
Wesleyan Economic Working Papers

<http://repec.wesleyan.edu/>
Nº: 2010-001

Elections and Political Risk: New Evidence from Political Prediction Markets in Taiwan

Masami Imai and Cameron A. Shelton

January 2010

WESLEYAN
UNIVERSITY



Department of Economics
Public Affairs Center
238 Church Street
Middletown, CT 06459-007

Tel: (860) 685-2340
Fax: (860) 685-2301
<http://www.wesleyan.edu/econ>

Elections and Political Risk: New Evidence from Political Prediction Markets in Taiwan.*

Masami Imai
Department of Economics
Wesleyan University
mimai@wesleyan.edu

Cameron A. Shelton
Robert Day School of Economics and Finance
Claremont McKenna College
cshelton@cmc.edu

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.

Key Words: Partisan Effects, Taiwan
JEL codes: P16, O16, E44

* The authors acknowledge financial support from Wesleyan University and thank Peter Hull for excellent research assistance and Jie-Jun Tseng at Academia Sinica, Taipei, for generously providing us with the data from the Taipei Political Exchange. We also thank Richard Burdekin, Brock Blomberg, Richard Grossman, Anders Johansson, and Tom Willett for helpful comments.

Elections and Political Risk: New Evidence from Political Prediction Markets in Taiwan.

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.

Key Words: Partisan Effects, Taiwan
JEL codes: P16, O16, E44

1. Introduction

Because governments have discretionary power to levy taxes and impose burdensome regulation on private firms with productive assets 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.¹ 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.²

More 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, Wolfers,

¹ See Drazen (2001) for a useful summary.

² See Snowberg, Wolfers, and Zitzewitz (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.

Zitzewitz, 2007a,b; Fuss and Bechtel, 2008; Shelton, 2010). 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, Wolfers, and Zitzewitz (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.

More credible evidence of partisan effects comes from Jayachandran (2006) and Knight (2007) both of which 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 the effects of partisan control on stock prices varies according to the firm's political contributions to each party. Studying the US Presidential election of 2000, Knight (2007) has 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, 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.

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 2006). 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 (esp. politically connected) firms in emerging markets (e.g., Fisman, 2001; Johnson and Mitton, 2003; Faccio, 2006; Claessens, Feijen, and Laeven, 2008; Bunkanwanicha and Wiwattanakantang, 2009).

We make a contribution to this literature by measuring the economic impact of Taiwan's electoral shocks on Taiwanese firms' profitability 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 economic dependence that would in turn inhibit political independence.³

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.

³ 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.

The Taiwanese case also has methodological advantages emanating from the availability of a unique data set on the 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.⁴ 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 2 percent 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

⁴ Similar data in the US have been shown to be more accurate than polling data (Wolfers and Zitzewitz 2007).

evidence that elections and the attendant possibility of regime change pose considerable political risk to private firms in Taiwan.

This paper is organized as follows: Section 2 summarizes Taiwan's political parties, elections, and diplomatic and economic relations with the mainland. Section 3 discusses the data. Section 4 describes our methodology. Section 5 presents the empirical findings. Concluding remarks follow.

2. Background

2.1. History

Multi-party democracy is relatively new to Taiwan. Following the arrival of Chiang Kai-shek and the Kuomintang (KMT) nationalist government in 1949, Taiwan was a single-party state under KMT rule. Abrogating term limits, direct elections, and other constitutional provisions, the KMT justified its authoritarian rule as necessary to mobilize and retake the mainland. But as the Communist Party in China (CPC) solidified its rule on the mainland and gained international recognition, this goal became increasingly unrealistic and thus the justification of autocracy became increasingly unconvincing. This led to strident calls for a truly democratic state enabling participation by those Taiwanese, approximately 85% of the population, whose residence pre-dated the KMT's arrival. In response, the KMT gradually allowed for broader access to the party, local and then national elections, and, in 1987, lifted martial law and the ban on competing political parties.⁵

Political liberalization led to the rise of competing political parties. Most notably, the Democratic Progressive Party (DPP), formally organized in 1986, was the first, largest, and most important opposition party. Following constitutional reforms in 1991, and beginning with the

⁵ Rigger (2002) describes the democratization process

openly competitive legislative elections of 1992, the DPP steadily gained in power and political clout, culminating in the two-term Presidency of Chen Shui-bian from 2000 to 2008.

Born of the struggle to broaden democratic participation to include native Taiwanese, the DPP has, from its founding charter, advocated a fundamentally different relationship with mainland China than that pursued by the KMT. Prior to democratization, the KMT was dedicated to reunification of China under KMT rule. As a result, official KMT policy recognized “One China, Two Systems” and pursued negotiations with the Communist Party in China (CPC). By contrast, from its founding charter, the DPP maintained that decades of de-facto separation had produced durable cultural and economic differences with the mainland. On this basis, the DPP advocated formal legal independence bringing equal status with the PRC in international law.

Nonetheless, as a result of electoral competition, the positions of both the KMT and the DPP have evolved. Adjusting to the necessities of governing—the need to cooperate with the KMT in parliament and the need to accommodate the demands of Taiwan’s most important ally, the United States, who has repeatedly warned against declarations of independence—President Chen moderated the traditional DPP rhetoric of *de jure* independence to a belligerent defense of the status quo *de facto* independence. In fact, Chen said in his 2000 inaugural speech that as long as the CPC has no intention of using military force against Taiwan, he would follow the “four no’s,” (1) not declaring independence, (2) not changing the “national title,” (3) not including the concept of “state-to-state” relations between the island and the mainland in the Constitution, and (4) not promoting any referendum on changing the status quo in regard to independence. Several deliberate provocations, however, have been used both to distract the electorate from the DPP’s

poor economic record and to placate the still influential portion of the party membership which continues to agitate for formal independence.⁶

Meanwhile, having lost successive elections, the KMT came to recognize the electoral power of Taiwanese nationalism and gradually moderated its position on cross-strait relations to match the electorate's desire to preserve the status quo of *de facto* independence.⁷ The KMT having been outmaneuvered in the 2004 elections, 2008 candidate Ma Ying-jeou was very clear to emphasize that his election would not result in abrupt change in Taiwan's status. To do so he formulated his "three no's": no unification, no independence, and no armed conflict would occur during his term. This was a clear and deliberate emulation of the four no's Chen articulated during his 2000 inaugural speech. Moreover, Ma took pains to separate his party from the CPC. When Chinese President Hu Jintao, in a speech at the 17th National Congress, suggested that issues related to China's sovereignty and territory should be decided by "all of the Chinese, including Taiwanese", Ma publicly retorted that Taiwan's fate is for Taiwanese to decide.

