Dynamic Capital Structure and Political Patronage: The Case of Malaysia

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This version: October 16, 2013

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Abstract: This paper investigates the effect of political patronage on firms' capital structure. The evidence is from Malaysia a country characterised by relationship-capitalism and covers 1988 to 2009. Using a system GMM estimator we find firms set leverage targets and adjust towards them following deviations at the rate of 28 per cent per annum. Next, we construct a natural experiment and use a difference-in-differences model to investigate if the strategic financing decisions of politically patronised firms differs from non-connected firms after an exogenous shock caused by the 1997 Asian crisis. Our results unambiguously demonstrate a significant difference in the capital structure of patronised firms relative to non-connected firms following the exogenous shock but only for the crisis period 1998-2001. After 2002 the capital structures of patronised and non-connected firms are statistically equivalent.

JEL Classification: G01 (Financial Crises), G32 (Financing Policy; Financial Risk and Risk Management; Capital and Ownership Structure).

Keywords: Asian financial crisis, Capital Structure, Political Patronage.

I. Introduction

Prior research demonstrates that many firms set capital structure targets.[1] Targeting implies firms' make strategic choices on leverage and respond to temporary deviations by rebalancing the mix of debt and equity financing (see Jalilivand and Harris, 1984; Graham and Harvey, 2001; Hovakimian et al, 2001; Leary and Roberts, 2005; Flannery and Rangan, 2006; Kayhan and Titman; 2007; DeAngelo et al, 2011). These decisions affect firms' investment choices, capital costs and expected returns, and could trigger conflicts of interest between firms' stakeholders. Whilst targeting requires firms' to balance the merits of over- and under-leverage relative to adjustment costs, full adjustment is unattainable because of market frictions, which infers firms' face perpetual financing choices since sub-optimal financing decisions could realise lower firm value or increase the probability of bankruptcy.

The objective of this paper is to evaluate firms' capital structure choices under political patronage. Whereas the value of political connections to firms is well documented (see Fisman, 2001; Faccio, 2006, 2010; Khwaja and Mian, 2005; Leuz and Oberholzer-Gee, 2006; Wu et al, 2012), the impact of patronage on firms' strategic decision-making is not. Our evidence comes from Malaysia which is representative of economies characterised by relationship-capitalism.[2] We define political patronage to include informal connections between politicians and firms according to personal histories (see also Johnson and Mitton, 2003; Faccio, 2005; Faccio, Masulis and McConnell, 2005; Johnson, Kochhar, Mitton and Tamirisa, 2006; Mitchell and Joseph, 2010). The source of this information is Gomez and Jomo (1997). A second more formal

1 Graham and Harvey (2001) report that 81 per cent of firms use a target debt ratio or range in financing decisions.

2 Transparency International's Corruption Perceptions Index (CPI) measures public sector transparency and accountability. The 2012 CPI score for Malaysia is 49 (maximum of 100) ranking Malaysia as 54 of 176 countries. Since its inception in 1995, the annual CPI for Malaysia shows public sector corruption neither improves nor worsens, and remains an anomaly.

type of patronage arises when Malaysia's sovereign wealth fund (*Khazanah Nasional Berhad*, KNB) and government sponsored entities (like *Permodalan Nasional Berhad*, PNB) acquire equity holdings in firms. Fraser et al (2006) claim investments by KNB reflect political patronage associated with government's industrialisation policies, whilst patronage through PNB complies with development policies to increase native Malays' equity holdings (see Section IIC). We identify investments by the KNB and PNB from their websites. Historically, Malaysia's governments influenced corporate activities through listing restrictions, direct equity stakes, control of banks, and government-sponsored investor vehicles (Gomez and Jomo, 1997). Consequently, politically connected firms carry more debt (Johnson and Mitton, 2003; Fraser et al, 2006; Bliss and Gul, 2012).

The paper has two main aims. First, to determine the optimal capital structure of Malaysian firms on the basis of a set of "core factors"; namely, size, profitability, tangibility, investment opportunities, an industry benchmark for target leverage, and business risk (see Frank and Goyal, 2009, p. 9).[3,4] We analyse relationships to establish if the determinants of capital structure are explained by either the trade-off or pecking order theories, or by an amalgamation as indicated by dynamic trade-off theory. Using the partial adjustment technique, used commonly to empirically validate the trade-off theory, we estimate the speed of adjustment for Malaysian firms to provide evidence from an emerging market under relationship-capitalism.

A second aim is to precisely gauge the effect of political patronage on firms' financing decisions. Invoking a natural experiment setting, we classify firms as politically connected (patronised) or non-connected and contend the 1997 Asian crisis constitutes an exogenous shock

3 Shleifer and Vishny (1992) posit that liquidation values of assets in place also impacts on the level of debt (Benmelech et al, 2005, and Brown et al, 2006 offer empirical evidence).

4 Lemmon et al (2008) find these factors explain as much as 80 per cent of variation in leverage ratios.

to Malaysian firms. A difference-in-differences framework empirically validates the following propositions: firms' respond to an exogenous shock by revising capital structure decisions; second, patronage enables politically connected firms to behave differently to non-connected firms. We examine if firms' financing decisions differ between an in-crisis period and subsequent recovery period, and whether patronage confers any effects in each period. To evaluate these propositions, the preferred econometric specification for the model specifies two post-shock periods and realises separate effects for patronised firms. The model is augmented with the core factors to identify predictive power and the impact of patronage, and also to reveal cross-time changes in financing strategies.

It is intuitive that firms' net operating incomes and equity prices would fall during an economic downturn and realise a jump in leverage causing anxiety to investors because of a perception that a firm is on the brink of bankruptcy. Consequently, firms either: (i) raise equity capital to reduce financial risk; or (ii) reduce debt. Raising capital in form of equity is not feasible due to the uncertainty over the duration of a crisis. Firms are compelled to cut debt by forgoing growth options or sell assets at fire sale prices thereby delaying economic recovery. However, patronised firms hold a critical advantage in the form of an implicit government guarantee they will be financially supported and not be allowed to fail. During periods of uncertainty, a close relationship between borrowing firms and lenders becomes a more important determinant of leverage than market-based explanations (Deesomsak et al, 2004). Thus, patronised firms find borrowing easier. Nevertheless, implicit government support could fade under the intensity of a crisis if the crisis raises systemic risk and causes disquiet in the ruling political party (as in Malaysia under the United Malays National Organization – UMNO) and

jeopardises the government's future (see Johnson and Mitton, 2003; Prasso et al., 2009; and Mitchell and Joseph, 2010).

We source financial statements data on 751 Malaysian firms from 1988 to 2009, yielding 7,042 firm-year observations. Each firm is classified as either politically patronised or non-connected. We use the system GMM estimator (Arellano and Bover, 1995; Blundell and Bond, 1998) to estimate the dynamic capital structure of Malaysian firms, and regression analysis to estimate the difference-in-differences model. Various checks assess the robustness of the results.

In preview, the results show Malaysian firms do target leverage and adjust towards the optimal level at an estimated speed of 28 per cent per annum, which is comparable with speeds reported for other countries. The analysis of the determinants of capital structure support a theoretical study (Ebrahim and Mathur, 2013) and show the trade-off theory and pecking order theory are complementary. The determinants are mostly stable across time though the economic importance of some factors changes. A second set of results shows Malaysian firms amend capital structure during the crisis with patronised firms reducing debt quicker than non-connected firms. It suggests politically connected firms suffer more when an exogenous shock limits government's ability to patronise (Johnson and Mitton, 2003). The observed differences for patronised firms dissipate in the recovery period.

The remainder of the paper is organised as follows. Section 2 surveys literature and offers further motivation. It contains sub-sections on capital structure; the role of political patronage; and political patronage in Malaysia. Section 3 shows the methodological framework. Section 4 presents the core factors and theoretical expectations. Section 5 discusses data. Section 6 presents the results from the dynamic capital structure and difference-in-differences models. Lastly, section 7 concludes.

II. Literature and motivation

II.a Capital structure

The capital structure debate originates with the irrelevance theorem of Modigliani and Miller (1958) proving independence of capital structure and firm value. The result is conditional upon assumptions bearing scant resemblance to the real-world: perfect capital markets; an absence of taxes, bankruptcy risk and liquidation costs.

Subsequent developments incorporate market frictions such as corporate taxes (Modigliani and Miller, 1963) yielding an optimal capital structure of 100% debt maximizing firm value. This model too omits several relevant factors. Miller (1977) extends the above model by introducing personal income tax. The solution derives when the marginal benefit from increasing leverage (shielding profit from tax) is equal to the marginal cost of enticing equity holders into debt (attractive interest rates offsetting the favourable tax treatment individuals receive on equity). This solution yields a constant average capital costs resembling Millers' earlier work with Modigliani.

One factor missing is bankruptcy risk. This suggests a trade-off approach (see Myers, 1984). That is, an optimal capital structure occurs at level of leverage where the marginal cost (higher probability of financial distress) and marginal benefit (tax shield advantage) of increasing debt equate. Agency costs are yet another factor. In selecting a capital structure, firms should consider agency costs stemming from conflicts of interest between their different stakeholders (Jensen, 1986; Jensen and Meckling, 1976; Myers, 1977). At highly levered firms, equity holders benefit from upside risk. Debt holders could protect their interests through monitoring firm

managers (and enhanced disclosure requirements), but this action raises costs.[5] Apart from stock holder-debt holder conflicts, the literature highlights one further agency issue, which is the agency issue arising between various classes of equity owners of patronised firms (see Sections IIb and IIc).

