Department of Economics

Essays on Political Connections, Corruption and International Trade

Oskar Nelvin

Thesis submitted for assessment with a view to obtaining the degree of
Doctor of Economics of the European University Institute

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EUROPEAN UNIVERSITY INSTITUTE
Department of Economics

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Abstract

The first chapter aims at assessing the importance of political connections for the profitability of privately owned firms. The value of connections is estimated using a unique quasi-natural experiment: The September 2006 Thai coup d'état. Connections are found to be potentially very valuable, accounting for as much as 20% of market capitalization for the best connected firms. Benefits from connections include lower taxation and better access to debt financing. Firms operating in domestically dependent industries and industries with high external financing needs appear to benefit the most from being politically connected.

The second chapter incorporates a model of endogenous corruption into an intra industry trade model. The purpose is to study how trade liberalization impacts bureaucratic corruption. We find that trade opening leads to tougher competition and thereby reduces the officials' ability to extract rents from firms. We also analyze the incentive for governments to fight corruption and find that incentives are stronger when trade costs are lower. Finally, we empirically test the main prediction of the model, and find that more remote and less easily accessible countries also suffer from higher levels of corruption.

The third chapter aims at estimating trade creation and trade diversion under the South Asian Free Trade Agreement (SAFTA). Previous studies - mainly conducted prior to the implementation of the treaty - have put into question SAFTA's potential for trade creation. However, according to our estimates, conducted on post treaty data, SAFTA has increased intra regional trade by as much as 40% for eligible products. This figure is higher than estimates for most other trade blocks. Further, trade diversion

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appears to have been limited, though this is due mainly to the treaty being accompanied by significant reductions in external tariffs.

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Introduction

The title of this thesis, Essays on Political Connections, Corruption and International Trade, reflects the diversity of the chapters included, both in terms of issues dealt with and methodologies used. Two of the chapters are empirical, one theoretical. Two of the chapters deal with topics related to international trade, while a third focuses on assessing the importance of political connections for firm profitability. However, the three papers also have some common denominators. All three chapters deal with issues related to economic development in one way or another. All three papers also relate, either directly or indirectly, to economic governance and how institutional features affect economic outcomes.

The first chapter aims at assessing the importance of political connections for the profitability of privately owned firms. I estimate the value of connections using a unique quasi-natural experiment: The September 2006 Thai coup d'état. Political connections are found to be potentially very valuable, accounting for as much as 20% of the market capitalization of the best connected firms. The greatest value stems from connections to cabinet ministers, while connections to members of parliament are significantly less valuable. Benefits from connections include lower taxation and better access to debt financing. Firms operating in domestically dependent industries and

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industries with high external financing needs appear to benefit the most from being politically connected.

In the second chapter, which is joint work with Sarah Stölting, we incorporate a model of endogenous corruption into an intra industry trade model. The purpose is to study how exogenous trade liberalization can impact bureaucratic corruption. We show that trade opening leads to tougher competition and thereby reduces the official's ability to extract rents from firms. The overall bribe level of the economy is thereby reduced. We also analyze the incentive for governments to fight corruption, and find that the incentives are stronger when trade costs are lower. Finally, we empirically test the main prediction of the model, and find that more remote and less easily accessible countries also suffer from higher levels of corruption.

The third chapter, which is also joint work with Sarah Stölting, is more policy oriented and aims at estimating trade creation and trade diversion under the recently implemented South Asian Free Trade Agreement (SAFTA). Previous studies have mainly been conducted prior to the implementation of the treaty, and the vast majority of these studies have put into question SAFTA's potential for trade creation. However, our estimates, conducted on post treaty implementation data, indicate that the treaty has been successful in spurring regional intraregional trade: For eligible product categories, intra regional trade flows are estimated to have increased by, on average, as much as 40%. This figure is substantially higher than estimates for most other trade blocks. Further, trade diversion appears to have been limited, or nonexistent, though this is due mainly to the treaty having been accompanied by significant reductions in external tariffs.

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Chapter 1

Political Connections

1.1 Introduction

I measure the value of political connections by exploiting a unique natural experiment: The September 2006 Thai coup d'état. The exercise is carried out by estimating the change in expected profitability of firms which lost connections as a result of the coup. The paper establishes a clear link between political connections and firm profitability, showing that connections matter and thereby that business leaders have strong reasons to seek political influence.

Firms connected to different parts of the political system are considered. First, I distinguish between firms connected to the ruling party and firms connected to opposition politicians. Second, for firms connected to the ruling party, I distinguish between those connected to cabinet ministers (the executive) and those connected to other ruling party politicians (legislators).

The objective is to document the importance of connections and to provide stylized

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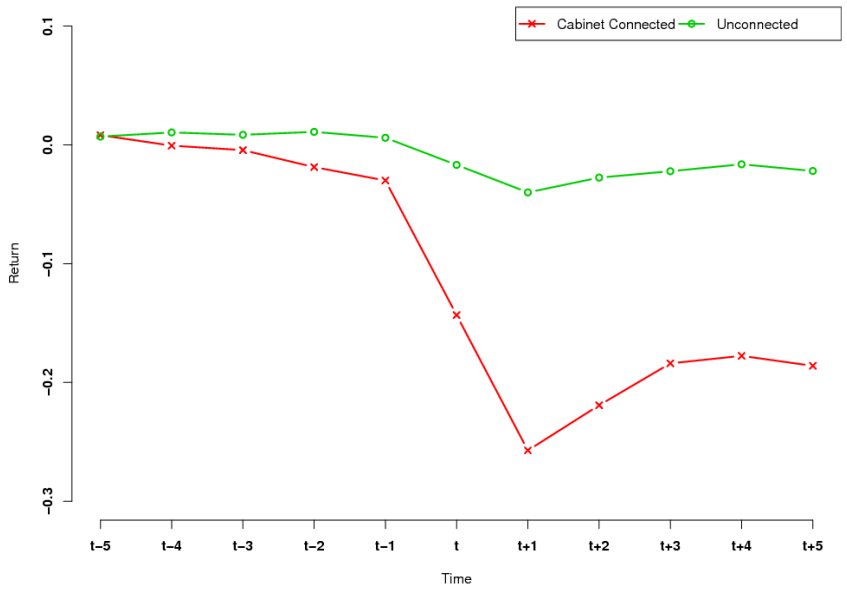
facts on connected firms. Figure 1.1 illustrates the main finding of the paper: Firms connected to cabinet members underperformed substantially in trading immediately subsequent to the coup. Using event study methodology, I estimate the value of connections for these firms to as much as 20% of market capitalization. Connections to other politicians are found to be significantly less important.

Figure 1.1: Return over the Event



My results are unlikely to be driven by omitted variables bias. As a consequence of the coup, parliament was dissolved and the ruling TRT[1] party banned. All connections to incumbent politicians were therefore effectively severed. This allows me to compare

[1]The Thai-Rak-Thai or Thais Love Thais party. See Appendix 4 for background and details.

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the value of a firm when connected with the value of that very same firm as unconnected immediately after the event. Overall market movements associated with the coup can be accounted for using a control group of unconnected firms.

Few settings are suitable for the analysis of political connections. Cross sectional studies of book profitability or market-to-book ratios are likely to suffer from significant omitted variable bias: If low productive firms, in need of protection, self select into being politically connected, cross sectional analysis underestimates the value of connections. If, on the other hand, only the strongest firms have the resources necessary to enter the market for connections estimates suffer from an upward bias. Further, if upholding connections is costly, only the net (or after cost) value of connections will show up in cross sectional data. In a perfectly competitive market the net value should be zero even if the gross value is very large.

To identify the value of political connections one needs to analyze an event which causes an exogenous and observable shift in the portfolio of connections held by firms. Further, if one wants to be able to identify the magnitude of the value, one needs this shift to be both measurable in extent and unexpected. This rules out using election outcomes as experiments. Elections are usually preceded by intense polling and the outcome is therefore seldom a surprise. If one uses the market value of firms as the outcome variable, markets are likely to have priced in the outcome to at least some extent, rendering identification of the magnitude impossible. Further, firms tend to hedge their political exposure ahead of elections, by so called double giving[2], contributing to more than one party. If a firm is connected to both the incumbent and the opposition,

[2]Ahead of the 2008 US election, the Center For Responsive Politics names Goldman Sachs, Citigroup, JP Morgan, UBS and Morgan Stanley as top-20 donors for both the Obama and the McCain campaigns.

identification of the true value of connections becomes difficult. Another feature of democratic elections is that though the losing party in an election is unable to appoint cabinet ministers, it typically retains power in legislative branches. Therefore losing an election seldom means complete loss of political power, while winning one rarely implies a complete takeover. If the connections one considers are to a party, or even to an individual, one can generally only say something about the difference in value between holding a cabinet position and a position in parliament, but nothing about the overall value of connections.

The Thai 2006 coup led to the dissolution of parliament and the banning of the ruling party, and thereby caused an exogenous shock to connections. Firms connected to cabinet members or to members of parliament, whether belonging to the ruling party or the opposition, all lost their political connections. At the same time, some firms, with ties to the coup makers, moved closer to the political power. The extent of the shift is also measurable in the sense that, for the vast majority of connected firms, connections were completely severed. Further, the event was largely unexpected.

Apart from providing a suitable natural experiment the Thai setting offers another interesting feature which is heavily exploited in this paper; the prevalence of business politicians. Business politicians are business men or women who have entered politics. Their existence and prevalence enables me to create an objective measure of political connectedness, i.e. firms controlled by a politician or a family member of a politician.

In addition to providing a measure of the value of connections, the paper exploits the experimental setting in order to addresses three related questions (i) Are there certain industry characteristics which make political connections particularly valuable? (ii) How are benefits distributed within an industry: Are politicians able to provide

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benefits to specific firms, or are they constrained to carpet bombing, i.e. providing benefits to all firms in a connected industry? (iii) What are the mechanisms through which politicians create value for connected firms?

My estimates indicate that, at least in the Thai setting, the value generated from political connections is mainly firm specific. Non-connected firms belonging to a politically connected industry do seem to be able to extract some political favours, but the industry wide effect is very small compared to the estimated firm specific value of connections. I further find that connected firms are more likely to be active in less transparent and more domestically independent industries. The proportion of a firm's demand originating in the domestic market is found to be an important determinant for the value of connections. Finally, connected firms are found to benefit from lower taxation, better access to debt financing and greater market power.

The relevance of the findings presented are by no means limited to the Thai context. The existence of business politicians is not a phenomenon unique to Thailand or to South East Asia; examples can also be found in Western democracies such as Italy (Silvio Berlusconi) and Canada (Paul Martin). Further, by identifying a clear link between the existence of certain politicians and firm profitability, the paper contributes to the broader literature on rent seeking, regulatory/legislative capture and institutions.

The reminder of the paper is organized as follows: Section 1.2 provides a brief overview of the previous literature on political connections. In Section 1.3 I present the definition of political connectedness used, and provide a detailed exposition of the methodological issues involved in measuring connectedness. Section 1.4 describes sample construction and provides sample statistics. The main results are presented

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in Section 1.5. Section 1.6 is devoted to question (iii) above. Finally I conclude and summarize my main findings in Section 1.7.

1.2 Literature

A nascent stand of literature concerns itself with the study of political rents achieved through close inter-linkages between business and politics.

Johnson and Mitton (2001) study politically connected firms in Malaysia around the East Asian crisis. The focus is not on the value of the political connections per se, but on how capital controls can be used by politicians to protect connected firms. The authors find evidence that the Malaysian government did indeed use capital control to support connected firms and that the benefits derived were substantial. Ferguson and Voth (2007) study connections in Nazi Germany and find that connected firms outperformed by between 5% and 8% during the period January to March 1933. Faccio (2006) examines connected firms using data from a sample of 47 countries. Politically connected firms made up around 8% of market capitalization in the surveyed countries, with a higher concentration in more corrupt countries. Bertrand et al (2004) study firms managed by politically connected CEOs in France. Instead of analyzing the benefits connections bring to firms, they investigate to what extent firms alter their business decisions in order to bestow re-election favors on incumbent politicians. The authors find that firms managed by connected CEOs create more jobs in politically contested areas and that this is especially true in election years.

The paper closest to the current is probably Fisman (2001). Fisman (2001) estimates the value of political connections in Suharto's Indonesia using event study

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methodology. The events under study are incidents of rumors related to Suharto's health. The value of political connections is found to be substantial, around 23% of market capitalization for the best connected firms. Though the methodology used is somewhat similar to that of the current paper, the institutional setting is very different. Table 1.9 in Appendix I provides a comparison between Indonesia, Thailand, the SEA region and OECD in terms of economic and political freedom. Thailand under the TRT achieves ratings close to the regional averages and to the OECD in terms of business freedom. Indonesia under Suharto, on the other hand, is a clear outlier, registering significantly worse scores for all indicators. In terms of both economic and political freedom, Suharto's Indonesia was closer to communist Vietnam than to its capitalist neighbors. The lack of political and economic competition under Suharto means that the external validity of Fisman's findings is questionable.