The parties having partially converged on the issue of political independence, the main axis of partisan competition has shifted to cross-strait economic policy. Nonetheless, the parties' positions on cross-strait economic policy—which are discussed in the next section—are clearly motivated by their founding principles and derive directly from and are constrained by their well-publicized preferences concerning cross-strait political relations. Given its suspicion of the

⁶ During the past several elections, DPP strategy has rested on the beliefs that its views on Taiwanese nationalism are closer to the voters than are the policies of the KMT. Prior to the 2001 legislative elections and both the 2004 and the 2008 Presidential elections, Chen ratcheted up tensions with China, perhaps in a bid to increase the salience of cross-strait relations and deflect attention from the economy. A month before the 2001 elections, Chen declared publicly that he had never accepted the 1992 Consensus of "One China, Two Systems". In 2003, Chen introduced a referendum to "ask China to withdraw their missiles to maintain the sovereignty of Taiwan and peace across the Taiwan Strait" (Bedford and Hwang, 2006). The referendum was to be part of the 2004 presidential election ballot. Seeking to replicate this strategy in 2008, Chen introduced a referendum asking whether Taiwan should apply for U.N. membership under the name "Taiwan", again to be part of the presidential election ballot. In each case, the KMT accused Chen of seeking to distract voters from his economic record. See Wang (2000) for discussion of the DPP's cross-Strait policy.

⁷ Most Taiwanese voters support the status quo, with fewer in support of either unification or outright independence. (see Table 6.1 in Fell, 2005, and recent comments by Rigger, 2008)

mainland and hostility toward political reconciliation, the DPP is incapable of advocating stronger economic links without fundamentally altering its party constitution that maintains Taiwan is a sovereign country that is independent of the People's Republic of China.⁸ This constraint is becoming increasingly problematic electorally.

2.2. The 2008 Presidential Election

The 2008 Presidential elections took place on March 22nd, 2008 and were just the fourth direct election for the President of the Republic of China. It was a pivotal election since KMT victory would return the KMT to power after eight years of the DPP's Chen Shui-bian. Perhaps more importantly, since the KMT won the majority in the preceding parliamentary elections (81 out of 113 seats), if the KMT were to win the popular vote in the presidential election, it would control both the executive and legislative branch, giving it much needed power to implement its preferred policy. In the end, KMT candidate Ma Ying-jeou defeated DPP candidate Frank Hsieh, winning the popular vote 58-41 percent.

By 2008, both the KMT and the DPP were committed defenders of the status quo *de facto* independence. As a result, the DPP strategy of saber-rattling to distract voters was of declining effectiveness. Nevertheless, significant differences in cross-strait policy remain between the parties. Rather than differences over unification/independence, the primary

⁸ The first paragraph of DPP's party constitution states that "territorial sovereignty and self-government are the preconditions for modern nations to establish the rule of law and to develop international relations. The facts that Taiwan is sovereign and independent, that it does not belong to the People's Republic of China, and that the sovereignty of Taiwan does not extend to mainland China, reflect historical realities as well as the present situation, and at the same time form part of the consensus of the international community. According to this reality of sovereignty and independence, Taiwan should draw up a constitution and establish a nation. Only then is it possible to guarantee respect and security for Taiwanese society and for individual citizens, and to offer the people the opportunity to pursue freedom, democracy, prosperity, justice and self-realization." http://www.dpp.org.tw/index_en/, accessed on October 13, 2009.

differences during the election concern cross-strait *economic* policy.⁹ 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: Taiwanese firms were allowed to invest no more than 20-40% of net worth.¹⁰

The long-running debate has been 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. Unusually for campaign promises, the scope and content of the measures Ma proposed was already clearly defined and their feasibility established. In particular, during the campaign, Ma not only reiterated a commitment to direct transportation and increased visitation but explicitly called for the eventual establishment of a common market. As a result of the cross-strait dialogs of 2005-6 with the CPC, Ma's campaign promises constituted a detailed and credible commitment to liberalize cross-strait economic relations. Finally, this commitment was stable and easily understood. As Rigger (2008) writes in her analysis of the Presidential elections, "Ma Ying-jeou held his campaign themes—including his position on cross-Strait relations—remarkably steady through the long presidential campaign."

⁹ See Fell (2005, p85): "in response to election results and moderate public opinion, election-oriented leaders have moved their parties away from highly polarized positions on the national identity issue towards more centrist positions. However, the parties have not converged... The development of this issue shows a clear pattern of party differentiation with... the public consistently able to distinguish between the parties."

¹⁰ The exact limit depends on the net worth of the firm and has varied over time.

On the other hand, the DPP vehemently opposed most of these steps, especially liberalization of agricultural trade and the eventual goal of a common market (see Rigger 2008). Moreover, the 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. The PRC rebuffed Chen's early efforts to improve cross-strait relations citing the DPP's pro-independence platform as an impediment to progress. Of the DPP, Rigger writes "Taiwan's relations with Beijing and Washington have deteriorated over the past eight years... a major contributing factor was Chen Shui-bian's determination to spend much of his presidency... strengthening Taiwan's resistance to closer engagement with the PRC." While it is not clear whether DPP candidate Frank Hsieh would have continued these policies, the past record of the DPP was clear for the voters and Hsieh never made a compelling case that he would break from this record.

Thus far we have discussed only two parties: the DPP and the KMT. While the DPP was the first opposition party, it is by no means the only major national party formed since the ban was lifted in 1987. Five parties won seats in the 2004 legislative elections, making Taiwan a true multi-party system. However, the five major parties are organized into two durable electoral coalitions. The Pan-Blue Coalition consists of the KMT, the People First Party (PFP) and the New Party (NP). The Pan-Green Coalition consists of the DPP and the Taiwan Solidarity Union (TSU). Fell (2005) argues that the issue of national identity and cross-strait relations is *the* dominant issue in Taiwanese politics. The Blue and Green coalitions formed in the run-up to the 2001 legislative elections and have endured ever since. In his analysis of the 2001 legislative elections, Copper (2002) argues these coalitions "made sense insofar as lines were fairly clearly drawn on the all-important issue of Taiwan's national identity. The KMT, the PFP, and the NP

espoused a “broader view” that saw Taiwan as part of China...; the DPP and the TSU advocated a position called localization or Taiwan first.” In essence, the political space is dominated by a single dimension thereby stabilizing the electoral coalitions.

In fact, both coalitions are consolidating into single parties meaning the two-coalition system is converging toward a two-party system. The KMT and the DPP dominate their respective coalitions: prior to the 2008 elections, the KMT held 90 of the blue coalition’s 118 seats and the DPP held 90 of the green coalition’s 97 seats. Electoral reforms of 2008 have enhanced this dominance. The reforms cut the total number of districts in half from 225 to 113 and moved from a system in which most seats were elected by proportional rule from multi-member districts to one in which most seats are elected by majority rule from single-member districts. The increased emphasis on majority rule has naturally served to enhance the power of the two largest parties. In the 2008 elections the KMT won 81 of the Blue Coalition’s 85 seats and the DPP won all 27 of the Green coalition’s seats giving the two major parties a combined 108 of the 113 seats in Congress.