While trade-off theory provides useful insights on capital structure, it does not explain the negative stock price reactions to corporate financing events which are more severe for equity offerings than debt (Denis, 2012). Myers and Majluf (1984) contend that firm managers know outside investors discount firms' stock prices, leading firms to either avoid issuing equity or issue when mangers perceive equity is overvalued. On this basis, Myers (1984) proposes the pecking-order theory which posits that firms exhibit a preferred hierarchy in financing decisions. Firms minimize adverse selection problems by issuing the least information-sensitive securities (debt) first, before they issue more information-sensitive securities, and lastly equity. Therefore, as firm profitability improves, leverage falls because retained earnings act as "inside equity" (Frank and Goyal, 2007). In contrast to the pecking order theory view that equity issues convey negative information to investors that causes stock prices to adjust, the market timing theory of capital structure (Baker and Wurgler, 2002) hypotheses that managers issue overvalued equity and repurchase it when the stock becomes undervalued.

Developments in the literature show firms' financing decisions could yield an optimal capital structure that is consistent with value maximization. This implies firms target their leverage and amend their financing following temporary deviations from target in order to return leverage towards its optimum. In the static trade-off model the adjustment is instantaneous albeit

5 Myers (2001, p. 96) suggests bankruptcy costs are part of agency costs: "*conflicts (meaning agency issues) between debt and equity investors arise when there is a risk of default. If debt is totally free of default risk, debt holders have no interest in the income, value or risk of the firm. But if there is a chance of default, then shareholders gain at the expense of debt investors*".

incompatible with real-life scenarios; in contrast, dynamic trade-off models incorporate a gradual process of adjustment and it is this feature which differentiates the two models (see Flannery and Rangan, 2006; Frank and Goyal, 2007; DeAngelo et al, 2011). Adjustment is partial because of transactions costs (Leary and Roberts, 2005; Strebulaev, 2007).

Accepting the premise of adjustment to target raises the question of how quickly does leverage adjust. Studies provide answers by estimating the mean reversion towards target though consensus is absent (see Fama and French, 2002; Lemmon et al, 2008; Huang and Ritter, 2009; Flannery and Rangan, 2006). Jalilvand and Harris (1984) and Auerbach (1985) suggest the variation in adjustment speeds reflects factors such as firm size, the type of debt, and price of capital. Other factors affect adjustment speeds: the option to issue transitory debt (DeAngelo et al, 2011); cash flow realizations (Faulkender et al, 2012); and institutional factors (Öztekin and Flannery, 2012).

Empirical studies attempt to reconcile the trade-off and pecking order theories albeit with mixed results (see Titman and Wessells, 1988; Rajan and Zingales, 1995; Shyam-Sunder and Myers, 1999; Frank and Goyal, 2003). In contrast, in the dynamic model readjustment towards optimum leverage is determined by features of static trade-off and pecking order theories demonstrating that the theories are not mutually exclusive (see Fama and French, 2002; Flannery and Rangan, 2006; Antoniou et al, 2008). In a rational expectations framework, Ebrahim and Mathur (2013) theoretically prove the theories are complementary. Their model shows risky debt is at best Pareto-neutral to risk-free debt. Whereas this implies that low agency cost instruments (like risk-free debt) are more preferable, consistent with pecking order theory, it also illustrates that the subsequent choice of financing is risky debt, echoing static trade-off theory. In this context, pecking order precedes static trade-off as the welfare of agents depends on the type of

financing, but this ranking is contingent on the quality of assets employed by the firm (see Shleifer and Vishny, 1992).

II.b Political patronage

Connections between politicians and firms are commonplace. They exist in countries which restrict foreign investment and are considered corrupt as well as in more transparent and open economies. The sources of value to patronised firms include: preferential treatment by government-owned enterprises; lighter taxation; preferential treatment in competition for government contracts; and relaxed regulatory oversight of firms or stiffer regulatory oversight of rivals (Faccio, 2006).

Which forms could political patronage take and how are the costs and benefits distributed? Frye and Iwasaki (2011) propose three hypotheses which demonstrate relations between government, state directors, and firms. First, government uses state directors to stop management looting firms. This assumes government is concerned with firm performance and the political repercussions of economic malaise, prompting government to place state directors at underperforming firms with intent to improve performance by disciplining management. Second, the rent-extraction hypothesis posits that firms expend effort to secure patronage to gain access to economic rents. Government sends state directors to firms in order to reward interested parties whose support is necessary for the retention of power. However, state directors could use their position for personal gain at the expense of social welfare and firm performance. Third, the collusion hypothesis implies government develops mutually beneficial forms of cooperation with firms. In exchange for rents accruing from the benefits of patronage, management offers public goods and other services to government. The empirical evidence is ambiguous. The collusion hypothesis holds in Russia (Frye and Iwasaki, 2011) and Hong Kong (Wong, 2010). In contrast,

Faccio (2006) in a cross-country study, and Fan et al (2007) for newly partially privatized Chinese firms find in favour of the rent extraction hypothesis. Lastly, Chang and Wong (2004) report evidence from China which suggests patronage takes various forms and produces different outcomes for firm performance.

Cross-country data shows politically patronised firms are significantly more levered than non-connected firms. For the former, debt is higher at firms connected to government through ownership compared to state directors sitting on corporate boards (Faccio, 2010). It is pertinent to consider why patronised firms enjoy preferential access to debt financing and why lenders are more willing to extend credit to them. State ownership of banks is a contributory factor as is the informal relations between government and private-owned banks; both can produce irresponsible lending to government-approved firms even if credit risks are higher (Faccio, 2010; Bliss and Gul, 2012). In explanation, lenders could be irrational; receive direct support from government; be coerced into making poor loans to politicians' friends; or lenders recognise patronised firms are more likely to benefit from government rescue than non-connected firms in the event of default. Patronised firms carry more debt than non-connected firms following bail-outs, which supports the proposition that lenders willingly finance patronised firms irrespective of operating performance (Faccio, 2006).

II.c Political patronage in Malaysia

Native Malays account for sixty per cent of the Malaysian population. The remainder is split amongst Chinese, Indians and other minor ethnic groups. Malaysia gained independence from Great Britain in 1957. At that time the economy narrowly focused on natural resources and native Malays held only three per cent of equity. To redress the imbalance, the government embarked on a series of populist economic transformation programs to promote industrialization:

the Import Substitution Industrialization (ISI) in the 1960s; and the Export Oriented Industrialization (EOI) in the 1980s (see Fraser et al., 2006). The government also sought to uplift the social status of Malays and increase their participation in business through the New Economic Policy (NEP, 1970 to 1990) and National Development Policy (NDP, 1991 to 2000). The NEP was implemented following race riots in 1969, while the NDP is a continuation under a new name. NEP and NDP confer special privileges to Malays: including access to higher education and participation in business particularly government projects. A key objective was to raise Malay equity ownership to thirty per cent and to reduce poverty levels. A New Economic Model supersedes the NDP seeking to promote fair and equal opportunities across races.

In pursuing its development plan, the government adopted a relationship-based form of capitalism, disparagingly termed crony capitalisation (Johnson and Mitton, 2003), whereby selected firms receive political patronage or special incentives. Gomez and Jomo (1997) define patronage as preferential treatment given to businessmen who are either politicians or politically connected to government. Patronage lets connected parties capture various state rents in exchange for economic and political support. The government claimed patronage would improve the economy, address socio-economic imbalances, and redress competitive distortions facing native Malays.

Political patronage in Malaysia has been practiced in three ways. First, the government establishes firms which it controls via a sovereign wealth fund, *Khazanah Nasional Berhad*. These Government-Linked Companies (GLCs) are pivotal institutions in the economy. Second, patronage is given to firms owned by government-sponsored institutional investors.[6] Lastly,

6 The structure of these institutions is similar to mutual funds.

political patronage implies informal ties with politicians: connected firms are owned by relatives and/or friends of politicians, or by politicians themselves through proxy.

Relationships became so widespread that by 1995 almost 20 per cent of the Malay ruling party's division chairmen were millionaire businessmen (Gomez and Jomo, 1997). Faccio (2006) reports for Malaysia that connected firms account for 44 per cent of the top 50 firms: this cohort accounts for 28.24 per cent of market capitalization, one of the highest in the cross-country sample. Faccio et al (2006) investigate bail-outs of connected firms using a global sample and report 17 (of 51 bail-outs) occurs in Malaysia. To emphasise the importance of patronage, between July 1997 and August 1998 roughly 9 per cent of an estimated $60 billion loss in market value at connected firms is attributed to the fall in the expected value of patronage. The imposition of capital controls saw the figures rebound and of the $5 billion gain, 32 per cent is attributed to an increase in the value of patronage (Johnson and Mitton, 2003).

The populist albeit controversial policies did transform the economy which is one of the largest and most industrialized in SE Asia. Nonetheless, financial crises accompanied the economic transformation including the 1997 Asian crisis. Although former Prime Minister, Dr Mahathir Mohamed infamously chastised foreign speculators for ripening the conditions for the crisis, the financial practices of Malaysian firms also contributed. Previously, Malaysian firms relied heavily on external borrowings especially from banks which supplied between 52 to 82 per cent of external financing between 1990 and 1997 compared to between 11 to 40 per cent for new equity issues (Suto, 2003).

Financial liberalization in 1989 altered the structure of corporate debt and long-term funding became an important source of finance (Schmukler and Vesperoni, 2006). Some

commentators contend the speculative attack on the currency in 1997 triggered the inevitable because the crisis had been in the making for many years due to firms' financial practices. Borsuk (1993) identifies the easy access to bank loans especially for patronised firms, which was enhanced by state ownership of several banks (Gomez and Jomo, 1997). For these reasons, bank lending or debt finance became the largest component of capital structure, which is unsurprising because alternative sources of financing were either underdeveloped or more expensive. Using a sample of 500 publicly listed non-financial firms from 2001 to 2004, Bliss and Gul (2012) find patronised firms are more highly levered; they are charged higher interests rates on borrowings since lenders' perceive these firms as relatively more risky because patronised firms are more likely to report a loss and have negative equity.