1.3 Linking firms and politicians

Connections between firms and politicians can take numerous forms: Friendship ties might exists between politicians and members of senior management, politicians could act as board members in private firms, or a firm might support an individual politician or a party with campaign financing. However, to be able to study political connections, I need a tangiable and managable defenition of the concept. An interesting feature of the Thai political system is that a large number of businessmen and women have become involved in politics in the past decades. In the current study I will exploit this feature and use ownership ties as my definition of political connectedness. A firm will be treated as politically connected if, and only if, it is controlled by a politician or a family member of a politician. Though this defenition is arguably restrictive, it does

enable me to construct an objective measure of political connectedness.

Table 1.1: Categories

Group	Description
TopTRT	Firm connected to cabinet ministers.
OtherTRT	Firms connected to politicians associated with the ruling TRT-party, but not members of cabinet at the time of the coup.
Opposition-firms	Firms connected to politicians associated with one of the opposition parties.
Coup-firms	Firms connected to the Post-Coup government but not connected before the coup.
Unconnected	Firms with no political connections

As explained in the Introduction, I am not only interested in the value of political connections on average, but also in the value of connections to different parts of the political system. Are connections to the ruling party more valuable than connections to the opposition? Are connections to the executive more valuable than connections to legislators[3]? Each sample firm is therefore allocated to 1 out of 5 political connectedness categories depending on: (i) Whether it is politically connected or not. (ii) If it is, to which part of the political system the related politician belongs.

The 5 categories are listed in Table 1.1. TopTRT- and OtherTRT-firms are all connected to the ruling party, TopTRT to cabinet ministers and OtherTRT to other ruling TRT party politicians. The group Opposition-firms include all firms connected to

[3]The pre-coup cabinet consited of 35 ministers under the leadership of the Prime Minister. The pre-coup elected parliament consited of 700 legislators, of which 500 were members of the House of Representatives and 200 of the Senate. The post-coup National Legislative Assembly was appointed by the army and consited of 242 reprsesentatives, of which 32 were selected from the private sector.

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opposition politicians. Coup-firms were unconnected at the time of the coup. However, these firms were controlled by business groups which became connected as a result of the coup, i.e. their owners became members of government and/or parliament[4] after the coup. I include this group as the stock market might have been able to anticipate which business leaders were likely to gain in influence as a result of the coup.

Figure 1.2: Example of connection

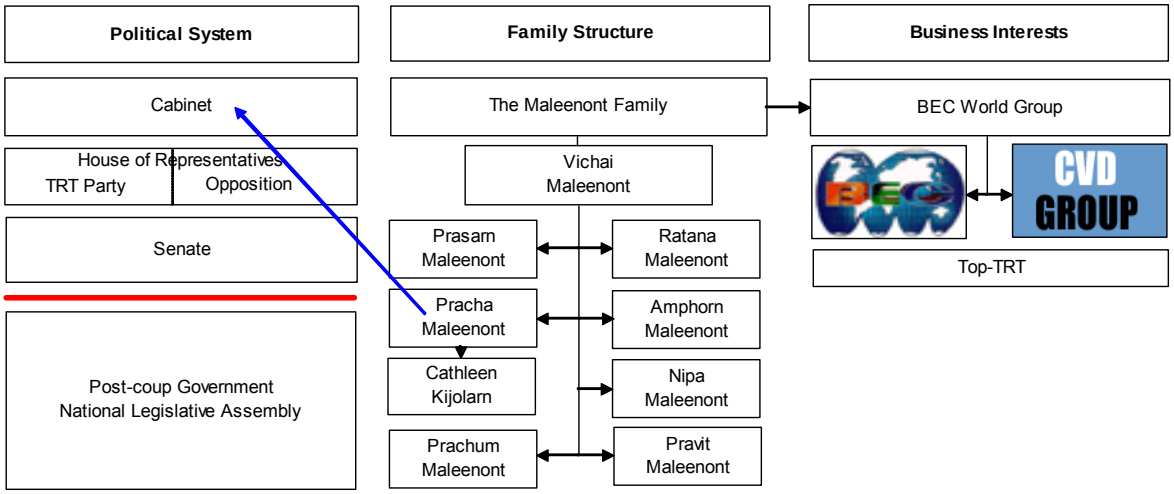

Figure 1.2 provides an example of how firms are assigned to the respective groups. Pracha Maleeont (see box in the middle column) held the post of Deputy Minister of Transportation in 2001/2002, Deputy Minister of the Interior 2002-2005 and Minister of Tourism in 2005/2006. As apparent in Figure 1.2, Pracha is the son of Vichai Maleeont, and hence a member of the Maleeont family. The Maleeont family, in turn, controls the BEC World Group, which includes two of my sample firms: BEC World, the operator of TV channel Channel 3, and several other media outlets and CVD Entertainment, a

[4]The so called National Assembly.

movie distributor. Both BEC World and CVD Entertainment are consequently treated as TopTRT firms.

In total, 21 families/business groups[5] were identified as politically connected in the 2001 to September 2006 period. 7 families/business groups[6] were identified as connected to the post coup government. Connected business groups controlled firms representing 25% of market cap as of year end-2005. 12% of market cap was controlled by business groups connected to the post coup government.

In order to identify politically connected firms under my definition I have to go through two steps. First I need to know the identity, if existing, of the controlling shareholder or, as a vast majority of companies in Thailand are family controlled (Wiwattanakantang, 2000), the controlling family, of each sampe firm. Second, I need to identify the political offices held, if any, of the controlling shareholder and his or her family .

1.3.1 Identifying ownership

Diversified business groups is an important feature of the business environment in many developing and some developed countries. Such groups are made up by a often diverse set of individual firms, often controlled by a family and bound together by cross-ownership and/or board interlockings (Khanna and Yafeh, 2007). The prevalence of business groups is a vital structural feature of private sector business in Thailand, as the Brooker Group states it, they "pervade every aspect of Thai business life"[7]. Ownership of a group often result from complex, direct and indirect cross ownerships. Around 17%

[5]Of which 17 are identifed as controlling one or more firms included in the sample.
[6]Of which 4 are identifed as controlling one or more firms included in the sample.
[7]Thai Business Groups: A unique guide to who owns what, Brooker Group, 2003.

of Thai firms are part of pyramid or cross holding structures (Wiwattanakantang, 2001). Further, large firms are sometimes controlled by chains of privately held companies, for which no ownership data is publicly available. Sources of direct ownership data therefore do not offer an accurate picture of group affiliations. This point is also made by Claessens et al., (2000).

To accurately identify the controlling shareholder of any firm the prevalence of indirect ownership structures needs to be taken into account. To solve this problem, I make use of "Thai Business Groups: A unique guide to who owns what", published by the Brooker Group, a major Bangkok based business consultancy. The Broker Group provides detailed information on the Thailand's top 150 families/business groups and lists all their affiliated firms. In the current paper, I treat all firms listed by the Brooker Group as affiliated to a business group as controlled by that group, and thereby by the family controlling that group. For firms not listed by the Brooker Group, I consider as a controlling shareholder any owner directly controlling more than 10% of the firm's shares. Further details are provided in Appendix V.

1.3.2 Identifying connections

Having established who owns what, the next step is to identify families who were involved in politics. Again Thai Business Groups is useful as it lists political offices held by central family members. However, this information is far from exhaustive. New MPs and cabinet ministers have been appointed since the publication of the Guide and less important familly members are not listed. I therefore make use of the fact that the Brooker Group also provides family trees for members of all the 150 families. These family trees are matched against records of legislators and members of cabinet collected

from the Thai Government House, House of Representatives and Senate. Matching is done manually in order to take into account the many possible transcriptions of Thai family- and first names. An additional problem is the fact that Thai Business Group only provides information on the main 150 business groups, some connected politicians might be members less important families. To a large extent this is solved by newspaper searches and the use of cabinet member profiles. However, it cannot be ruled out that some MPs connected to less important business groups are not treated as connected, though they should be given my definition of political connectedness.

One question which arises is how to treat the Thai monarchy[8]. Though the King has historically intervened in politics in times of crisis, Thailand is a constitutional monarchy and the King is granted very limited direct political powers. I will not treat firms controlled by the monarchy as politically connected for two reasons: Firstly, the status of the monarchy did not change as a result of the coup. Both the TRT party and the coup makers pledged their allegiance to the King. Secondly, though it is possible that the King could use his influence to further his business interests, the position is appointed exogenously by birth, hence it cannot be achieved as part of a rent-seeking strategy.

Having defined what I mean by political connections and I identified politically connected firms, I can now move on to sample construction and data collection.

[8]The King's assets are managed by The Crown Property Bureau, established under an Act of Parliament in 1936. Assets managed by the Bureau are under the Act divided into three categories. (1) "His Majesty's private property", assets belonging to the King before ascension to the throne, or acquired by or conveyed to the King, but not under his status as King. (2) "Domain Public", land or other assets which the King utilizes for the benefit of the State, for example the Royal Palace. (3) "Crown Property", any assets belonging to the King, but not covered by the two pervious definitions. Effectively assets belonging to the Monarchy. The Crown Property Bureau is according to the the Brooker Group the country's largest investor. Its assets include large shareholdings in several listed firms such as Siam Cement Group and Siam Commercial Bank.

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1.4 Data description

The following data was collected for this study: (1) Data on political connections as described in Section 1.3. (2) Financial and accounting data for all firms listed on the Stock Exchange of Thailand (SET) and the Thai Market for Alternative Investments (MAI). (3) Data on state ownership in listed firms (state ownership is included as a control variable).

The sample consists of 468 firms. Details on sample selection are available in Appendix III. 87 out of 468 firms were identified as politically connected, either to the ousted TRT party, the opposition or to the post-coup government and/or National Legislative Assembly. Connected firms were present in 16 out of 19 industry sectors, the only exceptions being Automobiles and Parts[9], Oil & Gas and Utilities[10].

Table 1.2 provides summary statistics of the sample. A more detailed sample description is available in Table 1.8, Appendix I.

Table 1.11a and 1.11b in Appendix I provides a more detailed overview on how connected and unconnected firms are distributed across industries. Overall politically

[9]In fact one of Thailand's leading suppliers of auto and motorcycle parts is the Jungrungruangkit controlled Summit Group. Suriya Jungrungruangkit has held several cabinet position under Thaksin's rule. However, none of the group's auto related firms are listed on the Stock Exchange and hence not included in the sample.

[10]In terms of number of firms Oil & Gas and Utilities are relatively small industries on the Stock Exchange, with 6 and 5 firms respectively represented in the sample. The Oil & Gas sector is highly dominated by the state, with four out of five listed firms controlled by the state-controlled PTT Group. Ownership in the utilities sector is more widespread and includes foreign players as well as the Crown Property Bureau.

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Table 1.2: Connected firms and industries

Group	No. Firms	No. Industries
Full Sample	468	19
Connected Firms	87	16
Unconnected	381	19
TopTRT	18	7
OtherTRT	5	4
Opposition-firms	39	13
Coup-firms	25	8

connected firms make up around 19% of the number of firms and 25% of market capitalization. Connected firms are more prevalent in insurance, chemicals and telecommunications. In terms of market capitalization TopTRT firms are highly concentrated in the telecommunications, technology and media sectors. Opposition- and Coup-firms are almost completely absent from these sectors, and are instead concentrated to the financial sector, with insurance and banking both being overrepresented.

Firms connected to the ruling party have on average a slightly higher debt ratios. In terms of total assets TopTRT- and OtherTRT firms are on average smaller than the sample average, while Opposition-firms are significantly larger; this is probably due to the fact that some very influential business groups, like the Bangkok Bank Group belong to this category. Coup-firms are on average smaller and have a lower degree of leverage.

Data on state ownership in listed firms was collected from the Thai Ministry of Finance. The state had interests in 9 sample firms active in 6 industry sectors.

In the next section I will move on to formally estimate the value of political connections given the connectedness categories listed in Table 1.1.

1.5 Event Study, Results and Robustness

In this section I will conduct an event study on stock market returns over the September-2006 Thai coup d'état. The coup will be treated as an exogenous shock to political connections, and the value of connections will be measured by estimating the underperfomance of firms which lost their connections as a result of the event. In addition, I will address the following two questions posed in the introduction: (i) Are there certain industry characteristics which make political connections particularly valuable? (ii) How are benefits distributed within an industry: Are politicians able to provide benefits to specific firms, or are they constrained to carpet bombing, i.e. providing benefits to all firms in a connected industry?

1.5.1 Determining the event window

Before I move on to estimation, I will however have to define the event window. Doing this requires a clear idea of the time line of the September coup. I will also need to establish what information was avaliable to market participants at each point in time.

