk ( $\beta$ ). Similarly for SHCOMP, standard errors are adjusted for contemporaneous correlation across firms.

\*  $p < 0.1$ .

\*\*  $p < 0.05$ .

\*\*\*  $p < 0.01$ .

the interaction of mainland investment (measured either as a continuous variable or as an indicator of being close to the legal limit) with DPP share is robust to the inclusion of this dummy variable for export to Asia (columns 2–3 and 5–6 in Table 4), which suggests investors anticipated and responded to changes in the policy environment for both cross-strait trade and investment. While it is safe to say that partisan effects in Taiwan are likely to operate through both investment and trade, multicollinearity—85% of firms that export to Asia have investment in the mainland while 67% of firms with investment in the mainland export to Asia—prevents us from concluding as to the relative importance of trade restrictions, investment restrictions, and expropriation risk.

#### 5.4. Possible alternate channels

Having demonstrated a strong correlation between the prospects of a DPP victory and the share prices of firms with significant mainland investments, we turn to the possibility that this correlation may be driven, not by fear of the DPP's cross-strait policies, but by some third factor that affects both voter behavior and the profitability of firms that invest in the mainland (e.g., economic news such as rising wage in China, tighter regulation on foreign firms in China, or failed investments by Taiwanese firms in China which would reduce the share prices of these Taiwanese firms while at the same time also likely lessening the appeal of the KMT's policies to Taiwanese voters). Our first step is to note that the expected margin of victory is not strongly correlated with either the Taiwanese broad stock index (TAIEX) or the Shanghai broad stock index (SHCOMP).<sup>28</sup> Moreover, if

<sup>28</sup> The correlation coefficient of DPP's margin of victory with TAIEX is  $-0.44$  and statistically insignificant while that with SHCOMP is  $0.46$  and also insignificant.

economic news is driving both the prediction markets and the stock market, then our coefficient estimates should change substantially if we drop our controls for the TAIEX and SHCOMP which should capture some of the relevant economic news.<sup>29</sup> They do not (Table 2). While Taiwanese voters surely, like voters around the world, vote based on economic conditions (see Lewis-Beck and Paldam, 2000), retrospective economic evaluation does not seem to be driving the high frequency movements in the DPP's expected margin of victory that we use in our analysis.

Instead, the largest movements in expected margin of victory seem to be driven by political events, as shown in Fig. 3.<sup>30</sup> Events favorable

<sup>29</sup> On the other hand, these broad market indices might not reflect the business climate for foreign firms. Thus we might still worry that news changing this climate is an omitted variable driving both stock prices and voter attitudes. We conducted a Lexis-Nexus search for media mentions of policy changes affecting the business climate for foreign firms in China. There was nothing of relevance during our sample period. This is likely because there were so many big changes the year prior to our sample. In March through July of 2007, the Chinese government passed big changes to the corporate income tax rate for foreign companies, to labor laws governing worker compensation, and to export rebates, each of which represented a severe challenge to the profitability of foreign firms. Several of these changes were scheduled to take place in January 2008. However, these changes were passed many months before our sample and had been announced and publically debated long before they were passed. While voters might have reacted to the news that the change was implemented, investors and business owners were had known for at least six months and probably more than a year. We thus conclude it is unlikely our results are driven by unobserved news. We are indebted to an anonymous referee for emphasizing the importance of this investigation.

<sup>30</sup> In Fig. 3, we focus on long (or medium) term change in Taiwan Political Exchange (TPE) by exploring possible events that could account for weekly change in expected margin of victory for DPP since the daily data seem excessively noisy (Fig. 1). The figure also displays expected margin of victory as opposed to expected vote share of each party so as to keep the figure less cluttered. Since expected vote shares of the two parties are nearly perfectly (negatively) correlated, the margin of victory tends to exaggerate the movement in TPE.