The crisis damaged the Malaysian economy. A contraction in GDP and the stock market of around six and 80 per cent, respectively, occurred in 1998. In contrast to her neighbours, the Malaysian government imposed capital controls rather than accept conditional support from the IMF. It also pegged the ringgit to the US dollar to insulate the economy from further speculative attacks and to assist restructuring efforts. The government founded three agencies to restructure the financial sector and corporate balance sheets: the Corporate Debt Restructuring Committee (CDRC) to restructure debt; Danamodal to recapitalize banks; and an asset management entity Danaharta to buy bad loans from banks.

III. Methodological framework

Equation [1] shows the optimal capital structure captured by the debt-to-equity or leverage ratio Y^*_{it} for the i^{th} firm at time t:

$$Y^*_{it} = \alpha_0 + \sum_j \beta_j X_{jit} + \alpha_i + \alpha_t + \varepsilon_{it} \qquad [1]$$

Where: i represents firms ranging from 1 to N; t denotes time ranging from 1 to T; X captures (J) firm-specific and time varying characteristics; α_i and α_t represent unobserved firm-specific and time-specific effects; ε_{it} is an error term assumed to be independently identical and normally distributed with zero mean and constant variance, $\varepsilon_{it} \approx i.i.d.\ N(0, \sigma^2)$.

In a perfect (frictionless) world with no adjustment costs, firms respond to variations in X_{jit} by changing capital structure to equal the optimal leverage ratio in a process termed complete adjustment. It implies that at any point in time the leverage ratio should equal its target or optimum level, $Y_{it} = Y^*_{it}$. Therefore, a change in leverage exactly equals the change required for a firm to attain its optimum: $Y_{it} - Y_{it-1} = Y^*_{it} - Y_{it-1}$.

Given imperfect knowledge and adjustments costs, firms do not adjust instantaneously towards optimal leverage. The partial adjustment model incorporates this result through a parameter, λ that measures the speed of adjustment. λ is inversely proportional to transactions costs and ranges from 0 to 1. Cross-country studies emphasise the sensitivity of leverage to institutional factors such as legal traditions including protection of property rights and enforcement of creditor rights, and to the dominance of one type of financial structure over another (Rajan and Zingales, 1995; González and González, 2008; Antoniou et al, 2008; Öztekin and Flannery, 2012).

Equation [2] shows the partial adjustment model which is rewritten in equation [3]:

$$Y_{it} - Y_{it-1} = \lambda_{it} (Y^*_{it} - Y_{it-1}) \qquad [2]$$

$$Y_{it} = (1 - \lambda_{it})\, Y_{it-1} + \lambda_{it} Y^*_{it} \qquad [3]$$

To remove the unobservable optimal leverage, Y^*_{it}, substitute equation [1] into [3] to derive equation [4], and re-write as equation [5] below:

$$Y_{it} = (1- \lambda_{it})\, Y_{it-1} + \lambda_{it} (\alpha_0 + \sum_j \beta_j X_{jit} + \alpha_i + \alpha_t + \varepsilon_{it}) \quad [4]$$

$$Y_{it} = \varphi_0 + \theta_0 Y_{it-1} + \sum_j \theta_j X_{jit} + \eta_i + \eta_t + \mu_{it} \quad [5]$$

Where: $\varphi_0 = \lambda_{it}\, \alpha_0$, $\theta_0 = (1-\lambda_{it})$, $\theta_j = \lambda_{it}\, \beta_j$, $\eta_i = \lambda_{it}\, \alpha_i$, $\eta_t = \lambda_{it}\, \alpha_t$, and $\mu_{it} = \lambda_{it}\, \varepsilon_{it}$.

Equation [5] contains a lagged dependent variable and dynamic panel data methods are used to estimate it. Although first differencing removes time-invariant unobserved heterogeneity it could produce correlation between the transformed lagged term and the transformed error term, which would bias λ. In solution, Arellano and Bond (1991) propose the difference GMM estimator (Generalized Methods of Moments) which differences equation [5] to remove time-invariant fixed effects and uses levels of the lagged dependent variable to instrument the first difference of the lag. However, difference GMM could produce unbiased estimates if levels of endogenous variables are weak instruments for first-differenced variables, and if the lagged levels and first differenced variables are serially correlated (Arellano and Bover, 1995; Blundell and Bond, 1998). In response, Blundell and Bond (1998) propose the system GMM estimator. It combines the first differencing approach with a levels regression using lagged first differences as instruments. The system estimator is more efficient than its difference counterpart because it uses a more efficient set of instruments to counter the weak instruments problem.

We use system GMM to estimate the partial adjustment model to control for endogeneity which could arise in dynamic capital structure models. Flannery and Hankins (2013), noting differences in reported adjustment speeds, simulate a dataset and apply several commonly used methods in a horserace for effectiveness in resolving econometric anomalies such as endogeneity

and censored dependent variables. Their results demonstrate the suitability of the system GMM estimator from both theoretical and empirical standpoints which reaffirms findings elsewhere (Wintoki et al, 2012; Öztekin and Flannery, 2012).[7]

We augment equation [5] with dummy variables to control for time-invariant industry effects because leverage varies across industries (Harris and Raviv, 1991) and affects capital structure decisions (MacKay and Phillips, 2005; Miao, 2005; Öztekin and Flannery, 2012). Other dummies control for year-specific effects common to all firms though variable through time (Antoniou et al, 2008). To check specification, we run two tests: the Sargan test for over-identifying restrictions; and Arellano and Bond's test for zero autocorrelation which determines if the first differenced residuals are free from second order serial correlation.

IV. Core factors

The dependent variable is *Leverage* measured by the book value of firms' total debt-to-total assets ratios.[8] Whereas others debate the choice of book or market value (Flannery and Rangan, 2006; Frank and Goyal, 2009) our choice draws on survey evidence (Graham and Harvey, 2001) which reports many managers claim not to rebalance capital structure following equity movements because of the high adjustment costs of continuous rebalancing. In the dynamic panel model setting, adjustment speed is ascertained from the coefficient on the one-period lagged dependent variable, $Leverage_{t-1}$. We use the core factors (Frank and Goyal, 2009)

7 Pooled OLS and fixed-effects estimators are unbiased under certain assumptions which are often absent in corporate finance data (Wintoki et al, 2012). Unobservable heterogeneity arises when errors are not independent nor identically distributed making the OLS estimators biased. Fixed-effects estimators correct for serial correlation in the residuals arising from unobserved firm-specific heterogeneity. However, the estimator is consistent only if the current values of the explanatory variables are completely independent of past values of the dependent variable.

8 Total debt equals all interest bearing and capitalized lease obligations. Total assets is the sum of total current assets, long term receivables, investment in unconsolidated subsidiaries, other investments, net property plant and equipment, and other assets.

to identify the determinants of the capital structure of Malaysian firms.[9] We next discuss the factors and expectations regarding leverage.

Size equals the natural logarithm of total assets (in ringgit billion at 2000 prices). Larger, more diversified firms face a lower risk of default because of lower earnings and net cash flow volatilities (Fama and French, 2002). Assuming size reasonably proxies for age; larger, more reputable firms face lower debt-related agency problems in debt markets (Fama and Jensen, 1983). Size also proxies for capital market access (Fama and French, 2002) and fixed financing costs (Kurshev and Strebulaev, 2006). Trade-off theory predicts a positive relation between leverage and size. Although pecking order theory is ambiguous, it suggests an inverse relationship because larger, better-known firms could more easily issue equity than small firms if adverse selection problems are severe.

Profitability equals the ratio of earnings before interest and taxes-to-total assets. Static trade-off models contend that more profitable firms hold more debt because expected bankruptcy costs are lower and interest tax shields more valuable. Furthermore, and from an agency perspective, the free cash flow theory contends that profitable firms use more debt as a mechanism to control managers (Jensen, 1986). In contrast, pecking order theory stipulates that profitable firms generate higher cash flows and use internal funds for financing instead of raising debt or equity (Myers and Majluf, 1984). The result shows more profitable firms use less debt to deliver an inverse relationship with leverage. Long run evidence from the US shows the declining (albeit statistically significant) importance of *profitability* as a predictor of leverage in

9 We do not use taxes as a proxy variable as the information on personal taxes of investors is not available. We also have difficulty in constructing a proxy for non-debt tax shields.

the 1980s and 1990s compared to earlier periods. It suggests a willingness by equity markets to fund currently unprofitable firms with good growth opportunities (Frank and Goyal, 2003).

Growth equals the market-to-book ratio of equity and proxies for firms' investment opportunities (Barclay and Smith, 1995). Static trade-off theory predicts an inverse relation between leverage and *Growth* because growth firms face the underinvestment problem. This arises because firms with risky debt face incentives to under invest in positive net present value projects since shareholders bear the full cost of projects but receive only a fraction of any increase in firm value as part goes to debt holders (Myers, 1977). For high growth firms, it is easier for shareholders to increase risk without it being detected by debt holders, which makes debt more costly for these firms. Growth firms could find it easier to issue equity with debt being less attractive as a disciplining factor (Jensen, 1986). Pecking order theory suggests growth firms should accumulate more debt over time providing profitability remains constant, which infers a positive relation with leverage. However, empirical evidence shows high growth firms are less levered because of a lower debt capacity (Lemmon and Zender, 2010).