Figure 1.9 in Appendix IV provides an overview of the key events surrounding the coup. The takeover was set in motion on Tuesday the 19th of September 2006 at 18:30. This was two hours after the 16:30 closing hour of the stock market that day. By the afternoon of Wednesday the 20th all pro-TRT forces had surrendered and a provisional military government had been installed. As the stock exchanged remained closed throughout the 20th, the news of the coup could not have reached the market before the start of trading on the 21st. I will allow two days for the news to be digested, and hence set my event window from start the of trading on the 21st till the end of

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trading on the 22nd.

Note that my estimation strategy is based on the assumption that no information about the coup was available to the market before the start of the event window. If the coup had been anticipated, part of its effect would already have been priced in on beforehand and my estimates would suffer from a downward bias. Though anticipation cannot be completely ruled out, the problem is likely to be minor. Firstly, the preparation of a coup (as opposed to an election) is in its nature clandestine. If the coup had been expected, the incumbent government could have taken preemptive measures (disarm the army, place loyal factions of the army around the capital). Secondly, Thailand was a well functioning democracy[11] and though the country has a history of military involvement in politics, no coup had taken place for the past 15 years. Thirdly, if the coup were expected, this fact was not captured in international risk ratings. Figure 1.3 and 1.4 in Appendix II present government stability indicators from two leading providers of country risk analysis; no noteworthy changes in the stability indices appear in the time leading up to the coup. Its should also be pointed out that even if the event had been expected, I would still be able to test for the existence of an effect, but the estimate for the magnitude would be biased.

1.5.2 Event Study

Having properly defined the event window, I can now move on to analyzing return patterns over the event. I will start by addressing the main question posed in the introduction, i.e. how valuable are political connections to privately owned firms. This issue will be dealt with in the next subsection. I will then move on to discussing if

[11] Rated as 'Free' by Freedom House 2002-2005.

there are particular industry characteristics which make political connections particularly valuable to the constituent firms. Finally, I will address the issue of how politicians distribute favours to firms. Are they able to target their favours to individual companies, or are they limited to providing benefits to a whole industry?

The value of political connections

As stated in the introduction, I am not only interested in the value of connections on average, but also in how valuable it is for a firm to be connected to different levels of the political system. I posed two questions: 1) Are political connections valuable to firms, and if so, how valuable are they? 2) Are all politicians equally valuable? To answer these questions I will begin by graphically analyze the return patterns observed over event window, and then move on to formally estimate the value of connections.

The two most interesting categories of firms are arguably those connected to the ruling TRT party. Some Opposition firms might have gained in influence as a result of the coup, the same is true for the Coup firms. TRT-firms, on the other hand, all lost their political connections as their party was ousted from power. Figure 1.6 in Appendix II plots the cumulative return of TRT connected firms compared to the control group of unconnected firms. Over the two day event window TopTRT-firms underperformed the control group by almost 20%. OtherTRT-firms underperformed by around 5%. This is clearly a very significant loss. It is also interesting to note that the effect was persistant. Figure 1.8 in Appendix II plots the cumulative return of TopTRT firms adjusted for unconnected firm return over the 4 months preceding the coup. As apparent, the shares of these firms did not recover after the conclusion of the event.

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Figure 1.7 in Appendix II plots the cumulative return (unadjusted) of Opposition-firms and Coup-firms compared to the control group of non-connected firms. If market participants were able to anticipate which firms were likely to gain in connectedness under the new regime Coup-firms should outperform as a result of the event. The expected sign on the return of Opposition-firms is less obvious. On the one hand, these firms lost existing connections as a result of the coup (connections to opposition members of parliament). On the other hand, seasoned politicians belonging to the opposition could be expected to gain in influence in the post-coup era. As expected, Coup-firms outperformed unconnected firms (by around 3%). The same is true for Opposition-firms (by around 2%). The relatively small magnitude of returns (compared to the large losses for TRT connected firms) is not surprising given that the constellation and durability of the future government was unknown at this point in time.

In order to formally estimate the significance of connections, I construct the following base case difference-in-difference model:

$$R_{i,t} = \gamma_0 + \gamma_1 market_t + \gamma_2 POL_i + \gamma_3 X_i + \gamma_4 IND_i + coup_t[\gamma_5 + \gamma_6 POL_i] + \epsilon_{i,t}, \quad (1.1)$$

where γ_1 and γ_5 are a scalars, γ_2, γ_3, γ_4 and γ_6 are vectors of coefficients to be estimated. $market_t$ is the market return for day t, POL_i is a matrix of dummies representing each of the political connectedness categories, X_i is a set of firm specific controls, IND_i is a set of industry dummies and $coup_t$ is a dummy equal to 1 for the event window, and 0 for all other trading days between the 13th and 28th of September. I am interested in γ_6, the coefficients of the interaction term $coup_t * POL_i$.

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Results are reported in Table 1.3, Column 1 in Appendix I. The coefficient for TopTRT is negative and highly significant at -0.092. The coefficient can be interpreted as the average underperfomance of TopTRT firms per day over the event window. The total underperfomance compared to unconnected firms is therefor 18.4%; almost 20% of the value of these firms can hence be attributed to political connections. The estimates for OtherTRT firms is smaller and not statistically significant, though still negative at -0.019 (or -3.8%).

The coefficients for both Opposition- and Coup firms are positive and statistically significant at 0.01 and 0.016 respectively. One possible explanation for the positive sign on the Opposition coefficient is that connections to parliamentarians are of relatively low value (no significant effect for OtherTRT-firms), and that at least some opposition politicians are expected to move into more high-profile positions as a result of the coup.

The difference in returns between TopTRT-firms and Coup/Opposition firms is statistically significant (z-score 5.6 and 5.7), however, I do not find any statistically significant difference in the return between OtherTRT, Opposition and Coup-firms. Note however that model (1) imposes the coefficient for day one and two of the event window to be equal. In the robustness section below I will relax this assumption and we will see that the return patterns of Opposition and Coup-firms are in fact statistically different.

Fisman (2001) estimates the value of political connections in Suharto's Indonesia to around 23% of market capitalization for the most closely connected firms. It is interesting to note that the magnitude of my estimates are very similar to his, this despite the fact that the setting is very different.

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Determinants of the value of connections

Having concluded that political connectections are not only valuable, but also that the value of such connections can be very large, I can now move on to the second question posed in the beginning of this section: Are there certain industry characteristics which make political connections particularly important?

Due to data limitations I will limit myself to consider three industry characteristics which I think might be of particular interest: Domestic dependence, Transparency and External financing. The reasoning is as follows: Domestic dependence; most benefits politicians can provide to firms are likely to pertain to the domestic market. Political connections should therefore be more valuable for firms facing predominantly domestic demand. Transparency; the ability for a politician to bestow favors upon connected firms should be dependent on the degree of transparency in the specific industry. If prices and qualities are easily monitored by clients and competitors, providing preferential treatment to a specific firm, for example in a public procurement process, should be harder. Political connections should therefore be less valuable for firms operating in a highly transparent environment. External financing; Faccio (2002) finds that connected firms are more highly leveraged than unconnected firms. If one way in which firms benefit from connections is through improved access to external financing, one would expect connections to be more valuable in industries which require a higher degree of external financing.

My estimates for the value of connections is the highest for TopTRT-firms, below I will therefor focus my analysis on those. For ease of exposition I merge Opposition- and Coup firms to one group, BroadOpp. Results for OtherTRT firms are not reported.

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None of the industry characteristics listed above are observable per se. I will therefore have to rely on proxies. Below I will start by describing how my proxies are constructed and then move on to estimation.

Domestic dependence One possible proxy for domestic dependence would be the proportion of a firm's sales which originates domestically. However, I do unfortunately not have data on exports as a percentage of sales by firm or industry for Thailand, and even if I did have access to such data, using it might give raise to endogeneity. This is because my connection dummies are likely to be an imperfect measure of the degree of connectedness for a specific firm. If better connected firms trade less, because they have better access to domestic markets, any significant coefficient for trade might simply be due to the fact that firms that trade less are better connected, not due to connections being important for firms that face mainly domestic demand.

To overcome this problem I need a measure of trade dependence that is exogenous to political connections. If there is a technological aspect to domestic dependence such a measure can be constructed. I argue that this is the case. Certain industries, for example retailers and telecom operators, are more or less constrained to the domestic market, whereas manufacturing firms face relatively small hurdles in accessing foreign markets. Under this assumption, the relative domestic dependence across industry sectors should be well correlated across countries. The Amadeus database provides data on the percentage of turnover derived from exporting for around 600 listed UK firms. I use this data to calculate the average percentage of turnover from exporting for each ICB level 3 sector[12]. One minus this measure is then used as a proxy for the domestic dependence of that particular sector.

[12]Excluding Banking and Insurance as no data is available in Amadus.

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The first thing to note is that connected firms are mainly concentrated to industries with high dependency on the domestic market. Table 1.7 in Appendix I shows average domestic dependency for connected and unconnected firms respectively. While unconnected firms have an average domestic dependency measure of 0.57, the equivalent figure for TopTRT- and BroadOpp-firms is 0.63 and 0.67 respectively.

Transparency Some industries are by nature surrounded by a higher degree of secrecy than others (for example, the defence industry is likely to be less transparent than the fast food industry). Finding a proxy for the degree of transparency in a certain industry is however not straight forward. For the purpose of the current study I will use the Transparency International's Bribe Payers Index (BPI) by Sector. The reasoning is that as bribes are illegal, one should see more bribes being paid/accepted in less transparent industries.

The Bribe Payers Index rates sectors on a scale from 1 to 10 (1 being the most corrupt) depending on how likely senior officials are to accept or demand bribes for tenders, licensing or regulation in 17 sectors. Unfortunately, the sectors used in BPI do not directly correspond to the ICB classification. I therefore translate each of the 17 sectors into one or more ICB level-4 industry category. See Table 1.10, Appendix I for details. Firms belonging to industries not listed in Table 1.10 are excluded from the sample.

Top-TRT firms are active mainly in less transparent industries, with an average corruption rating of 3, compared to 4.4 for non-connected firms. Surprisingly BroadOpp firms are concentrated to more transparent sectors, with an average corruption rating of 5. See Table 1.7.

External Financing I follow Rajan and Zingales (1998) and use a sample of US-firms[13] to create my external financing proxy. For each firm I calculate Capital Expenditure over Property, Plant and Equipment. The individual firm estimates are then averaged up for each industry group in the same way as for the trade proxy. Table 1.7 provides descriptive statistics, politically connected firms have neither lower or higher external financing demand than non-connected firms.

Estimation Having defined the industry characteristics and proxies of interest I can now move on to estimate how they impact the value of political connections. I estimate the following difference-in-difference-in-differnce model:

$$\begin{aligned} R_{i,t} &= \gamma_0 + \gamma_1 market_t + \gamma_2 X_i + \gamma_3 IND_i + coup_t[\gamma_4 + \gamma_5 VOI_i + \\ &\quad \gamma_6 \log(Asset_i)] + POL_i[\gamma_7 + \gamma_8 \log(Asset_i) + \gamma_9 VOI_i] + \\ &\quad coup_t * POL_i[\gamma_{10} + \gamma_{11} VOI_i + \gamma_{12} \log(Asset_i)] + \epsilon_{i,t}, \end{aligned} \tag{1.2}$$

where VOI_i is a matrix of the variables of interest and $\log(Asset_i)$ is the log of total assets of company i..

Note that as I include all variables of interest in one single equation I have to drop a large number of observations. Transparency International provides no data on Services, Retail or Media, all highly connected industries. Further, I have no trade data on Banking and Insurance.

[13] I use all S&P-500 firms for year-end 2007.

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$coup_t$*log($Asset_i$) $* POL_i$ is included as a control for two reasons. Firstly, recent papers in the heterogeneous-firm trade literature (Bernard, Eaton and Kortum (2003)) emphasize the high correlation between size and propensity to trade. As I am interested in the demand structure of the individual firm, but only have access to sector-level data, I need to control for Assets as a proxy for size. Secondly, larger firms are likely to face more regulatory scrutiny (Alchian and Kessel (1962) and Jensen and Meckling (1978)), the coefficient for Transparency is therefore likely to be quite meaningless unless the size of the firm is controlled for.

As I am interested in how the above stated industry characteristics affects the value of connections I need only to consider connected firms, i.e. I can leave aside the issue of why some firms become connected and others not. I am therefore interested in γ_{11}, the vector of coefficients for the 3-way interaction of $coup_t * POL_i * VOI_i$.

Results are available in Table 1.5, Column 5 in Appendix I. The coefficient for $coup_t * TopTRT_i * DomesticDependence_i$ is negative, large and statistically significant at -0.39, while $coup_t * BroadOpp_i * DomesticDependence_i$ is positive at 0.023 (though not statistically significant). This is what one would expect if domestic dependence is important for the value of connections. Government connected firms with high domestic dependence lost more than their less domestically dependent peers, and domestically dependent BroadOpp-firms gained more than their less domestically dependent peers.