**Table 4**  
The effects on exporting firms.

Variables	(1)	(2)	(3)	(4)	(5)	(6)
	Ri	Ri	Ri	Ri	Ri	Ri
Change in DPP vote share	0.0381 (0.153)	−0.000662 (0.124)	−0.0221 (0.128)			
Export to Asia Change in DPP vote share	−0.222*** (0.0452)	−0.231*** (0.0547)	−0.250*** (0.0572)			
Mainland investment dummy Change in DPP vote share	−0.103 (0.0607)					
Mainland investment Change in DPP vote share		−0.467** (0.181)				
Indicator investment within 90% of limit Change in DPP vote share			−0.111** (0.0427)			
Change in DPP margin of victory				0.0207 (0.0797)	0.00245 (0.0652)	−0.00798 (0.0675)
Export to Asia Change in DPP margin of victory				−0.106*** (0.0206)	−0.110*** (0.0250)	−0.119*** (0.0256)
Mainland investment dummy Change in DPP margin of victory				−0.0482 (0.0281)		
Mainland investment Change in DPP margin of victory					−0.215** (0.0915)	
Indicator investment within 90% of limit Change in DPP margin of victory						−0.0543** (0.0200)
Constant	1.017 (0.724)	1.016 (0.724)	0.992 (0.703)	0.996 (0.730)	0.995 (0.730)	0.971 (0.710)
Observations	5943	5943	5729	5943	5943	5729
R-squared	0.484	0.484	0.482	0.482	0.482	0.481
Number of firms	525	525	505	525	525	505

Robust standard errors are in parentheses.

Weekly data cover the period: December 18, 2007 to March 21, 2008. Change in DPP Vote Share is weekly change in the price of a Democratic Progressive Party (DPP) contract in Taiwan Political Exchange. Mainland investment dummy equals 1 if a firm has subsidiaries in the People's Republic of China. Mainland investment is the ratio of mainland assets to total assets. Indicator investment within 90% of limit is a dummy variable for firms whose total mainland is within 90 of legal limit. Export to Asia is a dummy variable for firms that export to Asia. All specifications include firm specific intercepts and controls for both Taiwan Stock Exchange Capitalization Weighted Stock Index (TAIEX) and Shanghai Stock Exchange Composite Index (SHCOMP). To do so, the percentage change in TAIEX is interacted with a firm-specific dummy variable to allow for firm specific market risk (beta). Similarly for SHCOMP, standard errors are adjusted for contemporaneous correlation across firms.

\*\*\*  $p < 0.01$ .

\*\*  $p < 0.05$ .

\*  $p < 0.1$ .

to the KMT (e.g., Ma being cleared of corruption charges on December 28, the KMT winning the legislative majority on January 12, and the poll continuing to show that voters consider economic issues to be important in the last week of February) are negatively correlated with the expected margin of victory for the DPP. On the other hand, although the DPP's prospect was mostly on the decline throughout the campaign, the uprising in Tibet seemed to help the DPP during last week of the campaign as the DPP exploited the unrest to appeal its slogan of political independence from the mainland. These events should have little direct effects on the profitability of the Taiwanese firms whose investments are concentrated in large cities and coastal areas.<sup>31</sup>

Nonetheless, firms with mainland investment may systematically differ from firms without such investment: they may come from different industries, have different capital structures, or be systematically larger (or smaller) because certain qualities may causally lead to greater propensity for cross-strait investment. If the same quality that affects propensity for cross-strait investment also renders the firm more or less susceptible to partisan differences, this would result in correlation between expected vote shares and the returns to firms

with mainland investment.<sup>32</sup> For example, suppose there are fixed costs of entering the mainland such that only large firms have the ability to do so. Suppose further that the KMT (but not the DPP) is known to have cozy relationships with many large businesses and be open to bribery if the firm is important enough to merit the attention. This could deliver our results even if the channel we propose is untrue.

This is essentially an omitted variables problem: we need to identify and include potential factors that determine propensity to invest in the mainland. The two most likely such factors are firm size, as argued above, and capital intensity, given that much of the off-shoring to the mainland is driven by labor cost. Table 5 reports the results after controlling for firm size (measured by sales) and capital intensity (measured by the tangible assets-to-sales ratio). Neither of these controls affects the susceptibility of share prices to political expectations, nor do they change the magnitude and significance of the original results.

## 6. Concluding remarks

The Taiwanese Presidential Election of 2008 constitutes a clean experiment for measuring the political risk faced by Taiwanese firms: the election was dominated by a single issue on which the two parties maintained stable, credible, well-articulated policies with starkly different implications for a clearly identifiable subset of Taiwanese

<sup>31</sup> One might wonder whether the unrest directly affected the future profitability of Taiwanese investment in the mainland. Removing the period of the unrest from the data increases the standard errors as it greatly reduces the variation in the TPE data, but it does little to the point estimates.