Tangibility equals the ratio of net tangible assets-to-total assets. Large holdings of tangible assets could serve as collateral to lower the risk of lenders suffering the agency costs of debt like risk shifting, which could occur if shareholders substitute high-risk assets for low-risk assets (Rajan and Zingales, 1995; Frank and Goyal, 2009). Scott (1977) shows firms could borrow at lower interest rates if debt is secured by tangible assets. Pecking order theory predicts the opposite albeit with a caveat. It surmises the low information asymmetry associated with tangible assets makes it cheaper for firms to issue equity implying firms with higher tangibility are less levered. However, if adverse selection exists about firm assets, tangibility will worsen the

problem and could lead to higher debt. Nevertheless, empirical evidence from 10 developing countries supports trade-off theory (Booth et al, 2001).

Industry is the median leverage ratio for industries across *t* periods. Industry leverage exerts considerable predictive power on capital structure decisions. Evidence shows firms adjust leverage towards industry-level norms (Harris and Raviv, 1991; Hovakimian et al, 2001; MacKay and Phillips, 2005; Miao, 2005; Flannery and Rangan, 2006; Lemmon et al, 2008; Faulkender et al, 2012). *Industry* could also proxy for omitted industry-specific factors which affect firms' financing decisions (Frank and Goyal, 2009). As noted above, the model includes dummy variables to account for unobserved industry-level heterogeneity (Öztekin and Flannery, 2012). Whilst trade-off theory predicts a positive relationship between *Leverage* and *Industry*, the pecking order theory is ambiguous; it contends *Industry* matters only to the extent it proxies for firms' financing deficits (Frank and Goyal, 2009).

Volatility equals the ratio RoA_{it}-to-σ_{RoAt} where σ_{RoAt} is the standard deviation of return on assets for period *t*. It controls for firm risk (Lemmon et al, 2008; Frank and Goyal, 2009) and by construction resembles a proxy for financial distress costs (Miguel and Pindado, 2001). It also contains information about firm cash flow since more profitable firms are expected to have higher cash flows. Cash flow realizations exert significant first-order effects on firm's convergence towards target leverage ratios (Faulkender et al, 2012). Higher volatility lowers the probability that tax shields will be fully utilized and is associated with less debt under trade-off theory. More volatile or risky firms are likely to face a severe adverse selection problem, which under pecking order theory implies a positive relation between volatility and leverage.

V. Data

From DataStream we source annual financial and accounting data for 751 Malaysian firms from all industrial sectors between 1988 and 2009. We filter the sample to exclude financial firms and utilities, and omit negative and extreme values for *Growth* to avoid distorting its relationship with *Leverage* (Almeida and Campello, 2007). After filtering, the unbalanced panel dataset contains 7,042 firm-year observations. Approximately 11 per cent of observations are for politically patronised firms which account for roughly 7 per cent of the number of sample firms.

Table 1 shows correlations between *Leverage* and the firm-specific variables for the whole period and for sub-periods before and after the Asian crisis. Generally speaking, the magnitude of correlations between *Leverage* and the covariates is greater pre-crisis (except for *Size* and *Tangibility* which are higher post-crisis). *Leverage* is inversely correlated to *Profitability* and *Volatility* and positively associated with all other variables. Table 1 also shows significant post-crisis correlations between *Size* and other covariates (except *Growth*), which we do not observe pre-crisis. The increasing importance of *Tangibility* post-crisis is evident.

[Insert Table 1 here]

Table 2a presents the averages of the firm-specific variables by industry and for politically patronised and non-connected firms across 1988 to 2009. On average, patronised firms are larger though not for all industries. For six of eight industrial sectors, average leverage is often notably higher for patronised firms. Tables 2b and 2c represent the data by year. On average, from 1988 to 1995, patronised firms carry up to twice as much debt. We conjecture the high average leverage of patronised firms reflects informally government support. In the event of financial distress, government is expected to support patronised firms suggesting these firms are more

likely to service debts (Shleifer and Vishny, 1992). Although on average patronised firms carry relatively more debt post-crisis the difference with the average non-connected firm is less obvious. On average, patronised are larger and marginally more profitable from 2001. Examining trends in *Profitability* shows the average non-connected firm is much less profitable post-crisis compared to pre-crisis, which is not unsurprising given movements in Malaysian GDP following the onset of the crisis and the reduced investment opportunities (*Growth*) for all firms.

[Insert Tables 2a-c here]

VI. Results

V1.a Dynamic capital structure

We use system GMM to estimate the dynamic capital structure model in equation [5] for all firms from 1988 to 2009 to determine (i) if Malaysian firms adjust to target leverage; and (ii) to quantify the speed of adjustment. Column (1) of Table 3 shows the estimated coefficients and the results of the diagnostic tests. The p-values for the Sargan and zero-autocorrelation tests indicate the null hypotheses are not accepted, which confirms the model is neither over-identified nor are the residuals affected by second order serial correlation. $Leverage_{it-1}$ is the coefficient for the lagged dependent variable and is significant at the 1 per cent level. From the value of this coefficient (0.7162), we infer that Malaysian firms adjust leverage towards an optimal level and the speed of adjustment is approximately 28 per cent per annum. In the context of findings reported elsewhere from dynamic panel models, the adjustment speed of Malaysian firms is broadly consistent with or at the upper end of ranges reported for (mostly) US firms by Lemmon et al (2008; around 25 per cent), Huang and Ritter (2009; 17-23 per cent), and Faulkender et al (2012; 23-26 per cent), comparable with Frank and Goyal (2009; around 27 per cent), yet below Flannery and Rangan (2006; over 30 per cent).

[Insert Table 3 here]

Whilst we confirm the capital structure of Malaysian firms is affected across time by firm-specific characteristics, the results conclusively demonstrate that neither static trade-off nor pecking order theories exclusively predict capital structure. Of the six predictors of corporate leverage, three relationships each support trade-off and pecking order theories. That we cannot find in favour of either theory constitutes empirical support for a theoretical result which derives from amalgamating the theories under a rational expectations framework (Ebrahim and Mathur, 2013). It also supports dynamic trade-off theory (see also Antoniou et al, 2008).

The coefficient for *Size* shows larger Malaysian firms carry more debt and suggesting these firms face lower debt-related agency problems in debt markets (Fama and Jensen, 1983) and hold better access to capital markets (Fama and French, 2002). Whereas the positive coefficient on *Size* is consistent with trade-off theories, the inverse relationship between leverage and *Profitability* supports the pecking order explanation that profitable Malaysian firms with relatively high cash flow use internal funds as finance which lowers their reliance upon debt and/or equity (Myers and Majluf, 1984).

Pecking order theory explains observed positive relations between leverage and both *Growth* and *Volatility*. In interpretation, the former result suggests Malaysian firms with better investment opportunities do not suffer the underinvestment problem, and over time could accumulate more debt assuming constant profitability, whilst the latter result implies that risky Malaysian firms hold more debt because of severe adverse selection problems. Malaysian firms holding large amounts of tangible assets are significantly more levered supporting trade-off theory. This suggests *Tangibility* reduces the agency costs of debt through its proxy for collateral

(Rajan and Zingales, 1995), and/or interest expenses are lower when debt is secured by tangible assets (Scott, 1977). Our result for Malaysia confirms Booth et al (2001) for 10 developing countries. Lastly, we find a large coefficient revealing a positive relationship between leverage and *Industry* suggesting that Malaysian firms adjust their leverage ratios towards industrial sector benchmarks. This result supports trade-off theory (see Hovakimian et al, 2001; Flannery and Rangan, 2006; Lemmon et al, 2008; Frank and Goyal, 2009; and Faulkender et al, 2012). The magnitude of the coefficients contains information regarding which factors are economically meaningful determinants of capital structure. Our results signal the economic importance of *Profitability* (-0.2872) and *Industry* (0.2796) in determining corporate leverage.

We next consider the robustness of the main results. As a first step, we exclude the years 1998 and 1999 when the Asian crisis peaked. To determine if the crisis precipitated a change in firm behaviour in terms of firms' financing decisions, we construct sub-samples to capture the before (1988-1997) and after (2000-2009) periods. Earlier, section II.b referenced arguments stipulating that one outcome of the crisis could be to curtail firms' reliance on debt financing. Therefore, we re-estimate equation [5] by sub-period and present the results in columns (2-3) of Table 3. The data reject over-identification and second order serial correlation.

The speeds of adjustment are similar across periods. Between 1988 and 1997, corporate leverage adjusts towards target by approximately 31 per cent per annum; post-crisis the comparator is roughly 28 per cent. The signs on coefficients confirm the relationships between *Leverage* and firm-specific variables hold across time except *Volatility* which turns insignificant. Nevertheless we observe some notable changes in economic importance: for instance, the magnitude on *Profitability* falls from -0.4626 (pre-crisis) to -0.2527 (post-crisis). A declining ability for *Profitability* to predict *Leverage* for US firms was noted earlier, and explained by a

willingness of equity markets to fund currently unprofitable firms with good growth opportunities (Frank and Goyal, 2003). This result concurs with the correlation analysis showing firms are less profitable post-crisis which we contend affects their ability to finance new projects from retained earnings. Similarly, post-crisis *Industry* falls in economic importance (0.4725 to 0.1641) albeit whilst remaining significant. This could be interpreted as suggesting that the targeting of industry benchmarks becomes less important over time. In contrast, the relationship between *Leverage* and *Tangibility* turns significant post-crisis whilst the magnitude on *Size* virtually doubles. In summary, the comparison of estimated coefficients across time shows the crisis did exert some effects on firms' financing decisions.