The interaction $TopTRT_i * coup_t$ and $BroadOpp_i * coup_t$, -0.26 and +0.04 respectively, can be interpreted as the value of political connections for a firm with domestic dependency, external financing needs and transparency of zero. Note that for TopTRT-firms decreasing the measure of domestic dependence form 0.63 to 0.30 is enough to

wipes out the entire value connections! The proportion of a firm's demand originating in the domestic market is clearly a key determinant for how valuable connections are.

The coefficient for $coup_t * TopTRT_i * ExtFin_i$ is large and negative, though not statistically significant at -0.35. TopTRT-firms operating in industries with high external financing needs underperformed their less dependent peers when connections were lost, indicating that better access to financing is one way in which connected firms benefit. The coefficient for $coup_t * BroadOpp_t * ExtFin_i$ is however small and has the wrong sign. The same is true for Transparency. I find no relationship between degree of industry transparency and the value of connections.

As noted above, including all variables of interest in the same model forces me to drop a large number of observations. As a robustness check I therefore re-estimate model 1.2, but including only one variable at the time. Results are reported in Table 1.5, Columns 1-3. Note that the coefficient for $coup_t * BroadOpp_i * DomesticDependence_i$ now becomes significant at the 5% level.

Carpet Bombing vs. Precision Surgery

The results presented so far have all related to the firm specific vale of political connections. However, if a connected politician in some cases is unable to bestow favours directly upon an individual firm, he or she might still be able to provide benefits to a connected industry. Such favours could, for example, include legislation preventing competitive entry, which would benefit all incumbents in the industry. Stigler (1971) lists several such examples. If industry wide benefits are important, one would expect not only connected firms, but also firms present in sectors with a high concentration of connected firms to have suffered from the regime change.

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In order to test this hypothesis I need to construct a proxy for industry connectedness. I consider only the most important level of political connections, i.e. TopTRT and treat an industry as politically connected if at least one firm belonging to that industry is connected. 7 out of 19 industry sectors are found to be politically connected using this proxy.

Next I estimate:

$$\begin{aligned} R_{i,t} &= \gamma_0 + \gamma_1 market_t + \gamma_2 POL_i + \gamma_3 X_i + \gamma_4 IND_i + \gamma_5 INDPOL_i + \\ & coup_t[\gamma_6 + \gamma_7 POL_i + \gamma_8 INDPOL_i] + \epsilon_{i,t}, \end{aligned} \quad (1.3)$$

where $INDPOL_i$ is a dummy variable equal to one for firms belonging to a politically connected industry. I am interested in γ_8, the coefficient of the interaction $coup_t * INDPOL_i$.

Results are reported in Table 1.6, Column 1 in Appendix I. γ_8 is negative at -0.009 and statistically significant at the 5% level. Firms in connected industries underperformed unconnected firms by on average 1.8% over the two day event window. Clearly this number is small compared to the estimates for firm-specific connections, nethertheless, having a politically connected competitor appears to be an advantage rather than a disadvantage. Note that my results should be biased towards zero for at least one reason. Though firms in highly connected industries might lose industry-wide benefits when connections are lost, they should gain in competitiveness as at least one of their competitors has lost its firm specific benefits.

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Having established the presence of positive industry wide externalities I proceed, as I did in the case of industry specific benefits, by asking if there are cetrain industry characteristics that impcats the value of belonging to a connected industry.

Like in the previous subsection, I estimate the 3-way interaction $coup_t * INDPOL_i * VOI_i$, where VOI_i is Domestic Dependence and External financing. I exclude Transparency as including it means dropping a large number of observations and as it did not show up as significant in the firm specific regression.

$$\begin{aligned} R_{i,t} &= \gamma_0 + \gamma_1 market + \gamma_2 X_i + \gamma_3 IND_i + \\ & coup_t[\gamma_4 + \gamma_5 VOI_i + \gamma_6 \log(Asset_i)] + \\ & POL_i[\gamma_7 + \gamma_8 \log(Asset_i) + \gamma_9 VOI_i] + \\ & INDPOL_i[\gamma_{10} + \gamma_{11} \log(Asset_i) + \gamma_{12} VOI_i] + \\ & coup_t * POL_i[\gamma_{13} + \gamma_{14} VOI_i + \gamma_{15} \log(Asset_i)] + \\ & coup_t * INDPOL_i[\gamma_{16} + \gamma_{17} VOI_i + \gamma_{18} \log(Asset_i)] + \epsilon_{i,t} \end{aligned} \tag{1.4}$$

Results are reported in Table 1.6, Column 6. As for firm specific connections the trade measure is statistically significant at -0.06, which is actually larger than the coefficient for $coup_t * INDPOL_i$.

Interestingly, and somewhat surprisingly, we can note that the coefficient for $coup_t * INDPOL_i * ExtFin_i$ is positive, and significant at the 5% level. Indicating that within the group of connected industries, firms belonging to industries with larger external financing needs outperformed. If better access to external financing were an industry-

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wide benefit, the opposite sign would be expected. The result is however consistent with a pro-competitive effect. Directly connected firms lost competitive advantages in the form of better access to financing, this in turn benefited their competitors.

I conclude that benefits from connections are to some extent industry-wide in nature. Further, as in the case with firm specific connections, the value of being connected is dependent on how domestically oriented the industry is.

1.5.3 Robustness

Event window

Model 1.1 imposes the event to have taken place in t and t+1 (i.e. on the 21st and the 22nd of September 2006). Though this specification appears to be appropriate given the timing of events, it might be too restrictive. Model 1.5 (below) is more flexible as it allows us to study the 11 day period surrounding the event day by day, though this comes at a cost of a loss in degrees of freedom.

$$R_{i,t} = \gamma_0 + \gamma_1 market_t + \gamma_2 POL_i + \gamma_3 X_i + \gamma_4 IND_i + day_t[\gamma_5 + \gamma_6 POL_i] + \epsilon_{i,t}, \quad (1.5)$$

where day_t is a matrix of dummies representing each day in the sample period. I am interested in γ_6, the vector of interaction terms $day_t * POL_i$.

Results are reported in Table 1.4, Appendix I and are largely unchanged from specification (1.1). The coefficients for TopTRT-firms interacted with day t and t+1 are negative and highly significant at -8.9% and -9.1% respectively. The coefficient

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for OtherTRT-firms is negative, but insignificant for both event days. The interacted coefficient for Opposition-firms is positive for both t and t+1, but only significant for day t. Interestingly Coup-firms on the other hand gained mainly at time t+1, indicating that the market at this time had amassed further information as to who was likely to be included in future government constellations. The difference in returns between Coup- and Opposition-firms is statistically significant at t+1, but not at t.

Sectorial effects

One concern is that my results could be driven by sectorial effects rather than by political connections. If changes in industrial policy are expected as a result of the coup, and if those changes are expected to disproportionately hit industries with a large concentration of connected firms, my estimate for the value of connections could be biased. To rule out this possibility I need to control for industry random effects, i.e. I need to interact $coup_t$ and IND_i in equation (1.1) above.

I estimate:

$$R_{i,t} = \gamma_0 + \gamma_1 market + \gamma_2 POL_i + \gamma_3 X_i + \gamma_4 IND_i + coup_t[\gamma_5 + \gamma_6 POL_i + \gamma_7 IND_i] + \epsilon_{i,t} \tag{1.6}$$

Results are reported in Table 1.3, Column 2. Adding industry random effects does not significantly alter the results. All coefficients for POL_i*$coup_t$ keep their original sign, though magnitudes and significance levels are slightly reduced. Note that results are likely to be biased towards zero when industry random effects are included. This is because the within-industry effect fails to capture industry-wide benefits.

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Political instability

A second concern is that my results could be driven by heterogeneous sensitivity to political instability among firms. Political instability and hence increased uncertainty about the direction of future policy might lead to a flight to quality, benefiting high quality firms and hurting weaker firms. If politically connected firms are of lower quality in terms of profitability, indebtedness or managerial talent as implied by Gomez (2002), my estimates for the value of political connections might be biased upwards.

This issue is harder to address than the possibility of sector specific shocks, however, I can get a long way by controlling for firm specific characteristics. If flight to quality is important, larger, more established firms (higher market power), less indebted (lower leverage) and more profitable firms should do better. Further, if uncertainty about future policy is important, firms whose value is derived mainly from assets in place rather than from future growth opportunities should be less vulnerable.

In order to control for "flight to quality" I introduce the following covariates, all interacted with $coup_t$: Log(Assets) as a proxy for size. Leverage as a proxy for indebtedness. Profitability (EBITDA/Total Assets). Market share; market capitalization of firm i over total market capitalization in the industry. I use market capitalization rather than Sales as my sample includes financials. And finally, Market to Book as a proxy for future growth opportunities (Myers, 1984). As in Section 1.5.3 I also include industry random effects. To ensure that the ratios included are exogenous to the coup event I use accounting- and market data for year end 2005.

I Estimate:

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$$R_{i,t} = \gamma_0 + \gamma_1 market + \gamma_2 POL_i + \gamma_3 X_i + \gamma_4 IND_i + \gamma_5 Z_i + coup_t[\gamma_6 + \gamma_7 POL_i + \gamma_8 Z_i] + \epsilon_{i,t}, \tag{1.7}$$

where Z_i is a set of firm specific control variables, as described above, which are interacted with $coup_t$.

Results are reported in Table 1.3, Column 3. The coefficients for POL are again basically unaltered.

The leverage ratio is insignificant, and log (Assets) has the wrong sign, i.e. larger firms performed worse. Profitability, market share and market to book are however all significant and with the expected signs.

I conclude that my results are robust to the flight to quality hypothesis.

Top family- and connected firms

Controlling for observables, as in the previous subsection, might not be sufficient if politically connected firms are different from unconnected firms in unobservable characteristics. We know for example that most of the connected firms I have identified are controlled by family business groups. Family businesses are likely to differ from non-family businesses in a number of dimensions, some of which are hard to quantify[14]. Some of these dimensions could potentially be relevant to the share price reaction observed in connection to the event. If this is the case, non-family controlled unconnected

[14]For example, firms that are members of a business group might have better access to debt financing from internal capital markets or from a group bank. Family controlled businesses are also likely to differ from non-family firms in terms of access to management technologies and in how senior management is selected

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firms might not constitute a good control group for family controlled connected firms. To deal with this issue I limit my sample to firms controlled by Thailand's 150 most important families as listed by the Brooker Group. I run model 1.1 on this reduced sample. Results are presented in Column 8, Table 1.3 in Appendix I. The coefficients for POL are virtually unchanged compared to estimates based on the full sample.

As an additional robustness check I limit the sample to only include politically connected firms, i.e. TopTRT firms, OtherTRT firms, Opposition firms and Coup firms. I estimate model 1.1, but with POL_i redefined as to only include TopTRT and OtherTRT firms, i.e. I now let the Coup- and Opposition firms constitute my control group. The results are presented in Column 9, Table 1.3 in Appendix I. Not surprisingly the estimated loss over the event has increased somewhat for both TopTRT and OtherTRT firms. This is due to the fact that Opposition and Coup firms gained in value relative to unconnected firms as a result of the ousting of the TRT government.

The market model

According to Capital Asset Pricing Model (Treynor (1961), Sharpe (1964), Linter (1965) and Mossin (1966)) the theoretical required return of an asset should be dependent upon its component of non-diversifiable risk (β). Above I implicitly assume that the required return of connected and unconnected firms are on average equal. This might not be the case if shares of politically connected firm have systematically higher or lower β than unconnected firms.

I estimate the market model using OLS:

$$R_{i,t} = \alpha_i + \beta_i RM_t + \epsilon_{i,t}$$

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For my estimation period I use the 100 trading days between the 30th of September 2004 and the 15th of February 2005. The results presented above are however robust to a wide variety of estimation period specifications.

Having estimated the market model I move on to calculating abnormal returns over the event window. Market model abnormal returns are estimated:

$$AR_{i,t} = R_{i,t} - (\hat{\alpha}_i + \hat{\beta}_i RM_t)$$

I then proceed by estimating model (1.1), but now using the estimated abnormal returns on the left hand side. The results, reported in Table 1.3, Column 6, are virtually unchanged from previous estimations of model (1.1). The same is true when model (1.6) is re-estimated (Table 1.3, Column 7). I conclude that my results are not driven by differences in systematic risk between connected and unconnected firms.

The SHIN divestment

In Appendix V I argue that the SHIN-group[15] should be treated as connected to PM Shinawatra, despite the fact that these firms were divested shortly before the coup. I here re-estimate model (1.1), but modify TopTRT-firms such that the SHIN-group is treated as unconnected.