<sup>32</sup> We are indebted to an anonymous referee for this point.

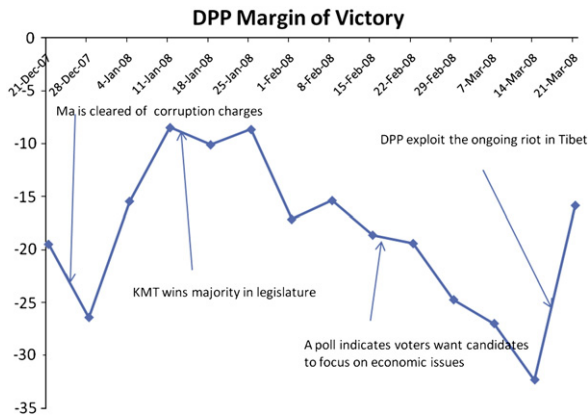


Fig. 3. Political events and change in expected DPP margin of victory.

firms. Judged against the baseline of KMT policy, a DPP victory would have implied adverse effects on firms with active investment in mainland China via two channels. First, maintaining the limits on cross-strait investment would have directly hurt those firms currently operating close to the investment cap by denying them opportunities to expand their operations in mainland China. Second, the DPP's habit of provocative displays of independence, combined with the PRC's threat to declare war should formal independence be declared, likely heightens expropriation risk for Taiwanese firms with mainland investment.

Our results confirm that three aspects of the parties' policy platforms were capitalized into firm share prices. First, the share prices of firms with mainland investments are more sensitive to the electoral campaign than those firms whose investment in mainland

China has not yet approached the firm-specific cap, suggesting the importance of the specific policy of lifting the investment cap. Second, our results show a statistically significant effect for those firms that have mainland investments but are *not* close to the legal limit. Third, we find that firms that export within the region were also sensitive to the expected election results. These last two factors are likely driven by some combination of (i) the expectation that the KMT would lower the transactions cost of doing business with the mainland and (ii) the expectation that KMT policies would lessen the chance of future political events leading to disruption of trade possibly including expropriation.

During the cross-strait tensions preceding the Taiwanese elections of 1996, the Taiwanese stock market plummeted as capital fled the island. While cross-strait relations are calmer now, our results suggest that Taiwanese firms continue to face significant risk from the simmering uncertainty. This is direct evidence that the effects of geopolitical uncertainty on the value of overseas investment, and thus on international economic integration, can be quite large.

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Table 5  
Controlling for firm size and capital intensity.

Variables	(1)	(2)	(3)	(4)
	<i>Ri</i>	<i>Ri</i>	<i>Ri</i>	<i>Ri</i>
Change in DPP vote share	-0.501 (0.420)	-0.350 (0.412)	-0.0876 (0.144)	-0.143 (0.100)
Mainland investment dummy Change in DPP vote share	-0.159** (0.0631)		-0.144* (0.0677)	
Mainland investment Change in DPP vote share		-0.680*** (0.157)		-0.722*** (0.179)
Log (sales) Change in DPP vote share	0.0274 (0.0190)	0.0132 (0.0203)		
Fixed assets-to-sales ratio Change in DPP vote share			0.000384 (0.00131)	0.000599 (0.00140)
Constant	0.946 (0.734)	0.944 (0.734)	0.945 (0.734)	0.944 (0.734)
Observations	7761	7761	7761	7761
R-squared	0.484	0.483	0.483	0.483
Number of firms	684	684	684	684

Robust standard errors are in parentheses.

Weekly data cover the period: December 18, 2007 to March 21, 2008. Change in DPP Vote Share is weekly change in the price of a Democratic Progressive Party (DPP) contract in Taiwan Political Exchange. Mainland investment dummy equals 1 if a firm has subsidiaries in the People's Republic of China. Mainland investment is the ratio of mainland assets to total assets. Indicator investment within 90% of limit is a dummy variable for firms whose total mainland is within 90 of legal limit. All specifications include firm-specific intercepts and controls for both Taiwan Stock Exchange Capitalization Weighted Stock Index (TAIEX) and Shanghai Stock Exchange Composite Index (SHCOMP). To do so, the percentage change in TAIEX is interacted with a firm-specific dummy variable to allow for firm specific market risk (beta). Similarly for SHCOMP. Standard errors are adjusted for contemporaneous correlation across firms.