The panel dataset comprises a greater number of observations post-crisis. Therefore, and as another test for robustness, we confine the sample to 182 firms which operate continuously between 1988 and 2009. In Table 3 columns (4-5) show the re-estimated coefficients for the sub-periods. Generally, the signs and significance reconfirm the previous findings. We note some differences in economic importance: for instance, for the limited sample and across 1988 to 2009 the coefficients on *Profitability* and *Industry* equal -0.1548 and 0.4518 compared with -0.2872 and 0.2796 for the unrestricted sample. For the restricted sample, targeting industry benchmarks is economically and statistically significant. The predictive power of *Industry* increases post-crisis for the restricted sample; its coefficient is over twice the size of the comparator in the unrestricted sample. We contend sample size is not a factor driving the results.[10]

10 In unreported regressions we apply the GMM difference estimator as another robustness check. The results are consistent with the main findings and are available upon request.

V1.b The effect of political patronage

Notwithstanding that patronage is a valuable resource, only a few studies investigate how political connections affect firms' strategic decision-making and long run performance (see Section I). We examine the effect of political patronage on firms' leverage decisions using a natural experiment approach. Assuming the Asian crisis constitutes an exogenous shock to Malaysian firms, we apply a difference-in-differences model to determine if the leverage of patronised firms significantly differs from the trend for Malaysian firms post shock. We contend firms' strategic decision-making is different immediately following an exogenous shock from the subsequent recovery period. To consider this proposition, we specify our model to contain two post-shock periods: 1998 to 2001 capture the duration of the crisis (Laeven and Valencia, 2008); 2002 to 2009 captures the recovery period. A dummy variable identifies each period equal to unity for 1998 to 2001 (2002 to 2009) and zero otherwise. In order to derive a precise evaluation of the strategic reactions of firms, we interact the period dummies with the firm-specific covariates for (i) all firms; and (ii) patronised firms. This identification strategy exploits both the reaction of leverage to the cross-time change in firm behaviour immediately after the shock and over the longer run, and differences in the reaction of leverage between patronised firms and non-connected firms during and after the crisis. Equation [6] presents the model:

$$Y_{it} = \beta_1 D_i + \beta_2 E_{1t} + \beta_3 D_i{*}E_{1t} + \sum_{j=q}^{q} \beta_j \, X_{it-1}{*}E_{1t} + \sum_{k=q}^{q} \beta_k X_{it-1}{*}E_{1t}{*}D_i$$

$$+\beta_{22} E_{2t} + \beta_{33} D_i{*}E_{2t} + \sum_{l=q}^{q} \beta_l \, X_{it-1}{*}E_{2t} + \sum_{m=q}^{q} \beta_m X_{it-1}{*}E_{2t}{*}D_i + \varepsilon_{it} \qquad [6]$$

Where Y_{it} is the leverage ratio; D_i is a dummy equal to unity if a firm holds political patronage and zero otherwise. For the purposes of classification, a firm is considered patronised on

satisfaction of any one of three criteria: (i) identified by Gomez and Jomo (1997) as having political connections; (ii) if a firm is controlled by the government-owned sovereign wealth fund, *Khazanah Nasional Berhad*; (iii) if a firm's institutional investors are government sponsored entities like *Permodalan Nasional Berhad*; E_{1t} is a dummy variable equal to unity for years 1998 to 2001 and zero otherwise; E_{2t} is a dummy variable equal to unity for years 2002 to 2009 and zero otherwise; the X_{it-1} are the one period lagged core factors. Whilst lagging ensures causality runs from covariates to leverage thereby ameliorating simultaneity concerns, a potentially endogenous relationship could occur if firms self-select to be politically patronised. In their detailed analysis of political relationships in Malaysia, Gomez and Jomo (1997) explain that connections of firms to politicians tended to be based on chance personal histories between businessmen and rising politicians. Johnson and Mitton (2003) contend that because relationships predate associations of these businessmen with particular firms, there are no grounds to believe that unobserved firm-level characteristics determine the political patronage of firms.

The coefficient β_1 measures the extent to which the leverage of patronised firms differs from others across time. The raw data unambiguously show patronised firms are more debt-intensive which realises expectations of $\beta_1>0$. The coefficient β_2 identifies the response of Malaysian firms' leverage during 1998 to 2001 relative to pre-crisis. A positive (negative) coefficient signals higher (lower) debt. β_3 is the coefficient on the interaction of D_i and E_{1t} and measures the effect of the exogenous shock on patronised firm leverage between 1998 and 2001. We apply the same procedure to measure how leverage responds post-crisis (2002 to 2009), E_{2t}. The coefficient β_{22} indicates the response of Malaysian firms' leverage whilst β_{33} identifies if the leverage of patronised firms differs from the trend in E_{2t}. Supposing Malaysian firms

strategically opt to carry less debt, say, due to equity market developments or a lessening of agency-related problems, we would expect $\beta_{22}<0$.

We interact each covariate with E_{1t} and E_{2t}. The coefficients β_j show how corporate leverage responds to capital structure decisions, pertaining to each core factor, made by Malaysian firms in the crisis. In order to determine if patronage affects such relationships, each interaction term is interacted with D_i with β_k measuring the effects. The coefficients β_l and β_m measure the effects of firm-specific variables on capital structure for Malaysian firms over 2002 and 2009 and if those effects differ for patronised firms.

Before presenting the results, we present the evolution of average annual leverage for patronised firms and non-connected firms from 1988 to 2009. From circa 1993-94 the rate at which Malaysian firms increase debt exceeds asset growth. Figure 1 demonstrates a convergence in leverage for patronised and non-connected firms just prior to the exogenous shock. After the shock, the average leverage of patronised firms peaks to suggest government intervention. Although non-connected firm leverage displays a similar pattern the magnitude of the jump is smaller. A considerable difference between the leverage of each cohort appears post-crisis. For non-connected firms, leverage falls quickly and is constant from 2001. In comparison the leverage of patronised firms is more variable though also trending downward. By 2009 the average holdings of debt roughly equate and compare to levels circa 1995 to 1996.

[Insert Figure 1 here]

Next we consider the parallel trends assumption which contends the trend in leverage for patronised and non-connected firms would roughly equate in the absence of the shock. Figure 2 plots the evolution of annual average leverage for both cohorts until the shock. Leverage shows a

similar trajectory from 1992 with minor differences circa 1995 to 1997, thereby satisfying the parallel trends assumption and inferring non-connected firms are a suitable control group.

[Insert Figure 2 here]

Table 4 shows the results of estimations of equation [6]. We test for robustness by changing the source of identification. Column (1) reports the results of the model 1 which robust clusters the standard errors. Model 2 in column (2) clusters the standard errors by firm to control for serial correlation in the dependent variable. Model 3 in column (3) augments model 2 by including dummies for years and industries to control for effects that are not directly observed. For instance, leverage could be influenced by institutional factors, such as, prevailing economic conditions and business cycle effects, legal environment, regulatory framework, and economic development. Model 4 changes the source of identification and we estimate a model with industry-year effects to account for shocks which have an industry-specific component that could affect leverage. Lastly, model 5 controls for firm-industry effects to accommodate unobservable invariant industry factors and unobserved firm-level factors that could lead to differences in leverage across industries.

[Insert Table 4 here]

Two main results emerge. First, the exogenous shock causes Malaysian firms to reconfigure capital structure during the crisis, and to subsequently revise their decisions post-crisis. Second, the results demonstrate that political patronage explains differences in leverage but only during the crisis. These findings are robust. We elaborate further on other important results. Table 4 rejects claims that patronised firms hold significantly higher levels of debt because β_1 is mostly insignificant. In crisis period, E_{1t}, the coefficients for β_2 show Malaysian

firms de-lever in an economically meaningful as well as statistically significant way compared to pre-crisis. Aside from 1998 when debt levels temporarily benefit from the September imposition of capital controls, the trend in leverage for Malaysian firms is driven by lower debt holdings. The β_3 coefficients show patronised firms reduce gearing to a greater extent compared to non-connected firms during the crisis.

The β_j and β_k measure the effects of each core factor on leverage for Malaysian firms and patronised firms during the crisis. It is difficult to unequivocally accept that patronised firms behave differently in terms of capital structure decision-making. Whereas profitable Malaysian firms became less levered during the crisis, profitable patronised firms increased debt (β_{j2} and β_{k2}). However, patronised firms increasingly targeted industrial benchmark leverage (β_{k5}). The results emphasise the economic importance of *Profitability* and *Industry* (the statistical evidence is mostly supportive) in predicting corporate leverage during the crisis. In addition, strong statistical, though less compelling economic, evidence shows patronised firms with lower *Volatility* held less debt during the crisis (see β_{k6}). For Malaysian firms debt is associated with larger firms (β_{j1} on *Size*), better investment opportunities (β_{j3} for *Growth*), and more tangible assets (βj_4 on *Tangibility*). We find no evidence of differences in the relations between these factors and leverage for patronised firms.

Our next concern is what happens to leverage post-crisis for Malaysian firms, and do the observed differences for patronised firms continue, and if so, does the importance of individual factors remain constant. The results demonstrate that Malaysian firms continue to operate with lower levels of leverage post-crisis compared to pre-crisis (β_{22}). Lower debt ratios could reflect both a deepening of equity and other nascent financial markets and a weakening of agency-related problems. Although β_{33} is positive and suggests patronised firms are more levered, the

coefficients are statistically insignificant and economically unimportant (Figure 2 clearly indicates a post-crisis convergence in debt levels for patronised firms and non-connected firms). The β_l coefficients identify the effects of individual factors on leverage for Malaysian firms. The signs on the coefficients remain consistent: more profitable firms are less levered (β_{l2}), whereas firm size (β_{l1}), growth opportunities (β_{l3}), and the amount of tangible assets (β_{l4}) positively affect leverage. A notable change, however, is the greater importance of benchmarking target leverage to industry medians (β_{l5}). Indeed, *Industry* and *Profitability* are the most economically important predictors of capital structure for Malaysian firms. We note also the rising economic importance of *Tangibility*. The evidence clearly shows patronage exerts little effect upon leverage post-crisis, though we observe some mixed statistical evidence to suggest industry benchmarking (β_{m5}) is a less important determinant of capital structure for patronised firms; certainly, the results emphasise the economic importance of *Industry* albeit in two models.