Results are reported in Table 1.3, Column 4. The coefficient for TopTRT-firms decreases from -0.092 to -0.096, a relatively small change. However, in order to determine whether it is appropriate to include the firms as connected or not, I also need to consider industry effects. Hence, I re-estimate model (1.6), using the modified set of

[15] Shin Corp, ITV, Shin Satellite and AIS.

TopTRT-firms dummies. The affected industry random effects should be Telecom and Technology. The coefficient for Telecom triples and the coefficient for Technology doubles (not reported) when SHIN-firms are treated as unconnected, indicating that these firms did trade at a connection-premium. Not treating them as connected biases the estimated value of connections upwards and the industry dummies downwards (results in Table 1.3, Column 5).

1.6 Benefits provided

The event study results above show us that markets put a positive value on political connections, and that this value is very large. However, they do not help us much when it comes to understanding why political connections are valuable, i.e. through which channels connected politicians provide benefits to firms. Nor do they tell us anything about the potential costs of upholding connections.

There are numerous ways in which politicians could support connected firms: Access to protected markets, bans on competitive entry, licenses, tax breaks, subsidies, quota and tariff exemptions, etc. etc.. Benefits from being politically connected could also be indirect; businesses or individuals might prefer a politically connected supplier, as being its client could potentially provide them with protection. Further, political connections are unlikely to come for free. Costs of upholding connections could include bribes, contributions to election campaigns or political parties, politically motivated hiring etc.

In the current section I will make use of the Thai September coup in order to try to understand why political connections have a value, i.e. what benefits is it that

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politically connected firms receive? Due to data constraints I am however forced to limit myself to testing for three sources of benefits, (i) lower taxes, (ii) easier access to debt, (iii) market power. I will also test for one potential source of costs of upholding connections, over employment, as this particular source has received some attention in the theoretical litterature.

One previous study, Faccio (2004) analyzes characteristics of connected firms using financial data. However, as Faccio (2004) does not have access to an experimental setting she is limited to a purely descriptive analysis. In the current paper I make use of the 2006 Thai coup d'état as a quasi natural experiment in order to make progress on causal identification.

I use a panel of financial data for listed Thai firms for the years 2003 till 2007. For the first three years, Thailand was governed by the Thai-Rak-Thai party. This is also the case for the period January till September in 2006. From October 2006 till December 2007, Thailand was ruled by the military junta that took power as a result of the September coup[16].

I drop 2006, as leadership was divided during this year, and keep connections constant for the full period. I then estimate:

$$Y_{i,t} = \gamma_0 + \gamma_1 YR7_t + \gamma_2 X_{i,t} + \gamma_3 IND_i + POL_i \left[\gamma_4 + \gamma_5 YR7_t\right] + \epsilon_{i,t}, \tag{1.8}$$

where $Y_{i,t}$ is the variable of interest, i.e. proxies for tax rates, debt access, market

[16]The fist elections after the coup took place in December 2007. The new elected government took office in January 2008.

power and employment and $YR7_t$ is a dummy equal to one for observations in 2007 and 0 for all other years. The parameters of interest is the coefficient for the difference in difference estimator γ_5.

1.6.1 Taxes

Actual, or Effective Tax Rates (ETR), can differ significantly between firms (Citizens for Tax Justice, 1984, 1985, 1986). In an often cited study of US firms Zimmerman (1983) finds that differences in ETR across firms can be explained by firm size and that larger firms pay higher taxes. This is attributed to larger firms having higher political costs in terms of greater government scrutiny (Alchian and Kessel (1962) and Jensen and Meckling (1978)).

Few studies of ETR using data from outside the US are however available. Kim and Limpaphayom (1998) examines ETR for listed firms in East Asia and find a negative relationship between firm size and effective taxes; indicating that political clout, rather than political costs, might be the explanation. Derashid and Zhang (2003) look at evidence from Malaysia and find that manufacturing firms, hotels and more efficient firms pay lower taxes. The authors attribute their results to the 'industrial policy hypothesis', i.e. tax breaks are offered to certain targeted sectors and firms as part of the government's development strategy.

Firm size and industrial policy might however not be the only determinants of ETR. Anecdotal evidence suggest that politically connected firms sometimes can reap substantial benefits in terms of lower taxes. Under the rule of Rafael Trujillo in the Dominican Republic, Trujillo owned firms were entirely exempt from taxes. In China, The Kuang Hua Industrial Corporation, controlled by Deng Xioping's son Deng Pufang,

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was granted tax free status as a charitable organization and in Indonesia, Suharto's son Tommy was granted the privilege to import cars from Korea exempt from luxury tax and other import duties.

I define ETR as Taxes paid/EBITDA. Following Zimmerman (1983) I remove the following observations from the sample: Firms with negative taxes paid, firms with negative profits, and firms with an ETR above two. I then proceed to estimate model (1.8) with ETR as the dependent variable.

Results are reported in Table 1.12b, Column 8 in Appendix I. The coefficient for TopTRT is negative and statistically significant at -3.6%, further, the coefficient for the interaction term $TopTRT_i * YR7_t$ is positive and significant at 21%. These results strongly indicate that cabinet connected firms benefited from lower taxation, and that the magnitude is large. Interestingly the interaction term $Opposition_i * YR7_t$ is also positive and quite large at around 4%, indicating that these firms, in terms of taxation, also suffered from the loss of connections.

The large magnitude of the interaction term coefficient is however a cause for concern. It appears as if in 2007 TopTRT-firms not only lost their tax advantage, but actually paid significantly higher taxes than unconnected firms. One possible explanation is retaliation, but the results might also be driven by outliers. I therefore remove all observations with an estimated ETR of above one (as in Derashid and Zhang, 2003). Results are presented in Table 1.12b, Column 7. Qualitatively the results remain the same, but the level of significance is increased from 10% to 5%, and the magnitude of the coefficient for $TopTRT_i * YR7_t$ is reduced from 21% to 4.7%. These results are consistent with politically connected firms receiving tax breaks, and these tax breaks being removed as connections were lost.

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Above I use a pre-depreciation measure of profitability. This is appropriate as one source of tax relief for connected firms could be favorable depreciation rates (Fields, 2002). However, as a robustness check I redefine ETR as Taxes paid/Pre-tax profits. Results are reported in Columns 9 and 10 (removing firms with tax rates above 1 and 2 respectively), As expected the magnitude of the coefficients are somewhat increased (Pre-tax profits are generally lower than EBITDA), but qualitatively the results are unaffected and the results remain statistically significant. I conclude that lower taxes is one way in which connected firms benefit from connections.

1.6.2 Debt

Khwaja and Mian (2005) find that politically connected firms in Pakistan borrow 45% more than non connected firms and have 50% higher default rates. Crony lending and resulting soft budget constrains are often cited as one of the main causes of the Asian financial crisis (Corsettit et al, (1999), Krugman (1998), Pomerleano (1999)). If connected firms have easier access to debt financing than unconnected firms, one would also expect them to finance a larger share of their assets using debt. I define Leverage as Total debt over Total assets. Banks and insurance companies are excluded from the sample. I also add the following controls: market to book, as low market to book firms are known to have higher leverage ratios (Rajan and Zingales (1995)), profitability, as profitability is known to affect the cost of debt (Chen and Zhao (2004)) and a dummy for whether the firm is associated with a group which also includes a bank[17].

Results are reported in Table 1.12a, Column 4 in Appendix I. The coefficient for

[17]Five such groups are identified; state owned firms (Krung Thai Bank), the Sophonpanich family (Bangkok bank), the Ratanarak family (Bank of Ayudhya), the Lamsam family (Kasikornbank) and the Crown Property Beureau (Siam Commercial Bank).

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both $TopTRT_i * YR7_t$ and $Opposition_i * YR7_t$ are negative at 10% and 6% respectively and statistically significant. Connected firms did lower their debt levels as a result of losing connections, indicating that preferential access to financing was a source of benefit to these firms. This is also consistent with the findings from Section 1.5.2.

As a robustness check I redefine Leverage as Long-term debt/Total Assets. Results are reported in Table 1.12a, Column 3. The signs of the coefficients of interest remain unchanged, but the significance level is reduced from 5% to 10%.

I conclude that easy access to financing is another channel through which connected firms benefit, however, this result is less robust than the one on ETR presented above.

1.6.3 Market power

Governments award monopoly rights, concessions, import and export licenses and licenses required to operate in protected industries. By easy access to such privileges anecdotal evidence suggest that connected firms can reap significant gains. In Korea, Samsung was only able to enter the heavily protected automobile sector in 1995, after Kim Y.S., whose candidacy they had heavily contributed to, became president. In The Dominican Republic, Trujillo gained complete control over several industries, including the distribution of milk and the meat industry, by granting monopoly rights to his own firms. In Indonesia, The Humpuss Group, controlled by Suharto's youngest son Tommy received exclusive rights to distribute petrochemical products from the state owned oil company Pertamina.

I use a firms Price-Cost Margin (PCM) as a proxy for market power. Following Domowitz, Hubbard and Petersen (1986) I calculate PCM for each firm as (Value of

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Sales - Cost of Goods Sold) divided by Value of Sales. Firms with a level two sector code Financials are excluded from the sample. I proceed to estimate model (1.8) using PCM as my dependent variable.

Results are reported in Table 1.12b, Column 11. All coefficients have the expected signs, ie coefficients for POL_i are positive and the coefficient for the interaction term $POL_i * YT7_t$ is negative for all connectedness groups apart from Coup-firms. However, only the coefficient for $Coup_i * YR7_t$ is statistically significant. Removing industry fixed effects does not qualitatively alter the results (Table 1.12b, Column 12).

1.6.4 Employment

As discussed above political connections are unlikely to come for free. Shleifer-Vishny (1994) suggest that one potential source of cost could be over-employment. In their model firms employ excess labour in return for subsidies paid by the politician. To test this hypothesis I define LABOUR as number of employees over total assets. None of the coefficients of interest are statistically significant, and both the coefficient on $TopTRT_i$ and $TopTRT_i * YR7_t$ have the wrong sign, indicating that politically connected firms, if anything, operate with a lower degree of labour intensity than connected firms. I hence find no support for the over-employment hypothesis.

1.7 Conclusion

The current paper exploits a unique natural experiment, the September 2006 Thai coup d'état, to estimate the value of connections to different parts of the political system.

Connections to cabinet ministers are found to be very valuable, accounting for as

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much as 20% of market capitalization for connected firms. However, no statistically significant value is found of connections to other ruling party politicians. Firms connected to the opposition actually outperformed unconnected firms as a result of the coup. A likely explanation is that some opposition politicians were expected to gain higher office under the new regime.

Advantages of being connected appear to be mainly firm specific, however, some evidence of industry wide benefits are also recovered. Connections are the most valuable to firms operating in domestically dependent industries and industries with high external financing needs. Connected firms benefit from lower taxation, have better access to debt financing and profit from greater market power.

The paper establishes a clear link between connections and firm profitability, showing that firms have strong reasons to seek political influence. However, it is silent on the overall welfare implications. Further it has little to say about which firms become politically connected. Additional theoretical and empirical work is needed to tackle these issues.

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Appendix I: Tables

Table 1.3: Event study results: I

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
coup*TopTRT-firms	-0.092***	-0.085***	-0.086***	-0.098***	-0.086***	-0.083***	-0.078***	-0.087***	-0.092***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
coup*Other-TRT-firms	-0.019	-0.021	-0.015	-0.018	-0.021	-0.018	-0.02	-0.03	-0.04*
	(0.02)	(0.02)	(0.02)	(0.022)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
coup*Opposition-firms	0.011***	0.007**	0.007*	0.011***	0.008**	0.011***	0.009***	0.011**	
	(0.003)	(0.003)	(0.004)	(0.003)	(0.003)	(0.003)	(0.003)	(0.005)	
coup*Coup-firms	0.017***	0.012**	0.009	0.017***	0.012**	0.011*	0.01*	0.012***	
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.004)	
Intercept	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
market	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
IND f.e.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
IND r.e.	No	Yes	Yes	No	Yes	No	Yes	No	No
X f.e.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
X r.e.	No	No	Yes	No	No	No	No	No	No
Z f.e.	No	No	Yes	No	No	No	No	No	No
Z r.e.	No	No	Yes	No	No	No	No	No	No
Adjusted R-squared	0.174	0.187	0.217	0.169	0.183	0.105	0.114	0.22	0.34
N-observations	5148	5148	4829	5148	5148	5148	5148	2134	649

Significance: *** 1%, ** 5%, * 10%. Clustered and robust errors.