\*\*  $p < 0.05$ .

\*  $p < 0.1$ .

\*\*\*  $p < 0.01$ .

## Appendix A

Table A1

Summary statistics.

Variable		Mean	Std. dev.	Min	Max	Obs
Weekly return (%)	Overall	0.90	6.68	−29.87	32.70	N = 7866
	Between		2.35	−23.25	19.71	n = 700
	Within		6.42	−28.23	30.88	T = 11,2371
TAIEX (%)	Overall	0.59	3.44	−5.59	5.58	N = 8400
	Between		0.00	0.59	0.59	n = 700
	Within		3.44	−5.59	5.58	T = 12
SHCOMP (%)	Overall	−2.46	4.60	−9.72	4.00	N = 8400
	Between		0.00	−2.46	−2.46	n = 700
	Within		4.60	−9.72	4.00	T = 12
Change in DPP vote share (%)	Overall	0.22	3.58	−4.24	8.25	N = 8400
	Between		0.00	0.22	0.22	n = 700
	Within		3.58	−4.24	8.25	T = 12
Change in DPP margin of victory (%)	Overall	0.30	7.24	−8.49	16.48	N = 8400
	Between		0.00	0.30	0.30	n = 700
	Within		7.24	−8.49	16.48	T = 12
Mainland investment	Overall	0.07	0.09	0.00	0.88	N = 8400
	Between		0.09	0.00	0.88	n = 700
	Within		0.00	0.07	0.07	T = 12
Mainland investment dummy	Overall	0.73	0.45	0.00	1.00	N = 8400
	Between		0.45	0.00	1.00	n = 700
	Within		0.00	0.73	0.73	T = 12
Indicator investment within 90% of limit	Overall	0.02	0.13	0.00	1.00	N = 8136
	Between		0.13	0.00	1.00	n = 678
	Within		0.00	0.02	0.02	T = 12
Export to Asia	Overall	0.62	0.49	0.00	1.00	N = 6300
	Between		0.49	0.00	1.00	n = 525
	Within		0.00	0.62	0.62	T = 12
Log (sales)	Overall	15.44	1.62	8.37	20.93	N = 8208
	Between		1.62	8.37	20.93	n = 684
	Within		0.00	15.44	15.44	T = 12
Tangible assets-to-sales ratio	Overall	0.96	10.05	0.00	259.69	N = 8208
	Between		10.05	0.00	259.69	n = 684
	Within		0.00	0.96	0.96	T = 12

Table A2

Comparing the TPE with the IEM.

		Weekly unit volume			
		Mean	Std dev.	Min	Max
Taiwan 2008	KMT	6290	6575	292	24,870
	DPP	6029	5403	398	20,253
US 2008	Dem	435	346	0	1273
	Rep	489	364	0	1131
US 2004	Dem	1159	866	216	3625
	Rep	1280	878	196	4026
US 2000	Dem	566	365	40	2167
	Rep	553	367	40	1642

Table A3

Basic results (weekly data: adjusted vs. raw data) adjusted raw.

Variables	(1)	(2)	(3)	(4)
	Ri	Ri	Ri	Ri
Change in DPP margin of victory	−0.0389 (0.0764)	−0.0654 (0.0548)	−0.0331 (0.0847)	−0.0654 (0.0600)
Mainland investment dummy Change in DPP margin of victory	−0.0687** (0.0305)		−0.0811* (0.0371)	
Mainland investment Change in DPP margin of victory		−0.341*** (0.0880)		−0.387*** (0.107)
Constant	0.922 (0.742)	0.921 (0.742)	0.955 (0.738)	0.954 (0.738)

(continued on next page)

Table A3 (continued)

Variables	(1)	(2)	(3)	(4)
	Ri	Ri	Ri	Ri
Observations	7866	7866	7866	7866
R-squared	0.483	0.483	0.483	0.483
Number of firms	700	700	700	700

Robust standard errors are in parentheses.