In sum, at the time of the Presidential elections in 2008, the Taiwanese political system was dominated by two parties and the most important policy cleavage was cross-strait economic policy. Throughout the campaign, this cleavage was stark and stable and carried credible and detailed policy implications as a result of the KMT-CPC cross-strait forums and a disciplined campaign by KMT candidate Ma. As a result, the policy implications of the election were remarkably clear *ex ante*.¹¹

¹¹ Moreover, 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. 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).

3. Data

3.1. Political Market Data¹²

The political markets for the 2008 Presidential Election are run by the Taipei Political Exchange (TPE).¹³ The market opened on December 17, 2007 and closed on March 22, 2008, the day of the 2008 Presidential Election. There were 1,985 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. In addition, 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.

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.¹⁴ 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

¹² This section is based on Tseng, Li, Wang (2009).

¹³ http://socioecono.phys.sinica.edu.tw/exchange/exchange_eng.html

¹⁴ 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).

market are awarded cash prizes. Rewards for 1st through 7th place were 10,000, 8,000, 6,000, 5,000, 4,000, 2,500, and 1,500 (real) NT dollars, respectively. Those placing 8th through 10th each received 1,000 NT dollars.¹⁵ It is in essence a tournament with a market mechanism for scoring.

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, Wolfers, Pennock, and Galebach (2004) (henceforth SWPG) 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.”

Seeking to explain what to many may be a mystifying result, SWPG point out that lack of financial risk does not preclude material and psychological rewards and suggest that when the subject is one of deep interest with a rich informational environment, play-money markets can attract knowledgeable traders, generate intense trading, and result in substantial discovery and processing of the available information. Moreover, SWPG point out that play-money markets may actually do a better job weighting the opinions of the various traders. In a real-money market, trading credit is a function of wealth and thus probably related to factors other than

¹⁵ 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.

predictive skill. By contrast, credit in play-money markets is a function of past success in that particular venue; thus the interpersonal opinion weights are likely more efficient.

In sum, SWPG suggest that under certain circumstances, play-money markets can be as accurate as real-money markets. We feel the TPE operates under such circumstances. Politics is clearly an area in which there is strong intrinsic interest and a wealth of relevant public and private information. Table 1 shows that the TPE actually surpasses the IEM in trading volume. 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. Figures 5 and 6 show co-evolution of prediction market and opinion poll results.¹⁶ 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. Thus we feel confident that the 2008 TPE represents an informative measure of popular ex-ante electoral expectations.

The raw data records (1) the prices of two candidates, Ma Ying-jeou (KMT) and Frank Hsieh (DPP), which in principal 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.¹⁷ 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 perfectly add up 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. Figure 1 displays the evolution of the prices of the DPP and KMT

¹⁶ The results of opinion polls are taken from two sources: United Daily News (http://mag.udn.com/mag/vote2007-08/storypage.jsp?f_ART_ID=109235) and TVBS (http://www.tvbs.com.tw/FILE_DB/DL_DB/rickliu/200803/rickliu-20080323100704.pdf)

¹⁷ The data also contain the price of invalid votes, which remained stable (1-2%) throughout the period.

candidates over time. The observed divergence between the adjusted and unadjusted is minimal; therefore, we use the adjusted series in our regression analysis. For use in robustness checks, we also calculate the expected DPP margin of victory $(\text{DPP share minus KMT share})/(\text{KMT share plus DPP share plus other shares})$, which is displayed in Figure 2.

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 (Figures 3 and 4) and use both daily and weekly series.¹⁸

3.2. Share Price

We use Taipei Stock Exchange data recording the daily closing share price for 700 firms.¹⁹ 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

¹⁸ 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 prediction market variable is not strong enough to use it as an instrument (see Stock and Yogo, 2005, for discussion of the weak instrument problem).

¹⁹ 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

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

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. 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

²⁰ 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.

of 2008 (i.e., the period of the elections), Taiwanese firms directly invest in a mainland company in only 28 out of 2384 cases.²¹

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 with investment in the mainland to the share price (i.e., expected vote share) of the DPP candidate, Frank Hsieh. The basic empirical specification is:

$$R_{it} = \alpha_i + \gamma DPP_t + \varepsilon_{it} \quad (1)$$

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. Firm-specific intercept α_i captures the average return of firm i . A negative coefficient on DPP would suggest that the electoral victory of the DPP poses political risk to firms with investment in China.

The main advantage of this basic specification is its simplicity, but a disadvantage is that the estimate of γ could be contaminated by a third (unobserved) factor that drives both political and financial markets in Taiwan; e.g., negative economic news adversely affects financial markets while at the same time possibly damaging the electoral prospects of the incumbent party

²¹ 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. However, unmeasured mainland investment might not be a serious problem for two reasons. First, to the extent that it is successfully diverted and thus hidden from 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. Second, the bias that could arise from such measurement error is likely to go against finding a significant relationship between the reported mainland investment and partisan effects, given that financial market participants are likely to have more information about the true exposure of each firm to the expected policy changes than we do.

(the DPP in the case of the 2008 presidential election). To overcome this possible bias, we extend the basic specification to control for market return in the Taiwan Stock Exchange:

$$R_{it} = \alpha_i + \beta_i TAIEX_t + \gamma DPP_t + \varepsilon_{it} \quad (2)$$

where *TAIEX* is the returns on Taiwan Stock Exchange Capitalization Weighted Stock 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.

The share price of Taiwanese firms that are commercially active in the mainland might also be sensitive to the economic condition of the mainland economy.²² Therefore, we check the robustness of our results by including market return in the Shanghai Stock Exchange:

$$R_{it} = \alpha_i + \beta_i TAIEX_t + \theta_i SHCOMP_t + \gamma DPP_t + \varepsilon_{it} \quad (3)$$

where *SHCOMP* is the returns on Shanghai Stock Exchange Composite Index.²³

We also run two placebo (or falsification) tests. 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 can estimate Equations (1) - (3) on this second set of firms to see if the correlation exists where it should not. Alternatively, we can pool all firms together and estimate the following regression model:

²² Since the presidential election featured intense debates on Taiwan's economic relationship with the PRC, it is plausible that the outcome of political prediction markets might in part be driven by the economic conditions in the mainland.

²³ We also use the Shanghai Stock Exchange A-Share Index. The results are qualitatively similar and thus not reported to conserve space.

$$R_{it} = \alpha_i + \beta_i TAIEX_t + \theta_i SHICOMP_t + \gamma_1 DPP_t + \gamma_2 CHINA_i * DPP_t + \varepsilon_{it} \quad (4)$$

where *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.