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Table 1.4: Event study results: II

	t-2	t-1	t	t+1	t+2
coup*TopTRT-firms	-0.016	-0.007	-0.089***	-0.091***	0.02*
	(0.016)	(0.007)	(0.022)	(0.022)	(0.012)
coup*Low-TRT-firms	0.007	0	-0.026	-0.005	-0.003
	(0.008)	(0.008)	(0.03)	(0.022)	(0.011)
coup*Opposition-firms	0.003	0.002	0.012**	0.006	-0.007
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
coup*Coup-firms	0.004	0.004	0.006	0.029***	-0.009**
	(0.005)	(0.004)	(0.012)	(0.005)	(0.004)
Intercept	Yes				
market	Yes				
IND f.e.	Yes				
IND r.e.	No				
X f.e.	Yes				
X r.e.	No				
Z f.e.	No				
Z r.e.	No				
Adjusted R-squared	0.179				
N-observations	5148				

Significance: *** 1%, ** 5%, * 10%. Clustered and robust errors.

Each column refers to the interaction term connectedness times day.

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Table 1.5: Interacted event study results

	(1)	(2)	(3)	(4)	(5)
coup*DomDep*TopTRT	-0.21852**			-0.2300**	-0.3905**
	(0.1033)			(0.1085)	0.1715
coup*DomDep*BroadOpp	0.0455**			0.0399*	0.0237
	(0.0208)			(0.0210)	0.0272
coup*ExtFin*TopTRT		0.1669		-0.0018	-0.3551
		(0.2350)		(0.2540)	0.2566
coup*ExtFin*BroadOpp		-0.0124		-0.0058	-0.0057
		(0.0628)		(0.0661)	0.0724
coup*Transparency*TopTRT			-0.0095		-0.0218
			(0.0211)		0.0214
coup*Transparency*BroadOpp			-0.0034		-0.0032
			(0.0039)		0.0040
coup*TopTRT	-0.2696**	-0.2129**	-0.1616*	-0.2744***	-0.2608**
	(0.0894)	(0.0835)	(0.0907)	(0.0896)	0.1028
coup*BroadOpp	0.0396**	0.02416	0.0310	0.0383*	0.0395
	(0.0180)	(0.0181)	(0.0216)	(0.0212)	0.0387
Intercept	Yes	Yes	Yes	Yes	Yes
market	Yes	Yes	Yes	Yes	Yes
IND f.e.	No	No	No	No	No
IND r.e.	No	No	No	No	No
X f.e	Yes	Yes	Yes	Yes	Yes
coup*log(Assets)*POL	Yes	Yes	Yes	Yes	Yes
Adjusted R-squared	0.1920	0.1818	0.2130	0.1892	0.2305
N-observations	4840	5148	4180	4840	3872

(1)	Domestic Dependence
(2)	External Financing
(3)	Transparency
(4)	Domestic Dependence and External Financing
(5)	All

Significance: *** 1%, ** 5%, * 10%. Clustered and robust errors.

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Table 1.6: Carpet Bombing vs Precision Surgery

	(1)	(2)	(3)	(4)	(5)	(6)
coup*INDPOL*DomDep		-0.0557***			-0.0607***	-0.0235
		(0.0156)			(0.0175)	(0.0200)
coup*INDPOL*ExtFin			0.1589**		0.1887***	0.1279*
			(0.0659)		(0.0685)	0.0771
coup*INDPOL*Transparency				0.0025		0.0047
				(0.0029)		0.0031
coup*INDPOL	-0.0086***	-0.0182	-0.0348**	0.0056	-0.0610***	-0.0372
	(0.0028)	(0.0148)	(0.0176)	(0.0167)	(0.0205)	0.0269
Intercept	Yes	Yes	Yes	Yes	Yes	Yes
market	Yes	Yes	Yes	Yes	Yes	Yes
IND f.e.	No	No	No	No	No	No
IND r.e.	No	No	No	No	No	No
X f.e	Yes	Yes	Yes	Yes	Yes	Yes
coup*INDPOL*log(Assets)	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R-squared	0.1869	0.2090	0.2020	0.2320	0.2089	0.2546
N-observations	5148	4840	5148	4179	4840	3872

(1)	No Interaction
(2)	Domestic dependence
(3)	External Financing
(4)	Transparency
(5)	Trade and External Financing
(6)	All

Significance: *** 1%, ** 5%, * 10%. Clustered and robust errors.

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Table 1.7: Industry characteristics

Group	Domestic Dependence	External Financing	Transparency
Full Sample	0.58	0.21	4.4
Connected Firms	0.62	0.21	4.6
Unconnected	0.57	0.21	4.4
TopTRT	0.66	0.2	3
Broad.Opp.	0.62	0.22	5

Table 1.8: Sample statistics

	No Firms	No. Sectors	Assets				Debt Ratio			
			Mean	St.Dev.	Min	Max	Mean	St.Dev.	Min	Max
Full Sample	468	19	768	3587	3	42133	24%	22%	0%	99%
Connected	87	16	1095	5260	5	42133	21%	20%	0%	64%
Unconnected	381	19	692	3078	3	33987	25%	22%	0%	99%
TopTRT	18	7	546	940	5	3513	25%	21%	0%	62%
LowTRT	5	4	224	215	30	530	26%	23%	0%	49%
Opposition	39	13	2060	7820	13	42133	21%	19%	0%	64%
Coup-firms	25	8	192	266	8	957	14%	18%	0%	57%

Assets and debt ratio as of the 29th of December 2006. Assets in mUSD.

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Table 1.9: Indicators of Economic and Political Freedom

	Economic			Political	
Area	Overall	Business Freedom	From Corruption	Political Rights	Civil Liberties
OECD 2005	70	76	72	1	1
SEA Region 2005 (cap)	69	74	51	3	3
Thailand 2005	63	70	33	3	3
SEA Region 1995 (cap)	72	79	76	4	4.5
Indonesia 1995	55	55	10	7	6
Vietnam 1995	42	40	10	7	7

Table 1.10: Transparency International Sector Groups

Transparency International Sector Group	ICB-Sector Level 4		
Agriculture and Fishery	Farming and Fishing		
Banking and Finance	Banks	Consumer Finance	Investment Services
	Life Insurance	Prop. and Casualty Ins	Reinsurance
	Specialty Finance		
Exploration and Prod.	Oil and Gas		
Heavy manufacturing	Aluminum	Auto Parts	Commodity Chemicals
	Industrial Machinery	Iron and Steel	Nonferrous Metals
	Paper	Specialty Chemicals	Tires
IT	Computer Hardware	Computer Services	Internet
	Software	Telecom. Equipment	
Light manufacturing	Clothing and Accessory	Consumer Electronics	Divers. Industrials
	Dur. Household Prod	Electrical Equipment	Food Products
	Footwear	Furnishings	Nondur.Household Prod
	Personal Products	Recreational Products	Soft Drinks
Mining	Coal	General Mining	
Pharmaceuticals/medical care	Healthcare Providers	Medical Supplies	Pharmaceuticals
Power generation/transmission	Con. Electricity		
Public works/construction	Building Mat. and Fix	Heavy Construction	Home Construction
Real estate/property	Real Estate Hold, Dev		
Telecoms	Fixed Line Telecom	Mobile Telecom.	
Transportation/storage	Comm. Vehicles	Trucks	Containers and Package
	Marine Transportation	Transport Services	Waste, Disposal Svs.

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Table 1.11: Connection by industry

(a) Connection by industry and number of firms

	Auto	Bank	BasR	Chem	Cons	Fin	Health	Ins	Media	Oil	RealE	Retail	Tech	Tel	TravL	Util	Househ	IndG	Food	Tot
No. Firms	15	9	31	26	34	36	15	18	25	6	38	20	18	11	16	5	50	54	41	468
%Con.	0%	22%	10%	15%	15%	14%	20%	39%	20%	0%	21%	30%	11%	45%	25%	0%	28%	13%	20%	19%
%Uncon.	100%	78%	90%	85%	85%	86%	80%	61%	80%	100%	79%	70%	89%	55%	75%	100%	72%	87%	80%	81%
%TopTRT	0%	0%	3%	0%	15%	0%	0%	0%	16%	0%	5%	5%	11%	36%	0%	0%	0%	0%	0%	4%
%Ot.TRT	0%	0%	3%	4%	0%	0%	0%	0%	0%	0%	3%	0%	0%	0%	0%	0%	4%	0%	0%	1%
%Opp.	0%	22%	3%	12%	0%	14%	20%	28%	0%	0%	11%	5%	0%	9%	19%	0%	2%	11%	10%	8%
%Coup	0%	0%	0%	0%	0%	0%	0%	11%	4%	0%	3%	20%	0%	0%	6%	0%	22%	2%	10%	5%

(b) Connection by industry and market capitalization

	Auto	Bank	BasR	Chem	Cons	Fin	Health	Ins	Media	Oil	RealE	Retail	Tech	Tel	TravL	Util	Househ	IndG	Food	Tot
Mcap	1.0	18.5	3.4	8.3	12.1	3.7	1.6	1.0	2.3	26.4	4.0	2.5	4.4	10.1	3.2	3.5	3.8	5.9	3.6	119.1
%Con.	0%	48%	8%	48%	4%	14%	38%	58%	45%	0%	41%	42%	71%	85%	10%	0%	21%	23%	15%	25%
%Uncon.	100%	52%	92%	52%	96%	86%	62%	42%	55%	100%	59%	58%	29%	15%	90%	100%	79%	77%	85%	75%
%TopTRT	0%	0%	0%	0%	4%	0%	0%	0%	45%	0%	11%	1%	71%	84%	0%	0%	0%	0%	0%	11%
%Ot.TRT	0%	0%	7%	1%	0%	0%	0%	0%	0%	0%	3%	0%	0%	0%	0%	0%	0%	0%	0%	0%
%Opp.	0%	48%	1%	47%	0%	14%	38%	52%	0%	0%	8%	8%	0%	1%	6%	0%	1%	15%	8%	14%
%Coup	0%	0%	0%	0%	0%	0%	0%	6%	1%	0%	19%	34%	0%	0%	4%	0%	20%	7%	7%	3%

Market in bnUSD cap per 1st of Jan 2006.

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Table 1.12: Sources of value

(a) Sources of value (1-6)

	(1)	(2)	(3)	(4)	(5)	(6)
TopTRT*YR7	-0.028	-0.04	-0.059*	-0.1**	-0.441**	0
	(0.027)	(0.04)	(0.031)	(0.04)	(0.174)	(0)
Opposition-firms*YR7	-0.039	-0.04	-0.049*	-0.058*	-0.086	0
	(0.029)	(0.036)	(0.025)	(0.034)	(0.064)	(0)
Coup-firms*YR7	0.021	-0.036	0.011	-0.043	0.04	0
	(0.033)	(0.039)	(0.026)	(0.033)	(0.083)	(0)
TRTGOV	0.016	-0.003	0.057**	0.035	0.49**	0
	(0.032)	(0.05)	(0.027)	(0.035)	(0.156)	(0)
Opposition-firms	0.052	0.028	0.043	0.018	0.088	0
	(0.035)	(0.053)	(0.032)	(0.052)	(0.069)	(0)
Coup-firms	-0.03	-0.059	-0.028	-0.056	0.073	0
	(0.033)	(0.051)	(0.024)	(0.042)	(0.084)	(0)
Intercept	Yes	Yes	Yes	Yes	Yes	Yes
IND f.e.	Yes	Yes	Yes	Yes	Yes	Yes
log(MCAP)	Yes	Yes	Yes	Yes	No	Yes
STATE	Yes	Yes	Yes	Yes	Yes	Yes
BANK	Yes	Yes	Yes	Yes	No	No
Profitability	No	No	Yes	Yes	No	No
Market-Book	No	No	Yes	Yes	No	No
Adjusted R-Sq.	0.067	0.065	0.203	0.131	0.136	0.349
N-obs	1563	1563	1513	1513	1566	1262

(1)	LT-debt/Total Assets
(2)	Total debt/Total Assets
(3)	LT-debt/Total Assets
(4)	Total debt/Total Assets
(5)	log(Market-Book)
(6)	Emplyment/Assets

Significance: *** 1%, ** 5%, * 10%. Clustered and robust errors.