Weekly data cover the period: December 18, 2007 to March 21, 2008. Mainland investment dummy equals 1 if a firm has subsidiaries in the People's Republic of China. Mainland investment is the ratio of mainland assets to total assets. All specifications include firm-specific intercepts and controls for both Taiwan Stock Exchange Capitalization Weighted Stock Index (TAIEX) and Shanghai Stock Exchange Composite Index (SHCOMP). To do so, the percentage change in TAIEX is interacted with a firm-specific dummy variable to allow for firm specific market risk (beta). Similarly for SHCOMP. Standard errors are adjusted for contemporaneous correlation across firms.

\*\* p<0.05.

\* p<0.1.

\*\*\* p<0.01.

Table A4

The effects of the investment limit: Varying the cutoff for classifying firms as constrained (X).

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Ri	Ri	Ri	Ri	Ri	Ri	Ri	Ri	Ri	Ri	Ri	Ri
Cutoff	X=93	X=93	X=93	X=93	X=90	X=90	X=90	X=90	X=87	X=87	X=87	X=87
Change in DPP vote share	-0.0882 (0.143)	-0.126 (0.103)			-0.0882 (0.143)	-0.126 (0.103)			-0.0882 (0.143)	-0.126 (0.103)		
Mainland investment dummy*Change in DPP vote share	-0.147* (0.0683)				-0.146* (0.0687)				-0.146* (0.0690)			
Mainland investment Change in DPP vote share		-1.110*** (0.225)				-1.116*** (0.226)				-1.127*** (0.240)		
Indicator investment within X% of limit Change in DPP vote share	-0.108** (0.0424)	-0.0177 (0.0357)			-0.110* (0.0529)	-0.00121 (0.0406)			-0.0999* (0.0501)	0.0182 (0.0506)		
Change in DPP margin of victory			-0.0389 (0.0764)	-0.0576 (0.0555)			-0.0389 (0.0764)	-0.0575 (0.0556)			-0.0389 (0.0764)	-0.0574 (0.0556)
Mainland investment dummy Change in DPP margin of victory			-0.0702* (0.0324)				-0.0699* (0.0327)				-0.0698* (0.0328)	
Mainland investment Change in DPP margin of victory				-0.523*** (0.111)				-0.527*** (0.110)				-0.531*** (0.117)
Indicator investment within X% of limit* Change in DPP margin of victory			-0.0523** (0.0218)	-0.0103 (0.0164)			-0.0519* (0.0285)	-0.000626 (0.0198)			-0.0490* (0.0257)	0.00620 (0.0232)
Constant	0.922 (0.717)	0.921 (0.717)	0.900 (0.725)	0.899 (0.725)	0.922 (0.717)	0.921 (0.717)	0.900 (0.725)	0.899 (0.725)	0.922 (0.717)	0.921 (0.717)	0.900 (0.725)	0.899 (0.725)
Observations	7638	7638	7638	7638	7638	7638	7638	7638	7638	7638	7638	7638
R-squared	0.484	0.484	0.482	0.483	0.484	0.484	0.482	0.483	0.484	0.484	0.482	0.483
Number of firms	678	678	678	678	678	678	678	678	678	678	678	678

Robust standard errors in parentheses.

Weekly data cover the period: December 18, 2007 to March 21, 2008. Change in DPP Vote Share is weekly change in the price of a Democratic Progressive Party (DPP) contract in Taiwan Political Exchange. Mainland investment dummy equals 1 if a firm has subsidiaries in the People's Republic of China. Mainland investment is the ratio of mainland assets to total assets. Indicator investment within X% of limit is a dummy variable for firms whose total mainland investment is in excess of X% of the legal limit. All specifications include firm-specific intercepts and controls for both Taiwan Stock Exchange Capitalization Weighted Stock Index (TAIEX) and Shanghai Stock Exchange Composite Index (SHCOMP). To do so, the percentage change in TAIEX is interacted with a firm-specific dummy variable to allow for firm specific market risk (beta). Similarly for SHCOMP. Standard errors are adjusted for contemporaneous correlation across firms.

\* p<0.1.

\*\*\* p<0.01.

\*\* p<0.05.

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