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 2). 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 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 3. As we add both TAIEX and SHCOMP to control for overall market risk, the goodness of fit improves dramatically, although the results are qualitatively similar without these indices. As we compare the results based on firms with mainland investment with those without it, the coefficient on DPP vote share is always smaller for the latter and never statistically significant (table 3: columns 2, 6, and 10). When we control for both TAIEX and SHCOMP, the coefficient on DPP vote share is negative and significant for firms with mainland investment (table 3: column 9). The magnitude of the estimated effect is also quite large. The average weekly fluctuation in expected vote share was 3.6 percentage points,²⁴ which would result in 83.5 basis points change in the share prices of firms with mainland investment, based on the coefficient on the expected DPP vote share in table 3, column 9. 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.²⁵

Furthermore, the results based upon pooled regression confirm that our results pass the key placebo test: the difference in the size of the coefficient is statistically significant (table 3: columns 3, 7, and 11). We also find that the sensitivity of share price is systematically related to the ratio of assets in the mainland to total assets (table 3: columns 4, 8, and 12). Where mainland investment is a greater fraction of total assets, returns are more sensitive to the political

²⁴ See Table A1 for summary statistics.

²⁵ Ideally, we would like to quantify the difference in firm value that would result from having one government vs. the other. In order to do this, we should look at the marginal effect as expected probability of DPP victory goes from 0 to 1 to estimate the total value of the DPP platform. But to do so requires converting changes in expected vote share into changes in expected probability of victory. Unfortunately, there is no clear translation from one to the other. Given the election wasn't particularly close, a 1% change in expected vote share probably didn't have a large change in the probability of DPP victory. So the fact that there are significant stock market responses suggests these firms would be *very* strongly helped by a DPP victory.

campaign. These results are robust to re-estimation using the difference between DPP vote share and KMT vote share (table 4).

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.

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 5). We find that a dummy variable for firms whose investment is close to the limit is negative and significant (columns 1, 4, and 7) and, moreover, that it remains significant even after controlling for investment presence in the mainland (columns 2, 5, and 8). 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. A one percentage point increase in expected DPP vote share leads to a decline of 12.7 basis points in the weekly returns of firms whose investment in the mainland has not approached the cap while those firms close to the limit suffer a decline which, at 25.6 basis points, is twice as large. These results suggest that the negative effects of the DPP on Taiwanese firms partly reflect the anticipated relaxation of investment limits under a KMT government.

The results also show that even after controlling for an indicator of firms that are constrained by the legal limit, the coefficient on dummy for firms with mainland investment remains negative and statistically significant (columns 2, 5, and 8). 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.

5.2. Trade Effects

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 trade with the PRC.²⁶ 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, the results with exports 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 6). Moreover, the negative coefficient on the interaction of mainland investment with DPP share is robust to the inclusion of this dummy

²⁶ 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).

variable for export to Asia (column 2 in both tables 6), 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, multi-collinearity—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.

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 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.

As expected, our results show that the share prices of firms close to the limit are more sensitive to the electoral campaign than those firms whose investment in mainland China has not yet approached the firm-specific cap, confirming that the policy-platform was capitalized into

equity price. Moreover, our results show a statistically significant effect for those firms that have mainland investments but are *not* close to the legal limit, suggesting the pricing of expropriation risk. 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.

References

Bechtel, Michael M. and Fuss, Roland (2008); "When Investors Enjoy Less Policy Risk: Divided Government, Economic Policy Change, and Stock market Volatility in Germany, 1970-2005"; *Swiss Political Science Review* v14, n2, p216-254.

Bedford, Olwen and Kwang-Huo Hwang; (2006); *Taiwanese Identity and Democracy: The Social Psychology of Taiwan*; Palgrave McMillan.

Berg, J., R. Forsythe, F. Nelson, and T. Rietz; (2000); "Results from a Dozen Years of Election Futures Markets Research," Working paper, College of Business Administration, University of Iowa.

Bunkanwanicha, Pramuan; Wiwattanakantang, Yupana; (2009); "Big Business Owners in Politics." *Review of Financial Studies*, vol. 22, no. 6, pp. 2133-68.

Campos, Nauro and Giovannoni, Francesco (2007), "Lobbying, Corruption and Political Influence", *Public Choice* 131: 1-21..

Chang, Julian and Steven M. Goldstein; (2007); "Introduction: The WTO and Cross-Strait Economic Relations" in *Economic Reform and Cross-Strait Relations: Taiwan and China in the WTO*; Chang and Goldstein (eds.)

Claessens, Stijn; Feijen, Erik; Laeven, Luc. (2008). "Political Connections and Preferential Access to Finance: The Role of Campaign Contributions." *Journal of Financial Economics*, vol. 88, no. 3, pp. 554-80

Copper, John F.; (2002); *Taiwan's 2001 Legislative, Magistrates and Mayors Election: Further Consolidating Democracy?*; World Scientific Publishing Co. and Singapore University Press.

Drazen, Allan; (2001); "The Political Business Cycle After 25 Years" in *NBER Macroeconomics Annual 2000*; p75-117. MIT Press.

Faccio, Mara; (2006); "Politically Connected Firms" *American Economic Review*, vol. 96, no. 1, pp. 369-86

Fell, Dafydd; (2005); *Party Politics in Taiwan: Party Change and the Democratic Evolution of Taiwan, 1991-2004*; Routledge.

Fisman, Raymond (2001). "Estimating the Value of Political Connections." *American Economic Review*, vol. 91, no. 4, pp. 1095-1102.

Forsythe, R., T. A. Reitz, and T. W. Ross; (1999); "Wishes, Expectations and Actions: A Survey on Price Formation in Election Stock Markets," *Journal of Economic Behavior and Organization*, Vol. 39, p. 83-110.

Fuss, Roland and Bechtel, Michael M. (2008); "Partisan Politics and Stock Market Performance: The Effect of Expected Government Partisanship on Stock Returns in the 2002 German Federal Election"; *Public Choice* v135, n3-4, p131-150.

Heckelman, Jac C. (2006) "Another Look at the Evidence for Rational Partisan Cycles" *Public Choice* v126, n3-4 p257-274.

Henisz, Witold J. (2004) "Political Institutions and Policy Volatility". *Economics and Politics*, vol. 16, pp1-27.

Hibbs, Douglas A. (1977) "Political Parties and Macroeconomic Policy" *The American Political Science Review* 71 (4): 1467-1487

Jayachandran, Seema. (2006). "The Jeffords Effect." *Journal of Law and Economics*, vol. 49, no. 2, pp. 397-425

Johnson, Simon; Mitton, Todd; (2003); "Cronyism and Capital Controls: Evidence from Malaysia," *Journal of Financial Economics*, vol. 67, no. 2, pp. 351-82.

Knight, Brian.(2007) "Are Policy Platforms Capitalized into Equity Prices? Evidence from the Bush/Gore 2000 Presidential Election". *Journal of Public Economics*. Vol. 91 (1-2). p 389-409.

Mukherjee, Bumba and Leblang, David (2007); "Partisan Politics, Interest Rates and the Stock Market: Evidence from American and British Returns in the Twentieth Century" *Economics and Politics* v19, n2, p135-167.