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Table 1.12: Sources of value

(b) Sources of value (7-12)

	(7)	(8)	(9)	(10)	(11)	(12)
TopTRT*YR7	0.051**	0.226*	0.077**	0.22	-0.051	-0.048
	(0.022)	(0.116)	(0.038)	(0.151)	(0.075)	(0.081)
Opposition-firms*YR7	0.046**	0.039*	0.051**	0.078*	-0.034	-0.019
	(0.018)	(0.021)	(0.024)	(0.041)	(0.038)	(0.048)
Coup-firms*YR7	-0.003	-0.01	-0.039	-0.041	0.059**	0.067***
	(0.017)	(0.018)	(0.027)	(0.028)	(0.024)	(0.025)
TopTRT	-0.038**	-0.036*	-0.065**	-0.068**	0.075	0.134
	(0.018)	(0.021)	(0.029)	(0.03)	(0.066)	(0.088)
Opposition-firms	-0.014	-0.015	-0.026	-0.03	0.037	0.063
	(0.013)	(0.013)	(0.018)	(0.018)	(0.042)	(0.047)
Coup-firms	-0.013	-0.014	-0.026	-0.035	0.048**	0.03
	(0.02)	(0.019)	(0.029)	(0.029)	(0.022)	(0.025)
Intercept	Yes	Yes	Yes	Yes	Yes	Yes
IND f.e.	Yes	Yes	Yes	Yes	Yes	No
log(MCAP)	Yes	Yes	Yes	Yes	No	No
STATE	Yes	Yes	Yes	Yes	Yes	Yes
BANK	No	No	No	No	No	No
Profitability	No	No	No	No	No	No
Market-Book	No	No	No	No	No	No
Adjusted R-Sq.	0.095	0.065	0.099	0.09	0.259	0.038
N-obs	1469	1474	1330	1336	1303	1303

(7)	Taxes/EBITDA (1)
(8)	Taxes/EBITDA (2)
(9)	Taxes/PreTax (1)
(10)	Taxes/PreTax (2)
(11)	PCM
(12)	PCM, no Industry F.E.

Significance: *** 1%, ** 5%, * 10%. Clustered and robust errors.

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Appendix II: Figures

Figure 1.3 plots the Risk of Coup or Civil War (max 4) and the Stability of Government (max 10) as rated by IRCG.

Figure 1.3: ICRG Stability Index

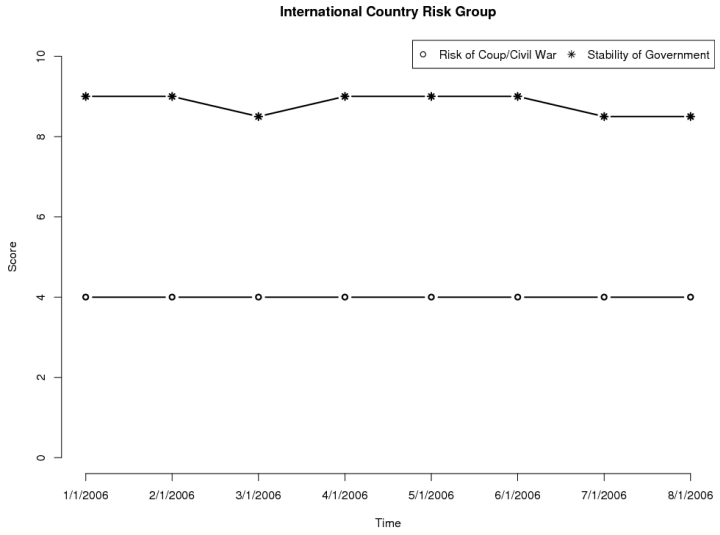

Figure 1.4 plots the Institutionalization of Regime Index (max 100) as rated by the Eurasia Group.

Figure 1.5 plots CAR over the event for all political connections groups.

Figure 1.6 plots CAR over the Event for Incumbents and Unconnected firms.

Figure 1.7 plots CAR over the event for the Opposition and Entrants vs Unconnected firms.

Figure 1.8 plots CAR for Top-TRT firms adjusted for unconnected firm returns

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Figure 1.4: Institutionalization of Regime

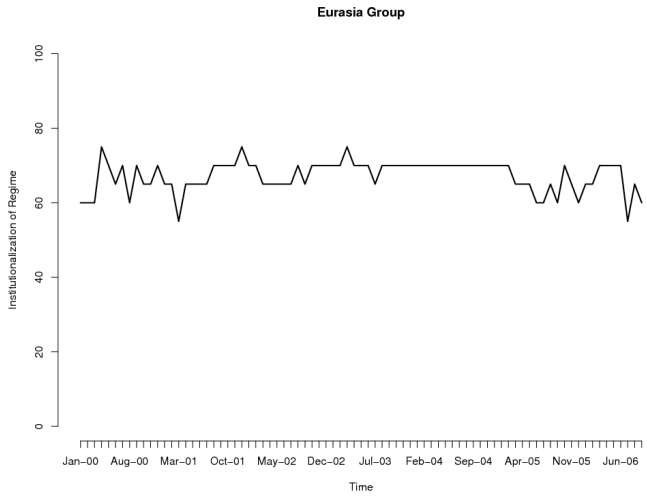

Figure 1.5: CAR over the Event: All

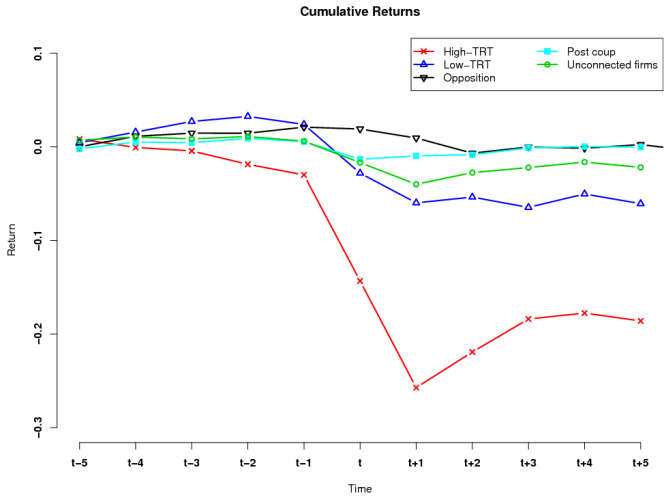

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Figure 1.6: CAR over the Event: Incumbents

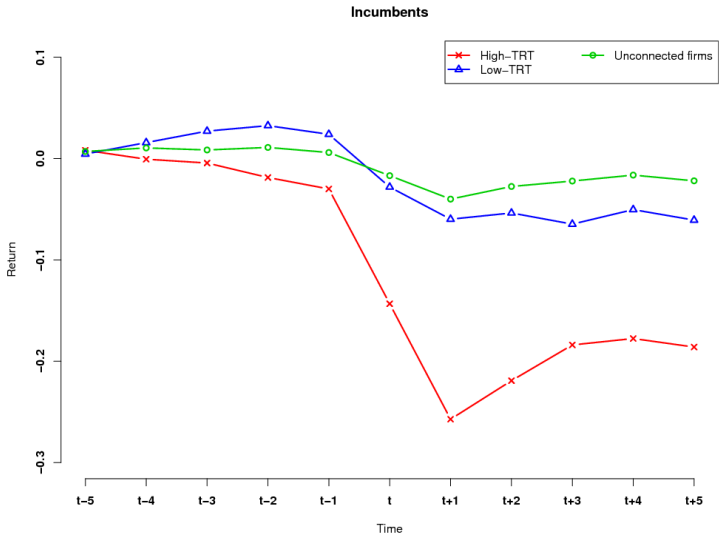
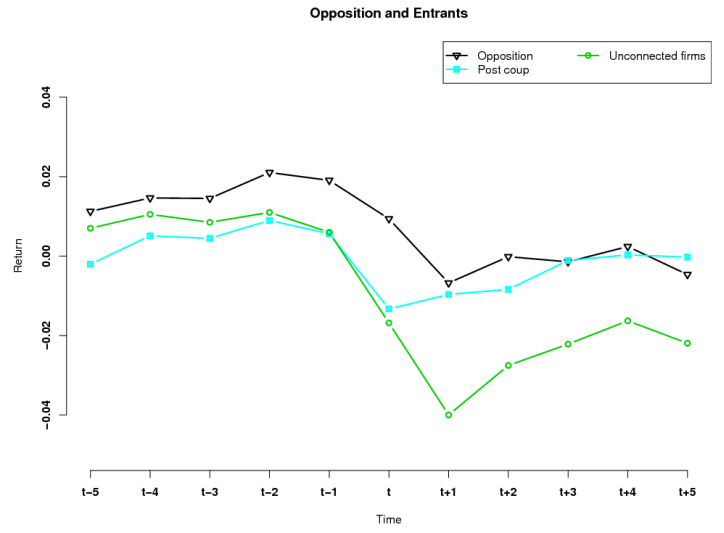
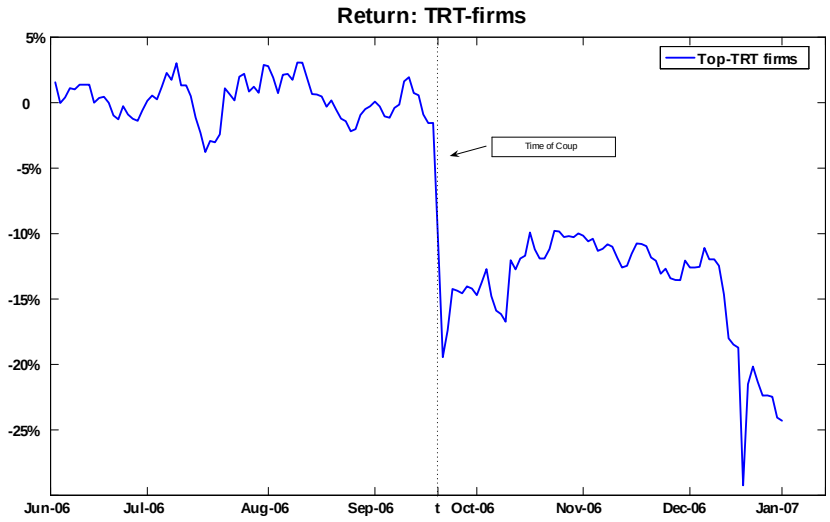


Figure 1.7: CAR over the Event: Opposition and Entrants



over the period Jun-06 to Jan-07.

Figure 1.8: Return: Top TRT firms



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Appendix III: Sample Selection

The sample of firms included in the study was created to be as broad as possible. I start with all Thai firms for which there is data in Worldscope, 638. This sample includes firms listed on both SET and MAI. Worldscope also contains data on firms which have been de-listed, gone bankrupt, or been listed after the period under study. For a small number of listed firms only very limited data is available.

I remove all firms from the original sample for which in year-end 2006 one or more of the following is missing: Market cap, total debt, total assets. I then remove firms with industry codes 8980 and 8990, equity and non-equity investment vehicles (essentially ETFs). Finally I remove firms for which no share price data is available for 2006. I end up with a total sample of 468 firms.

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Appendix IV: Background to Event

The populist-conservative Thai-Rak-Thai or Thais Love Thais party was founded in 1998 by telecom billionaire Thaksin Shinawatra. The party won a landslide victory in the 2001 elections, ousting the then ruling center-right Democrat Party[18]. Having secured 41% of the vote, TRT formed a coalition government with two smaller conservative parties[19]. A second victory in the 2005 elections earned the party its own majority with 61% of House[20] seats.

The 2001 election was the first after the Asian financial crisis and the first after the introduction of the 1997 constitution. More importantly, with help of his coalition partners Thaksin created the first absolute majority government in Thailand since 1957.

Though popular in the poorer north- and northeastern regions Thaksin's government was resented by the middle and higher classes, especially in urban areas. His government was also plagued by allegations of vote buying[21] and corruption, including allegations involving the prime minister himself as well as his wife.

In April 2006 Thaksin, faced with renewed and intense corruption allegations, called an early election marketed as a referendum on his rule. The election was boycotted by the opposition parties and later declared invalid by the Constitutional Court. TRT

[18] A seven party coalition under Democrat Party leader Chuan Leekpai.

[19] The New Aspiration and Cha Thai parties.

[20] The lower house, or The House of Representants, consisted of 400 members elected from single-member constituencies and 100 members elected from national party lists on a proportional basis. The upper house, or the Senate, consisted of 200 members elected from single-member constituencies.

[21] In an Abac Poll of Thai community leaders ahead of the 2005 elections 75% of community leaders described the vote buying situation as severe, and 23% as medium in their area. The average expenditure per vote was around 500 bath or 25 USD.

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however again received strong support: 61% of voters supported TRT, 1% voted for other parties and 38% selected the no-vote option. Turnout was 65%, slightly higher than in the 2001 and 2005 elections.

The early elections failed to placate the PM's critics who also accused him of trying to undermine the Thai monarchy. On September 19th 2006, with the stated motive of ridding the country of a corrupt leadership and protecting the monarchy, members of the Royal Army staged a successful coup d'état. The takeover was swift, bloodless and achieved without a single shot being fired. Thaksin was attending a meeting at the UN at the time.

The coup makers immediately dissolved the cabinet, both chambers of parliament as well as the constitutional court. The TRT party was banned and 111 of its members barred from politics for the next five years. Thaksin Shinawatra himself fled to the UK.

Figure 1.9 provides a time line of main event surrounding the coup.

Figure 1.10 provides a time line of main events in Thai politics.