VII. Conclusion

This paper examines the capital structure of Malaysian firms with two goals in mind. First, we investigate if Malaysian firms target an optimal leverage and using six core factors we establish the determinants of capital structure. We obtain our results from system GMM estimation of a dynamic partial adjustment model. Leverage is estimated to adjust to target at a rate of approximately 28 per cent per annum, which compares to speeds reported elsewhere for other countries. Our analysis of the determinants of capital structure reconciles the trade-off and pecking order theories and we demonstrate neither theory dominates. Rather, our evidence supports a theoretical model showing the theories are complementary (see Ebrahim and Mathur, 2013), and is also consistent with other empirical studies (see Antoniou et al, 2008; Frank and Goyal, 2009). Subsequent robustness checks confirm the determinants of capital structure are

generally consistent over time, though we observe some changes in the economic importance of factors, such as, profitability and benchmarking leverage to industry standard.

The second objective is to determine the effect of political patronage on capital structure following an exogenous shock. Using a difference-in-differences approach we determine if the leverage of politically patronised firms significantly differs from the overall trend for Malaysian firms following the Asian crisis. We consider if leverage decisions vary between an in-crisis period and a post-crisis recovery period. The results unambiguously demonstrate Malaysian firms amend capital structure during the crisis and politically patronised firms de-lever quicker than non-connected firms. This finding is consistent with claims that politically connected firms suffer more when an exogenous shock limits government's ability to provide privileges and subsidies (Johnson and Mitton, 2003). One reason for this largely unexpected result is because the severity of the exogenous shock increases systemic risk which causes the government to rethink its support in case patronage creates a backlash to threaten the future of an incumbent government. An alternative explanation views patronised firms as safer bets because of implicit government guarantee and are unwilling to seek further debt capital when the price is high. However, policy makers must exercise caution as to the amount of support they confer to selected firms in order to avoid sending an erroneous signal to both investors and markets. First, political interference in selected sectors of the economy can undermine the competitive edge of firms in the global economy. Second, populist policies can disenfranchise groups particularly minorities, which could cause such groups to relocate physically (i.e., extricating their human capital) overseas or move their financial capital overseas. These reactions can impede economic growth in the long run. Investors should recognise the cost of government support. Since political support extracts rents it confers low returns. Furthermore, a government's lifeline

evaporates when it is most needed i.e., during a severe economic downturn when the private sector needs to resort to its own wits to come out unscathed and stronger than before.

In recovery, patronised firms are more highly levered than non-connected firms but the findings are insignificant. Nevertheless, it indicates at least a partial return to the benefits of patronage and possibly reflects the activities of government restructuring agencies. This suggests the Malaysian government was better able to protect patronised firms once it had imposed capital controls and established restructuring agencies to deal with corporate debt. Whilst strategic decisions pertaining to core factors can explain revisions to capital structure in recovery, no concrete evidence shows patronised firms behave differently. Our analysis suggests political patronage exerts a causal impact on leverage during crisis episodes only. We believe our paper provides insights to understanding the effect of exogenous shocks on financing and how political patronage influences strategic decision-making (in the context of emerging markets and relation-based economies).

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Table 1: Correlation coefficients: 1988-2009 and sub-periods

	Leverage	**Size**	**Profit**	**Growth**	**Tang.**	**Industry**	**Volatility**
1988-2009							
Leverage	1						
Size	0.1985*	1					
Profitability	-0.2356*	0.2132*	1				
Growth	0.0275*	0.0591*	0.2285*	1			
Tangibility	0.1853*	0.1354*	-0.0209	-0.0440*	1		
Industry	0.2152*	0.2105*	0.0164	-0.0386*	0.1097*	1	
Volatility	-0.2401*	0.2227*	0.9614*	0.2957*	-0.0049	-0.0253*	1
1988-1997							
Leverage	1						
Size	0.0789*	1					
Profitability	-0.4317*	0.0153	1				
Growth	0.0882*	-0.2319*	0.2357*	1			
Tangibility	0.0586	0.0131	-0.0041	-0.0484	1		
Industry	0.3122*	0.0398	-0.1946*	0.0862*	-0.0484	1	
Volatility	-0.4329*	-0.0039	0.9833*	0.2180*	0.0104	-0.2077*	1
2000-2009							
Leverage	1						
Size	0.2290*	1					
Profitability	-0.1909*	0.2214*	1				
Growth	0.0280*	0.0218	0.1942*	1			
Tangibility	0.2107*	0.1434*	-0.0322*	-0.0797*	1		
Industry	0.1888*	0.2578*	0.0973*	-0.0430*	0.1563*	1	
Volatility	-0.1884*	0.2115*	0.9823*	0.2119*	-0.0272*	0.0806*	1

Notes: LEVERAGE = debt-to-total assets; SIZE = natural logarithm of real assets (2000 prices); TANGIBILITY = fixed assets-to-total assets; GROWTH = market-to-book value of equity; PROFITABILITY = earnings before interest and taxes-to-total assets; INDUSTRY = median debt ratio of industry; VOLATILITY = $RoA_{it}/\sigma RoA_t$.

* Statistically significant the 5% level.

Table 2a: Descriptive Statistics: Mean values by industry, 1988-2009

Industry	Obs.	Lev.	Size	Profit	Growth	Tang.	Ind.	Vol.
Politically connected firms								
Basic Materials	25	0.1809	368.0	0.0345	1.4546	0.2510	0.2688	0.3658
Consumer Goods	159	0.1601	1487.2	0.1063	1.9817	0.4261	0.1533	1.0215
Consumer Services	212	0.2668	2443.5	0.0714	1.9850	0.4129	0.2067	0.6609
Health Care	29	0.3108	1249.9	0.0636	1.7194	0.3905	0.2299	0.5136
Industrials	240	0.2499	3422.5	0.0538	1.5574	0.3916	0.2083	0.5065
Oil & Gas	7	0.4115	1633.9	0.0905	2.1561	0.1802	0.3066	0.7280
Technology	63	0.3591	1938.9	0.0495	2.2885	0.2918	0.1641	0.5130
Telecommunications	30	0.2120	18700.0	0.0299	1.9748	0.4649	0.1552	0.3807
Non-politically connected firms								
Basic Materials	724	0.2540	682.2	0.0573	1.4825	0.4143	0.2543	0.5134
Consumer Goods	1,810	0.1982	517.2	0.0669	1.8533	0.4288	0.1624	0.6075
Consumer Services	449	0.2060	1909.1	0.0728	1.5079	0.3915	0.2108	0.6755
Health Care	127	0.2002	235.3	0.0863	2.2587	0.4647	0.2099	0.6791
Industrials	2,454	0.2209	417.0	0.0440	1.4159	0.3653	0.2061	0.3928
Oil & Gas	192	0.2433	1662.2	0.0790	2.3640	0.4747	0.2575	0.7213
Technology	488	0.1211	190.8	-0.0167	1.7678	0.2221	0.0902	-0.0504
Telecommunications	33	0.0808	952.8	0.0738	3.0745	0.3197	0.0884	0.5856

Notes: LEVERAGE = debt-to-total assets; SIZE = total assets, bn (2000 prices); TANGIBILITY = fixed assets-to-total assets; GROWTH = market-to-book value of equity; PROFITABILITY = earnings before interest and taxes-to-total assets; INDUSTRY = median debt ratio of industry; VOLATILITY = $RoA_{it}/\sigma RoA_t$.

Table 2b: Descriptive Statistics: Mean values by year - politically patronised firms

Year	Obs	Lev.	Size	Profit	Growth	Tang.	Industry	Vol.
1988	9	0.2884	1153.6	0.0366	1.4595	0.5069	0.1874	0.5153
1989	10	0.2772	1772.8	0.0689	1.9312	0.5033	0.1663	0.9359
1990	10	0.2530	1905.0	0.0829	2.7070	0.4452	0.1473	0.8738
1991	19	0.1904	2006.2	0.0876	2.0421	0.4100	0.1492	1.0099
1992	21	0.1786	1993.2	0.0946	1.7516	0.4264	0.1316	1.2874
1993	23	0.1958	2373.7	0.0895	2.5405	0.3611	0.1370	1.1386
1994	24	0.2106	2889.1	0.0907	3.3252	0.3781	0.1840	1.1392
1995	31	0.1906	2946.5	0.0935	2.7981	0.4085	0.1939	1.3774
1996	33	0.2315	3176.4	0.0913	2.8334	0.4030	0.2132	1.1203
1997	32	0.2449	4187.0	0.0804	2.7231	0.4137	0.2419	0.8607
1998	32	0.3065	4327.3	0.0372	1.2566	0.4371	0.2708	0.1829
1999	31	0.3053	3928.0	0.0312	1.7222	0.4353	0.2397	0.2871
2000	42	0.2903	3096.7	0.0435	2.8633	0.4377	0.1972	0.4218
2001	44	0.2658	2956.6	0.0562	1.0687	0.4218	0.1775	0.4760
2002	42	0.2474	2893.7	0.0558	1.4207	0.4065	0.2059	0.5234
2003	48	0.2384	2675.6	0.0695	1.2174	0.3766	0.1915	0.6477
2004	48	0.2521	2734.0	0.0608	1.3879	0.3918	0.1919	0.4161
2005	51	0.2680	2746.1	0.0638	1.6504	0.4045	0.1854	0.6081
2006	53	0.2531	2720.9	0.0594	1.3623	0.3821	0.2043	0.4872
2007	54	0.2250	3189.7	0.0815	1.8131	0.3206	0.1881	0.6184
2008	55	0.2458	3175.0	0.0679	1.7268	0.3324	0.1876	0.4340
2009	53	0.2142	3825.4	0.0836	1.4879	0.3438	0.1878	0.4861

Notes: LEVERAGE = debt-to-total assets; SIZE = total assets, bn (2000 prices); TANGIBILITY = fixed assets-to-total assets; GROWTH = market-to-book value of equity; PROFITABILITY = earnings before interest and taxes-to-total assets; INDUSTRY = median debt ratio of industry; VOLATILITY = $RoA_{it}/\sigma RoA_t$.