Oliven, K. and T. A. Reitz; (2004); "Suckers are Born but Markets are Made: Individual Rationality, Arbitrage, and Market Efficiency on an Electronic Futures Markets," *Management Science*, vol. 50, p. 336-351.

Rhode, P. W. and K. S. Strumpf; (2007); "Manipulating Political Stock Markets: A Field Experiment and a Century of Observational Data," working paper, NBER.

Rigger, S.; (2008); "Taiwan's Presidential and Legislative Elections"; *Orbis* vol. 52, no. 4 pp. 689-700.

Servan-Schreiber, Emile; Wolfers, Justin; Pennock, David M.; Galebach, Brian. Prediction Markets; (2004); "Prediction Markets: Does Money Matter?" *Electronic Markets*, vol. 14(3), p. 243-251.

Shelton, Cameron (2010). "The Information Content of Elections and Varieties of the Partisan Political Business Cycle." *Public Choice*; forthcoming.

Snowberg, Erik; Wolfers, Justin; Zitzewitz, Eric. (2007a) "Partisan Impacts on the Economy: Evidence from Prediction Markets and Close Elections." *Quarterly Journal of Economics*. Vol. 122 (2). p 807-29.

Snowberg, Erik; Wolfers, Justin; Zitzewitz, Eric. (2007b) "Party Influence in Congress and the Economy." *Quarterly Journal of Political Science*. Vol. 2 (3). p 277-286.

Stock, James H; Yogo, Motohiro. "Testing for Weak Instruments in Linear IV Regression." *Identification and Inference for Econometric Models: Essays in Honor of Thomas Rothenberg*. Andrews, Donald W. K. Stock, James H., eds., Cambridge and New York: Cambridge University Press. p 80-108. 2005.

Tseng, Jie-Jun; Li, Sai-Ping; Wang Sun-Chon. (2009) "Experimental evidence for the interplay between individual wealth and transaction network." Mimeo.

Wang, T. Y.; (2000); "'One China, One Taiwan': An analysis of the Democratic Progressive Party's China Policy"; in *Taiwan in Perspective* by Wei-Chin Lee (ed.); Brill.

Whited, Hsin-hui I. H. (2008) "Economic Interdependence with Taiwan" in *China's Monetary Challenges: Past Experiences and Future Prospects*, ed. Richard Burdekin, Cambridge University Press.

Wolfers, Justin and Eric Zitzewitz. (2004) "Prediction Markets." *Journal of Economic Perspectives*. 18(2) 107-126.

Zhao, Suisheng; (2008); "Strategic Dilemma of Beijing's Taiwan Policy: Chinese Nationalism and the Making of the Anti-Secession Law"; in *The 'One China' Dilemma* by Peter C. Y. Chow (ed.); Palgrave MacMillan.

Figure 1: Expected DPP Vote Share and KMT Vote Share (Daily)

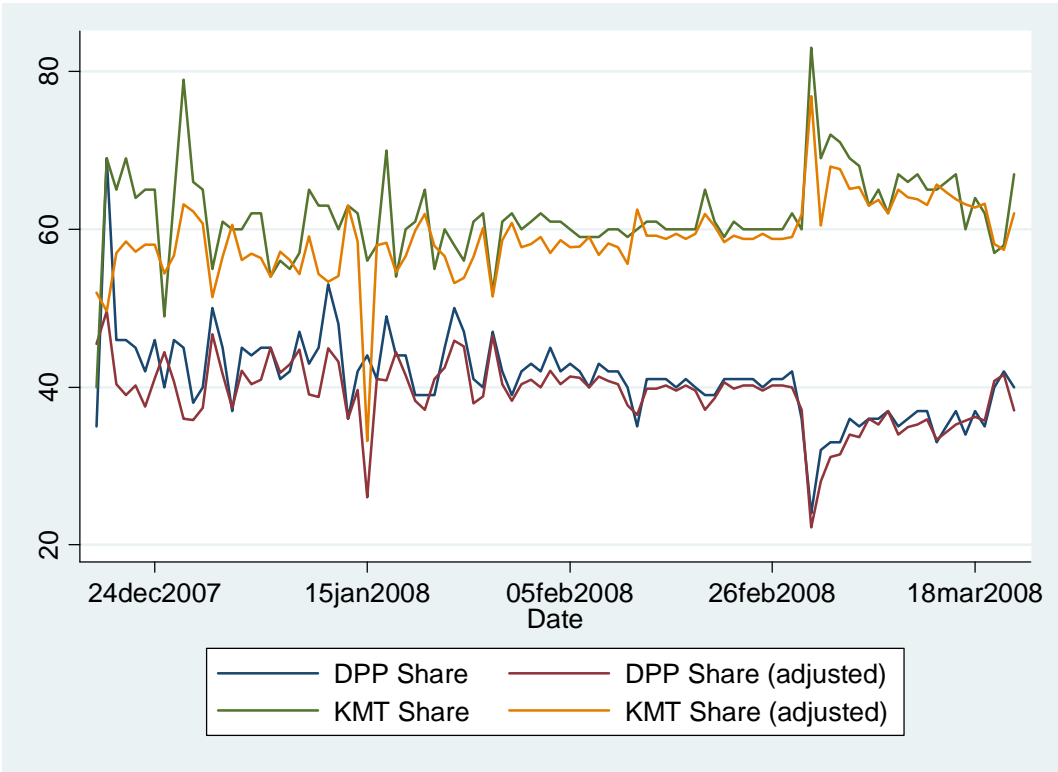


Figure 2: Expectation of DPP's Margin of Victory (Daily)

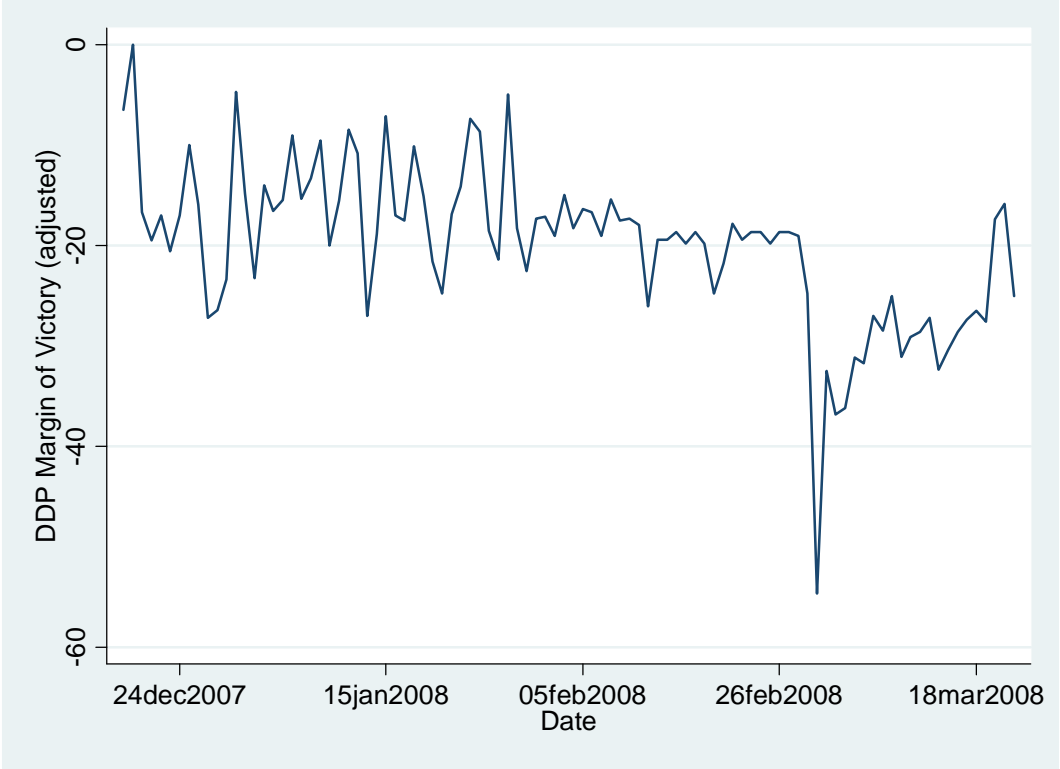


Figure 3: Expected DPP Vote Share and KMT Vote Share (Weekly)

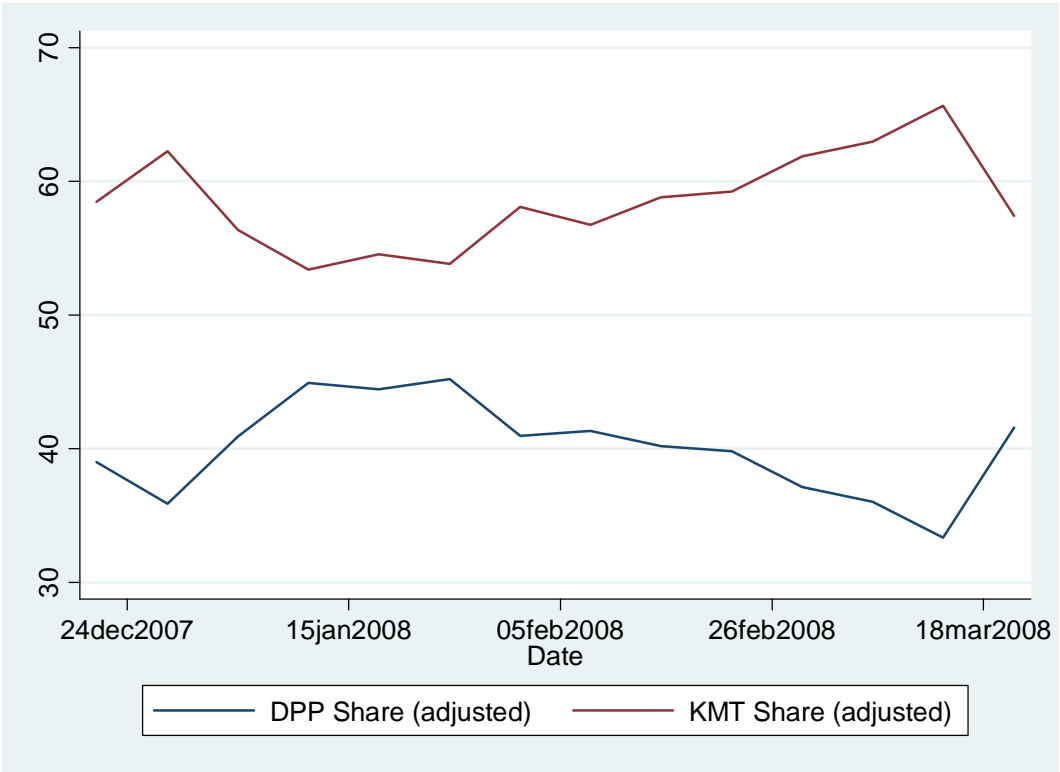


Figure 4: Expectation of DPP's Margin of Victory (Weekly)