Table 2c: Descriptive Statistics: Mean values by year - non-connected firms

Year	Obs	Lev.	Size	Profit	Growth	Tang.	Industry	Vol.
1988	22	0.0940	1014.4	0.0931	3.3747	0.4237	0.1207	1.3115
1989	23	0.0908	1158.3	0.1122	2.3725	0.4093	0.1238	1.5240
1990	30	0.1042	1117.2	0.1163	3.0556	0.3911	0.1347	1.2254
1991	57	0.1324	792.9	0.1145	3.2753	0.3978	0.1384	1.3199
1992	75	0.1397	730.9	0.1086	2.3982	0.4125	0.1118	1.4784
1993	78	0.1482	727.8	0.1016	3.5811	0.4303	0.1220	1.2920
1994	85	0.1753	833.8	0.1035	3.2717	0.4225	0.1639	1.3001
1995	124	0.2095	816.1	0.0976	3.5302	0.3965	0.2110	1.4376
1996	148	0.2236	1009.5	0.0945	4.7451	0.4082	0.2109	1.1593
1997	146	0.2592	1208.3	0.0738	4.1505	0.4238	0.2498	0.7904
1998	143	0.2773	1169.2	0.0231	1.4553	0.4463	0.2562	0.1136
1999	141	0.2480	1203.8	0.0542	2.7055	0.4396	0.2271	0.4995
2000	302	0.2170	628.2	0.0621	2.3893	0.4322	0.1909	0.6028
2001	362	0.2033	585.9	0.0427	1.1863	0.4335	0.1740	0.3615
2002	398	0.2106	530.8	0.0431	1.3554	0.4239	0.1892	0.4039
2003	435	0.2118	522.0	0.0435	1.2118	0.4246	0.1934	0.4051
2004	507	0.2136	483.4	0.0559	1.6216	0.4013	0.1985	0.3821
2005	568	0.2081	460.9	0.0515	1.1746	0.3997	0.1865	0.4911
2006	621	0.2080	581.5	0.0496	1.1800	0.3728	0.1951	0.4067
2007	656	0.2068	473.7	0.0569	1.4216	0.3253	0.1920	0.4312
2008	669	0.2106	480.2	0.0333	1.1883	0.3279	0.1928	0.2130
2009	687	0.2047	538.5	0.0261	0.9272	0.3363	0.1848	0.1517

Notes: LEVERAGE = debt-to-total assets; SIZE = total assets, bn (2000 prices); TANGIBILITY = fixed assets-to-total assets; GROWTH = market-to-book value of equity; PROFITABILITY = earnings before interest and taxes-to-total assets; INDUSTRY = median debt ratio of industry; VOLATILITY = $RoA_{it}/\sigma RoA_t$.

Table 3: Dynamic capital structure of Malaysian firms

VARIABLES	All firms 1988-2009 (1)	All firms 1988-1997 (2)	All firms 2000-2009 (3)	Restricted 1988-2009 (4)	Restricted 2000-2009 (5)
$Leverage_{t-1}$	0.7162***	0.6889***	0.7173***	0.6894***	0.6739***
	(120.01)	(18.08)	(91.78)	(103.88)	(49.63)
Size	0.0491***	0.0342***	0.0683***	0.0362***	0.0487***
	(20.83)	(3.18)	(14.35)	(14.16)	(7.93)
Profitability	-0.2872***	-0.4626	-0.2527***	-0.1548***	-0.2780***
	(-10.20)	(-1.47)	(-4.37)	(-5.67)	(-6.63)
Growth	0.0087***	0.0116***	0.0080***	0.0076***	0.0064***
	(19.46)	(6.11)	(8.14)	(16.50)	(4.83)
Tangibility	0.1037***	0.0715	0.0765***	0.0997***	0.0742***
	(19.58)	(1.31)	(10.60)	(14.86)	(6.75)
Industry	0.2796***	0.4725***	0.1641***	-0.0059**	0.0055
	(15.69)	(5.76)	(7.23)	(-2.11)	(1.27)
Volatility	0.0059*	0.0096	-0.0008	0.4518***	0.3391***
	(1.70)	(0.36)	(-0.13)	(31.87)	(8.55)
Constant	-0.3017***	-0.1832	-0.6200***	-0.6062***	-0.7616***
	(-10.86)	(-1.18)	(-3.08)	(-13.69)	(-3.92)
Specification tests					
Sargan	232.32	21.49	170.14	151.26	117.49
	(0.3036)	(0.9734)	(0.2409)	(0.6569)	(0.4440)
Autocorrelation	-0.5317	-0.1727	-0.6766	0.3567	0.4704
	(0.5949)	(8629)	(0.4986)	(0.7213)	(0.6381)
Observations	6,205	812	5,048	2,344	1,532
Number of firms	740	182	740	182	182

Notes: $Leverage = \varphi_0 + \gamma_0 Leverage_{t-1} + \gamma_1 Volatility + \gamma_2 Profitability + \gamma_3 Growth + \gamma_4 Tangibility + \gamma_5 Industry + \gamma_6 Volatility + \eta_i + \eta_t + \mu_{it}$.

Where: η_i is a firm-specific effect and η_t captures common period-specific effects. μ_{it} is the error term representing measurement errors in the independent variable and other explanatory variables that have been omitted. It is assumed to be independently identical normally distributed with zero mean and constant variance, i.e., $\mu_{it} \approx$ *i.i.d.* N $(0, \sigma^2)$. LEVERAGE = debt-to-total assets; SIZE = natural logarithm of total assets; TANGIBILITY = fixed assets-to-total assets; GROWTH = market-to-book value of equity; PROFITABILITY = earnings before interest and taxes-to-total assets; INDUSTRY = median debt ratio of industry; VOLATILITY = $RoA_{it}/\sigma RoA_t$.

Z-statistics in parentheses except p-values for specification tests. Year and industry effects not reported.

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

Table 4: Effect of crisis, recovery and political patronage on corporate leverage

Variables	Coeff.	Model 1	Model 2	Model 3	Model 4	Model 5
D_i	β_1	0.0315**	0.0315	0.0465		0.0388
		(2.20)	(1.05)	(1.49)		(1.21)
E_{1t}	β_2	-0.1625***	-0.1625**		-0.3267***	
		(-3.74)	(-2.41)		(-5.01)	
$D_i * E_{1t}$	β_3	-0.3519***	-0.3519*	-0.4410***	0.0233	-0.5179***
		(-2.97)	(-1.81)	(-2.66)	(0.16)	(-3.30)
Size*E_{1t}	β_{j1}	0.0222***	0.0222***	0.0226***	0.0477***	0.0249***
		(4.12)	(2.67)	(2.63)	(5.47)	(2.79)
Prof.*E_{1t}	β_{j2}	-0.7660*	-0.7660**	-0.6344	-0.5340**	-0.6586
		(-1.82)	(-2.01)	(-1.39)	(-2.06)	(-1.34)
Grow.*E_{1t}	β_{j3}	0.0137***	0.0137***	0.0127***	0.0140***	0.0132***
		(3.46)	(4.19)	(3.62)	(4.17)	(3.67)
Tang.*E_{1t}	β_{j4}	0.0977***	0.0977*	0.0971*	0.0910**	0.1048*
		(2.92)	(1.89)	(1.85)	(2.20)	(1.94)
Ind.*E_{1t}	β_{j5}	0.2138**	0.2138	0.0289	0.0669	
		(2.07)	(1.40)	(0.18)	(0.56)	
Vol.*E_{1t}	β_{j6}	0.0082	0.0082	-0.0075	0.0126	-0.0043
		(0.19)	(0.22)	(-0.16)	(0.53)	(-0.09)
Size*E_{1t}*D_i	β_{k1}	0.0198	0.0198	0.0242	-0.0092	0.0291
		(1.49)	(0.91)	(1.17)	(-0.57)	(1.40)
Prof.*E_{1t}* D_i	β_{k2}	1.1123	1.1123	1.1608*	0.8636**	1.3072*
		(1.29)	(1.59)	(1.65)	(2.21)	(1.77)
Grow.*E_{1t}* D_i	β_{k3}	0.0124	0.0124	0.0141	-0.0022	0.0159
		(1.31)	(1.04)	(1.24)	(-0.31)	(1.35)
Tang.*E_{1t}* D_i	β_{k4}	0.0976	0.0976	0.1239	0.0349	0.1572
		(1.16)	(0.73)	(0.96)	(0.34)	(1.17)
Ind.*E_{1t}* D_i	β_{k5}	0.5653**	0.5653	0.7065**	0.1318	0.8396**
		(2.22)	(1.62)	(2.16)	(0.54)	(2.50)
Vol.*E_{1t}* D_i	β_{k6}	-0.1225	-0.1225**	-0.1245**	-0.0801**	-0.1347**
		(-1.29)	(-1.97)	(-1.98)	(-2.14)	(-2.05)
E_{2t}	β_{22}	-0.2420***	-0.2420***		-0.3108***	
		(-17.63)	(-8.00)		(-5.61)	
$D_i * E_{2t}$	β_{33}	0.0233	0.0233	-0.0072	0.1632	-0.0162
		(0.36)	(0.20)	(-0.06)	(1.12)	(-0.13)
Size*E_{2t}	β_{l1}	0.0265***	0.0265***	0.0283***	0.0451***	0.0281***
		(12.45)	(5.53)	(5.86)	(5.90)	(5.66)
Profit.*E_{2t}	β_{l2}	-0.5987***	-0.5987***	-0.6691***	-0.6007***	-0.7186***
		(-3.39)	(-2.88)	(-2.66)	(-3.52)	(-2.79)
Grow.*E_{2t}	β_{l3}	0.0080***	0.0080**	0.0090**	0.0118***	0.0088**
		(3.82)	(2.23)	(2.48)	(2.80)	(2.37)
Tang.*E_{2t}	β_{l4}	0.1265***	0.1265***	0.1380***	0.0429	0.1366***
		(9.53)	(4.54)	(4.68)	(1.47)	(4.54)
Ind.*E_{2t}	β_{l5}	0.4789***	0.4789***	0.3354***	0.1050	
		(9.77)	(5.10)	(2.98)	(1.12)	
Vol.*E_{2t}	β_{l6}	0.0218	0.0218	0.0304	0.0452**	0.0355
		(0.99)	(0.84)	(0.96)	(2.07)	(1.10)
Size*E_{2t}*D_i	β_{m1}	0.0021	0.0021	0.0060	-0.0162	0.0071
		(0.33)	(0.16)	(0.45)	(-0.84)	(0.51)
Prof.*E_{2t}* D_i	β_{m2}	0.0137	0.0137	-0.1683	-0.0697	-0.2553
		(0.02)	(0.02)	(-0.28)	(-0.15)	(-0.45)
Grow.*E_{2t}* D_i	β_{m3}	0.0117	0.0117	0.0116	0.0022	0.0116
		(1.53)	(1.09)	(1.09)	(0.17)	(1.10)
Tang.*E_{2t}* D_i	β_{m4}	-0.0273	-0.0273	-0.0418	0.0631	-0.0403
		(-0.51)	(-0.25)	(-0.41)	(0.73)	(-0.39)
Ind.*E_{2t}* D_i	β_{m5}	-0.4313**	-0.4313	-0.4113	-0.4348*	-0.3567