Figure 5: Co-movement of Opinion Poll (China Times) and Political Exchange

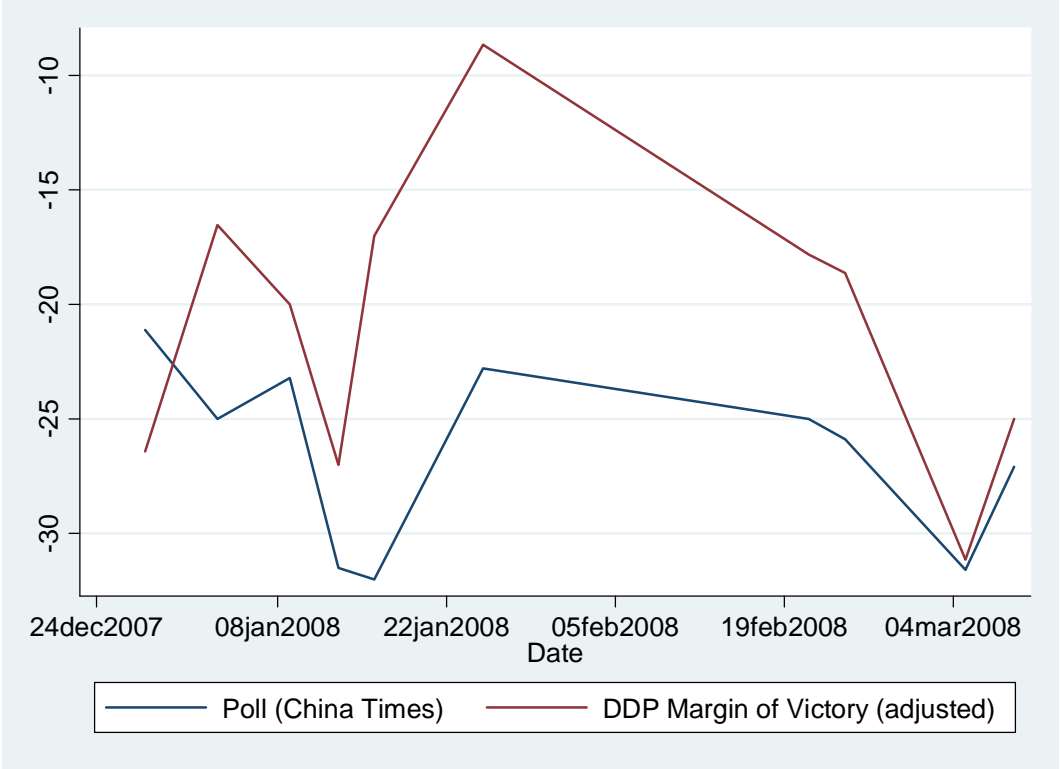


Figure 6: Figure 5: Co-movement of Opinion Poll (TVBS) and Political Exchange

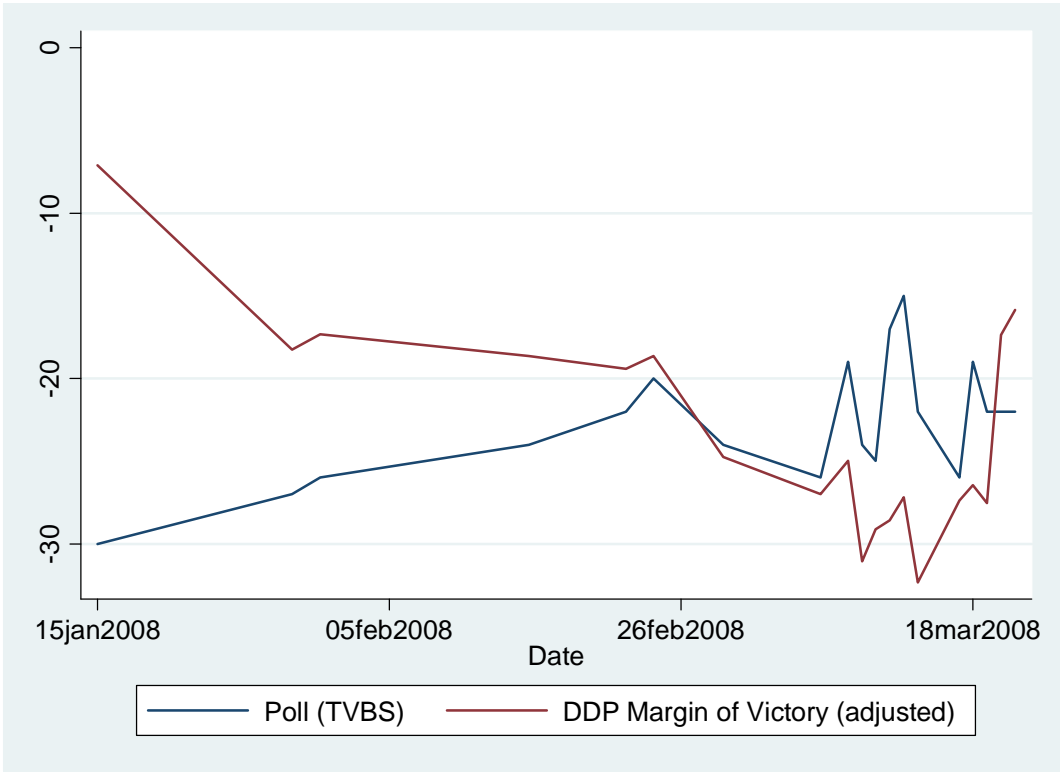


Table 1: Comparing the TPE with the IEM

		<u>weekly unit volume</u>			
		<u>mean</u>	<u>std dev.</u>	<u>min</u>	<u>max</u>
Taiwan 2008	KMT	6290	6575	292	24870
	DPP	6029	5403	398	20253
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 2: Basic Results (daily data)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Dependent variable: Daily Return	mainland investment				mainland investment				mainland investment			
	yes	no	pooled	pooled	yes	no	pooled	pooled	yes	no	pooled	pooled
Change in DPP Vote Share	-0.0523 (0.0613)	-0.0702 (0.0586)	-0.0702 (0.0586)	-0.0579 (0.0593)	0.0131 (0.0219)	-0.0115 (0.0295)	-0.0115 (0.0295)	0.00542 (0.0202)	0.00693 (0.0229)	-0.00815 (0.0294)	-0.00815 (0.0294)	0.00537 (0.0203)
Mainland investment dummy * Change in DPP Vote Share			0.0180 (0.0304)				0.0247 (0.0294)				0.0151 (0.0307)	
Mainland investment * Change in DPP Vote Share				0.0114 (0.0900)				0.0156 (0.0906)				-0.0353 (0.0900)
TAIEX controls	no	no	no	no	yes	yes	yes	yes	yes	yes	yes	yes
SHCOMP controls	no	no	no	no	no	no	no	no	yes	yes	yes	yes
Observations	28975	10582	39557	39557	28975	10582	39557	39557	27044	9881	36925	36925
R-squared	0.005	0.008	0.006	0.006	0.372	0.285	0.346	0.346	0.399	0.322	0.377	0.376
Number of firms	509	191	700	700	509	191	700	700	509	191	700	700

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

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. For specifications that control for Taiwan Stock Exchange Capitalization Weighted Stock Index (TAIEX), percentage change in TAIEX is interacted with firm-specific dummy variable to allow for firm specific market risk (beta). Similarly, for specifications that control for Shanghai Stock Exchange Composite Index (SHCOMP), percentage change in SHCOMP is interacted with firm dummy. Standard errors are adjusted for contemporaneous correlation across firms.

Table 3: Basic Results (weekly data)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Dependent variable: Daily Return	mainland investment				mainland investment				mainland investment			
	yes	no	pooled	pooled	yes	no	pooled	pooled	yes	no	pooled	pooled
Change in DPP Vote Share	-0.202 (0.255)	-0.0769 (0.236)	-0.0769 (0.236)	-0.129 (0.244)	-0.161 (0.193)	-0.0423 (0.201)	-0.0423 (0.201)	-0.0903 (0.173)	-0.232** (0.0978)	-0.0882 (0.144)	-0.0882 (0.143)	-0.143 (0.101)
Mainland investment dummy * Change in DPP Vote Share			-0.125** (0.0458)				-0.119*** (0.0371)				-0.144** (0.0649)	
Mainland investment * Change in DPP Vote Share				-0.558* (0.277)				-0.554 (0.317)				-0.732*** (0.171)
TAIEX controls	no	no	no	no	yes	yes	yes	yes	yes	yes	yes	yes
SHCOMP controls	no	no	no	no	no	no	no	no	yes	yes	yes	yes
Observations	5767	2099	7866	7866	5767	2099	7866	7866	5767	2099	7866	7866
R-squared	0.013	0.002	0.010	0.010	0.436	0.349	0.410	0.410	0.516	0.410	0.484	0.484
Number of firms	509	191	700	700	509	191	700	700	509	191	700	700

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

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. All specifications include firm-specific intercepts. For specifications that control for Taiwan Stock Exchange Capitalization Weighted Stock Index (TAIEX), percentage change in TAIEX is interacted with firm-specific dummy variable to allow for firm specific market risk (beta). Similarly, for specifications that control for Shanghai Stock Exchange Composite Index (SHCOMP), percentage change in SHCOMP is interacted with firm dummy. Standard errors are adjusted for contemporaneous correlation across firms.

Table 4: Robustness Using Margin of Victory

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Dependent variable: Daily Return	mainland investment				mainland investment				mainland investment			
	yes	no	pooled	pooled	yes	no	pooled	pooled	yes	no	pooled	pooled
Change in DPP Margin of Victory	-0.0986	-0.0389	-0.0389	-0.0644	-0.0733	-0.0169	-0.0169	-0.0403	-0.108*	-0.0389	-0.0389	-0.0654
Mainland investment dummy * Change in DPP Margin of Victory	-0.126	-0.117	-0.117	-0.121	-0.102	-0.105	-0.105	-0.0905	-0.054	-0.0766	-0.0764	-0.0548
			-0.0597**				-0.0564**				-0.0687**	
			-0.0225				-0.0184				-0.0305	
Mainland investment * Change in DPP Margin of Victory				-0.258				-0.255				-0.341***
				-0.149				-0.171				-0.088
TAIEX controls	no	no	no	no	yes	yes	yes	yes	yes	yes	yes	yes
SHCOMP controls	no	no	no	no	no	no	no	no	yes	yes	yes	yes
Observations	5767	2099	7866	7866	5767	2099	7866	7866	5767	2099	7866	7866
R-squared	0.013	0.002	0.01	0.009	0.435	0.349	0.409	0.409	0.514	0.409	0.483	0.483
Number of firms	509	191	700	700	509	191	700	700	509	191	700	700

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Weekly data cover the period: December 18, 2007 to March 21, 2008. Change in DPP Margin of Victory is weekly change in the difference between the price of a Democratic Progressive Party (DPP) contract minus that of a Kuomintang (KMT) contract the 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. For specifications that control for Taiwan Stock Exchange Capitalization Weighted Stock Index (TAIEX), percentage change in TAIEX is interacted with firm-specific dummy variable to allow for firm specific market risk (beta). Similarly, for specifications that control for Shanghai Stock Exchange Composite Index (SHCOMP), percentage change in SHCOMP is interacted with firm dummy. Standard errors are adjusted for contemporaneous correlation across firms.

Table 5: The Effects of the Investment Limit

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Dependent variable: Daily Return	mainland investment pooled			mainland investment pooled			mainland investment pooled		
Change in DPP Vote Share	-0.168 (0.247)	-0.0769 (0.236)	-0.112 (0.249)	-0.130 (0.191)	-0.0423 (0.201)	-0.0731 (0.177)	-0.194* (0.105)	-0.0882 (0.143)	-0.126 (0.103)
Mainland investment dummy * Change in DPP Vote Share		-0.127** (0.0474)			-0.122** (0.0398)			-0.146* (0.0687)	
Indicator Investment within 90% of limit * Change in DPP Vote Share	-0.165** (0.0544)	-0.129** (0.0574)	-0.0401 (0.0572)	-0.160*** (0.0492)	-0.125** (0.0550)	-0.0330 (0.0381)	-0.151*** (0.0434)	-0.110* (0.0529)	-0.00121 (0.0406)
Mainland investment * Change in DPP Vote Share			-0.927*** (0.251)			-0.943*** (0.278)			-1.116*** (0.226)
TAIEX controls	no	no	no	yes	yes	yes	yes	yes	yes
SHCOMP controls	no	no	no	no	no	no	yes	yes	yes
Observations	7638	7638	7638	7638	7638	7638	7638	7638	7638
R-squared	0.009	0.010	0.011	0.411	0.412	0.412	0.482	0.484	0.484
Number of firms	678	678	678	678	678	678	678	678	678

Robust standard errors in parentheses:

*** p<0.01, ** p<0.05, * p<0.1

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.

For specifications that control for Taiwan Stock Exchange Capitalization Weighted Stock Index (TAIEX), percentage change in TAIEX is interacted with firm-specific dummy variable to allow for firm specific market risk (beta). Similarly, for specifications that control for Shanghai Stock Exchange Composite Index (SHCOMP), percentage change in SHCOMP is interacted with firm dummy. Standard errors are adjusted for contemporaneous correlation across firms.

Table 6: The Effects on Exporting Firms

	(1)	(2)	(3)
Dependent variable: Daily Return			
Change in DPP Vote Share	0.0381 (0.153)	-0.000662 (0.124)	-0.0212 (0.126)
Export to Asia * Change in DPP Vote Share	-0.222*** (0.0452)	-0.231*** (0.0547)	-0.252*** (0.0539)
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			0.0171 (0.0611)
TAIEX controls	yes	yes	yes
SHCOMP controls	yes	yes	yes
Observations	5943	5943	5943
R-squared	0.484	0.484	0.483
Number of firms	525	525	525

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

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. For specifications that control for Taiwan Stock Exchange Capitalization Weighted Stock Index (TAIEX), percentage change in TAIEX is interacted with firm-specific dummy variable to allow for firm specific market risk (beta). Similarly, for specifications that control for Shanghai Stock Exchange Composite Index (SHCOMP), percentage change in SHCOMP is interacted with firm dummy. Standard errors are adjusted for contemporaneous correlation across firms.

Table A1: Summary Statistics

Variable		Mean	Std. Dev.	Min	Max	Observations
Weekly Return (%)	overall	0.900	6.685	-29.866	32.696	N = 7866
	between		2.353	-23.251	19.711	n = 700
	within		6.425	-28.232	30.880	T-bar = 11.2371
TAIEX (%)	overall	0.591	3.440	-5.591	5.577	N = 8400
	between		0.000	0.591	0.591	n = 700
	within		3.440	-5.591	5.577	T = 12
SHCOMP (%)	overall	-2.462	4.605	-9.717	4.001	N = 8400
	between		0.000	-2.462	-2.462	n = 700
	within		4.605	-9.717	4.001	T = 12
Change in DPP Vote Share (%)	overall	0.217	3.583	-4.240	8.251	N = 8400
	between		0.000	0.217	0.217	n = 700
	within		3.583	-4.240	8.251	T = 12
Change in DPP Margin of Victory (%)	overall	0.304	7.239	-8.489	16.482	N = 8400
	between		0.000	0.304	0.304	n = 700
	within		7.239	-8.489	16.482	T = 12
Mainland investment	overall	0.071	0.090	0.000	0.882	N = 9100
	between		0.090	0.000	0.882	n = 700
	within		0.000	0.071	0.071	T = 13
Mainland investment dummy	overall	0.727	0.445	0.000	1.000	N = 9100
	between		0.446	0.000	1.000	n = 700
	within		0.000	0.727	0.727	T = 13
Indicator Investment within 90% of limit	overall	0.049	0.215	0.000	1.000	N = 9100
	between		0.215	0.000	1.000	n = 700
	within		0.000	0.049	0.049	T = 13
Export to Asia	overall	0.621	0.485	0.000	1.000	N = 6825
	between		0.486	0.000	1.000	n = 525
	within		0.000	0.621	0.621	T = 13