		(-2.20)	(-1.20)	(-1.12)	(-1.79)	(-0.92)
Vol.*E_{2t}* D_i	β_{m6}	-0.0075	-0.0075	0.0079	0.0093	0.0165
		(-0.09)	(-0.11)	(0.12)	(0.16)	(0.26)
Constant		0.1883***	0.1883***	0.1382***	0.2355***	0.0496**
		(27.91)	(14.47)	(4.52)	(17.36)	(2.03)
Observations		6,201	6,201	6,201	6,201	6,201
R-squared		0.1376	0.1376	0.1537	0.7303	0.1629

Notes: $Y_{it} = \beta_1 D_i + \beta_2 E_{1t} + \beta_3 D_i * E_{1t} + \sum_{j=q}^{q} \beta_j \, X_{it-1} * E_{1t} + \sum_{k=q}^{q} \beta_k X_{it-1} * E_{1t} * D_i + \beta_{22} E_{2t} + \beta_{33} D_i * E_{2t} + \sum_{l=q}^{q} \beta_l \, X_{it-1} * E_{2t} + \sum_{m=q}^{q} \beta_m X_{it-1} * E_{2t} * D_i + \varepsilon_{it}$

Standard errors are robust in Model 1 and clustered at firm level in all other models. Model 3 includes (unreported) time dummies and industry dummies. Model 4 specifies industry-year effects. Model 5 specifies firm-industry effects.

Robust t-statistics in parentheses.

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

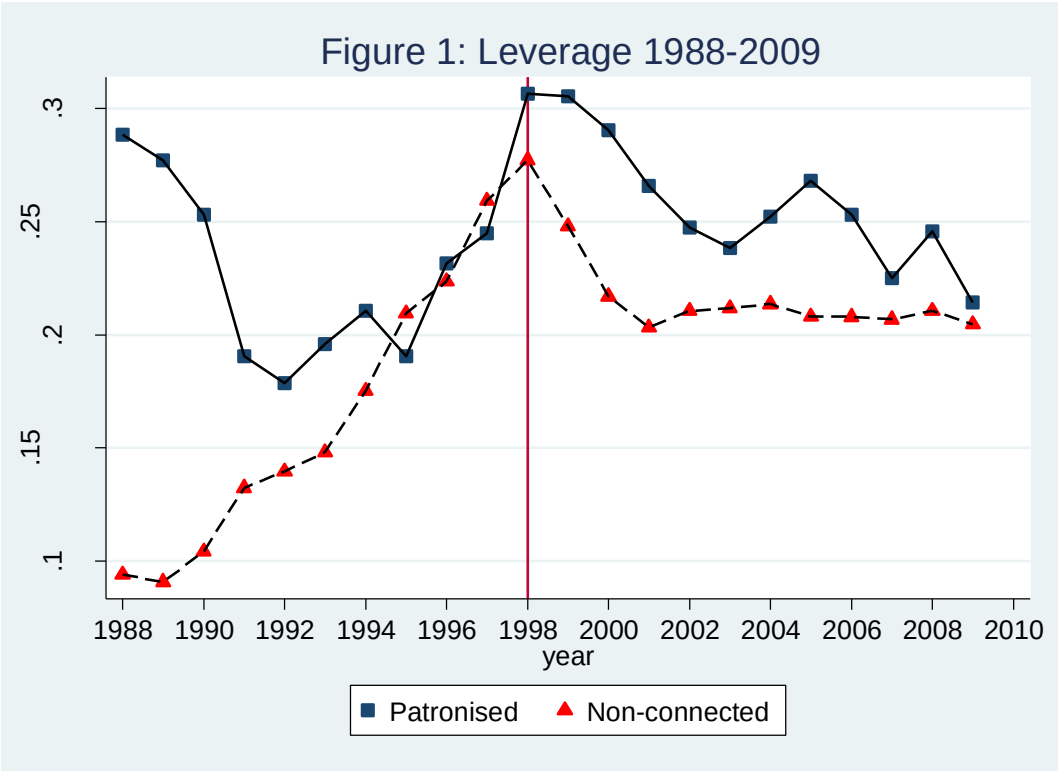
Figure 1: Leverage 1988-2009
.1
.15
.2
.25
.3
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
year
Patronised
Non-connected

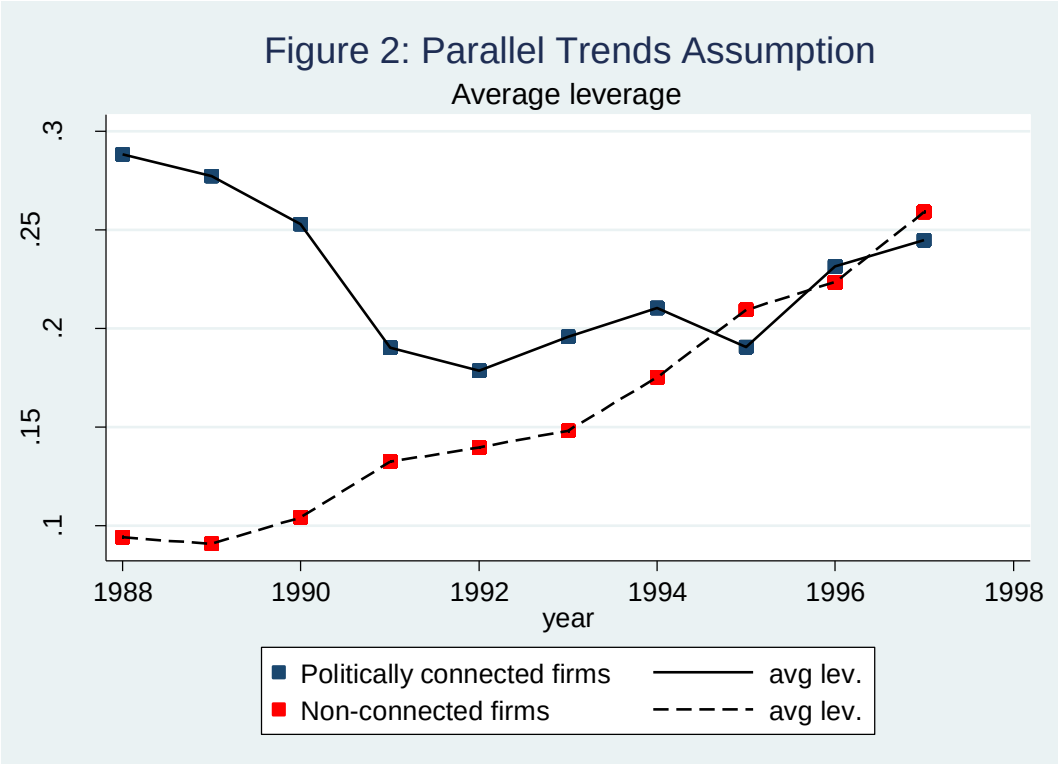
Figure 2: Parallel Trends Assumption
Average leverage
.1
.15
.2
.25
.3
1988
1990
1992
1994
1996
1998
year
Politically connected firms
avg lev.
Non-connected firms
avg lev.