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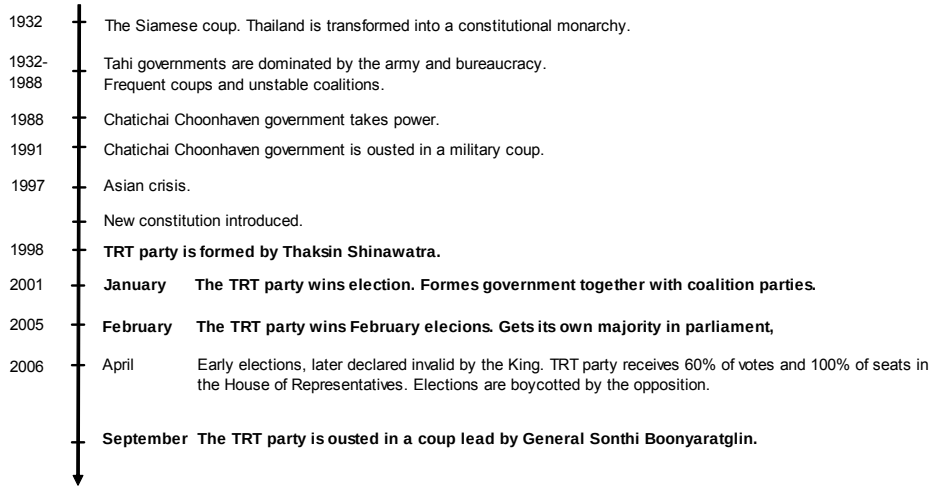
Figure 1.9: Time line: The September coup

Figure 1.10: Time line: Thai politics



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Appendix V: Identifying Ownership

In terms of identifying the ownership of business groups the Brooker Group publication takes me a long way. However, a number of issues remain. Firstly, the guide only provides information on the top 150 business groups; some politicians might be connected to less important groups. Secondly, the latest edition of Thai Business Groups was published in mid-2003. Hence changes in group structures might have occurred, and some companies might have changed names over the period.

Several alternative sources are used to remedy these problems. The English language newspaper the Nation regularly produce profiles of government ministers whenever major cabinet reshuffles take place. These profiles include information on business interests which are double checked against alternative sources of ownership data. I also perform LexisNexis searches using search words such as "politics", "business" etc.

Changes in ownership structures are dealt with through LexisNexis searches using search words such as "acquisitions", "divestment, "sale", etc. A number of changes in the ownership structures of relevant firms took place between mid-2003 and the coup. For example, the Shinawatra related Wongsawat family acquired a majority share in Wyncoast Industrial Park in mid-2004. In December 2005 Tata Steel acquired Millennium Steel, formerly part of the Horrungruang family controlled Millennium Steel/Hemaraj Land/Sun Tech group. The firm is now known as Tata Steel (Thailand). The most significant ownership change during the period was the Shinawatra family's divestment of its stakes in Shin Corporation and thereby also in Advanced Info Services, ITV and Shin Satellite to Singapore's Temasek Corporation in January 2006. This transaction also raises the question of how these firms should be treated over the coup. One alternative is to assign them to a non-connected status. This is however likely

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to be misleading. The four firms formed the core of the PMs business interests and were closely interwoven with the TRT party. The divestment happened only 8 months before the actual coup event. I therefore choose to treat these firms as Shinawatra connected in my base specification. However, results will also be reported for when these firms are treated as unconnected.

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Chapter 2

Importing Discipline: Trade in a model of Endogenous Corruption

Joint work with Sarah Stölting

2.1 Introduction

In the current paper, we identify a channel through wich trade opening can influence bureocratic corruption and argue that trade liberalization can be a potentially potent policy tool in the fight against corruption.

We incorporate a model of endogenous corruption into an intra-industry trade model with firm heterogeneity. Exogenous trade opening leads to tougher competition and consequently reduces the officials' ability to extract rents from firms. Trade liberalization therefore leads to a reduction in bribes charged to individual firms. In addition, as corruption distorts entry decisions and hampers welfare, trade liberalization has a stronger welfare enhancing effect under corruption than in a bribe free economy. We also analyze the incentive for governments to control corruption. When trade is liber-

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alized, firms become more sensitive to the relative corruption level between countries. Governments therefore have stronger incentives to fight corruption when trade costs are low. Finally we test empirically the main prediction of the model, i.e. that higher trade costs lead to higher levels of corruption. Though our empirical strategy falls short of full causal identification, we show that countries that suffer from high trade costs due to a remote or innacessible location, also tend to experince higher levels of corruption.

The importance of bureaucratic corruption as an economic phenomenon can hardly be overstated. Previous research has shown that corruption reduces long term investment by increasing uncertainty (Wei (2000)), distorts investment and technology choices (Gray and Kaufmann (1998)), undermines the state's ability to collect revenue by pushing firms underground (Mauro (1998)) and reduces economic growth (Mauro (1995)).

A relatively recent empirical literature studies the causes of corruption. Openness to trade, high income levels, democratic rule, high bureaucratic wages, as well as certain historical or cultural features, such as protestant tradition, ethnic homogeneity and British colonial rule, have all been shown to be associated with lower levels of bureaucratic corruption (see for example Treisman (2000) and Lederman et al. (2005)). Of these, trade openness can easily be singled out as the most policy relevant. History and traditions are exogenously given, institutions are hard and time consuming to change and the fact that higher income levels might reduce corruption is of little consolation to policy makers if income levels are low precisely due to rampant corruption. Trade policy, on the other hand, is generally under the direct control of policy makers.

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Figure 2.1: Corruption and trade protection

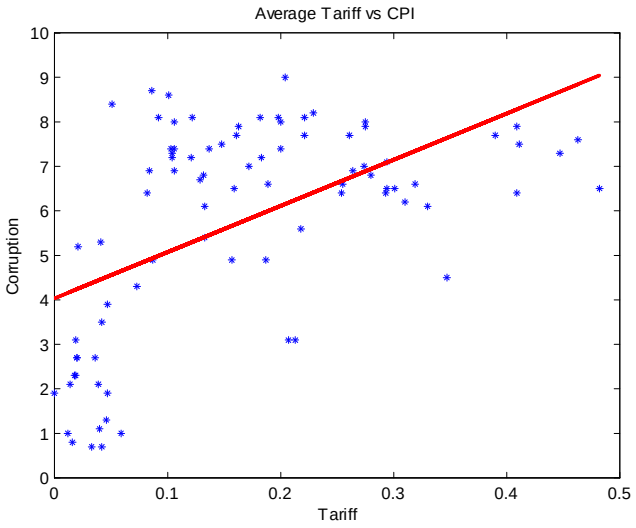

Figure 2.1 plots Transparency Internationals Corruption Perceptions Index against average tariff levels as a proxy for trade openness[1]. The data reveals a clear negative correlation between corruption and openness. Lower tariffs are associated with lower corruption levels. Svensson (2005) finds that of the worlds most corrupt countries all, except for Indonesia, are defined as closed economies according to the Sachs and Warner (1995) definition. Further, empirical work by among others Dutt (2009) and Ades and Di Tella (1999), establishes a negative correlation between trade openness and corruption.

In our model, trade liberalization is taken as exogenous. It is trade that impacts corruption, not the other way around. We do recognize that the causality could often be the reverse: Countries fail to liberalize due to the existence of strong special interest

[1]Data on average tariffs from Sachs and Warner (1995)

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groups and poor institutions. However, to focus attention on the effect of trade on bureaucratic corruption we abstract from this possibility.

As in Shleifer and Vishny (1993), we consider the sale of government property by government officials as the prototype of corrupt activities. We do not model an agency relationship, but simply assume that officials have the power to extract rents from existing firms and focus on analyzing the demand for bribes. Like in Choi and Thum (2005), paying the bribe is not associated with any type of cost reduction; it is simply a case of either paying or being forced to exit. We can for example think of the officials as bureaucrats working for a regulatory agency with the power to approve or deny an application for an operating- or export license[2]. Another interpretation would be that the bribe is paid in order for the firm to avoid complying with some very costly regulation, which would in any case have made it uncompetitive.

We consider a model with two types of officials: domestic officials and export officials. Domestic officials try to extract bribes from firms selling in the domestic market, while export officials can extract bribes from firms that want to access foreign markets. The domestic officials could hence be thought of as being able to approve or deny a domestic operating license, whereas the export officials can grant an export license. All bribes take the form of fixed cost payments.

[2]The most straight forward interpretation is a bribe paid in order to get an operating license. Around one third of firms in low income countries report that they have to pay bribes in order to receive an operating license, and in some countries the figure is substantially higher, around 63% in Mexico and 70% in Syria. Djankov et al. (2002) show that entry costs are highly correlated with corruption levels in a cross section of countries. The corrupt payment could also be interpreted more generally: as bribes need to be paid in order to keep the firm running. This would include an operating license, but also bribes necessary to get a telephone line etc. This interpretation would be close to what the World Bank calls "Bribes to get things done". Around 50% of firms in low income countries report to have to pay bribes to "get things done" according to the World Bank enterprise survey, and for many countries the figure is far above 80%.

Both types of officials are many in number and do not coordinate their rent seeking activities. Each official sets the bribe in order to maximize his expected private utility. Though each individual official does know how the economy works, as well as the productivity distribution of firms, the productivity of any individual firm is private information. The official is hence unable to price discriminate and constrained to demanding a uniform bribe from all firms[3]. When setting the bribe, the official faces the following trade-off: If the bribe is set too high it will induce excessive exit[4] and the official might walk away empty-handed as the firm he is dealing with closes down or chooses to exit the export market. On the other hand, if the bribe is set too low, potential revenue is forfeited. The optimal uniform bribe is the one that maximizes the officials expected revenue.

The model of endogenous corruption is incorporated into a static trade model based on Melitz-Ottaviano (2008). As in the basic version of Melitz and Ottaviano (2008) we consider a two country world. We assume the two countries to be symmetric. Firms are heterogeneous in productivities, and the productivity distribution is Pareto. Trade liberalization takes the form of a bilateral reduction in the variable cost paid to import into the country. One could think for example of the creation of a free trade area in which both countries bilaterally reduce their import tariffs. A reduction in import costs could also be seen as stemming from improvements in infrastructure.

The remainder of the paper is structuread as follows: In Section 2.2 we present the model. Section 2.3 analyzes how trade liberalization affects the optimal bribe and

[3]Previous research show that, at least in the subset of formal sector firms, smaller firms are hit harder by corruption relative to larger ones (Schiffer and Weder (2001)). By modeling the bribe as a one part tariff we are able to replicate this stylized fact in a simple manner.

[4]Romer (1994) also suggests that corruption can drive firms out of the market, and shows that this induces a large welfare loss

other equiblibrium outcomes. In Section 2.4 we introduce a government to look at how trade liberalization affects incentives to control corruption. In Section 2.5 we test empirically the predicted relationship between trade costs and corruption. Section 2.6 concludes.

2.2 The Model

In this section we present our model of endogenous corruption in an open economy framework. The model is heavily based on Melitz-Ottaviano (2008), but we depart from their set-up in one important respect: In the current model, access to both the domestic and export markets require the payment of bribes to corrupt officials.

We consider a two country world populated by two entirely symmetric countries. International trade is possible, but costly. Trade costs are modeled as iceberg cost, $\tau > 1$.

The section is structured as follows: In subsection 2.1 we provide a full description of the economy. Throughout this subsection bribes are treated as exogenous fixed costs of production and exporting. In section 2.2 we present the official‘s problem and endogenize the bribe level.

2.2.1 The Bribe Economy

Consumers

Consumers preferences are defined over a continuum of differentiated varieties, and a homogeneous good chosen as a numeraire. The utility function of each consumer is given by:

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$$U = q_0^c + \alpha \int q^c(\omega)d\omega - \frac{1}{2}\gamma \int (q^c(\omega))^2 d\omega - \frac{1}{2}\eta \left(\int q^c(\omega)d\omega \right)^2,$$

where q_0^c represents consumption of the homogenous good, and $q^c(\omega)$ represents the consumption of each heterogeneous variety ω. The demand parameters α, γ and η are all positive. α expresses the intensity of preferences for the differentiated products relative to the homogenous good, γ reflects love of variety and η denotes the substitutability between different varieties. Consumers maximize utility subject to a standard budget constraint. This yields the following linear demand system for each variety ω:

$$q(\omega) = \frac{L\alpha}{\eta N + \gamma} - \frac{L}{\gamma}p(\omega) + \frac{L}{\gamma}\frac{\eta N}{\eta N + \gamma}\bar{p}, \tag{2.1}$$

where L is the population size (from now on we assume $L = 1$ as we are not interested in scale effects), N is the number of firms serving each market and $\bar{p}$ is the average price level: $\bar{p} = \frac{N^e}{N}\left(\int_0^{c^*} p^d(c)g(c)dc + \int_0^{c_x^*} p^x(c)g(c)dc \right)$, with N^e being the number of entrants and c^* and c_x^* the cost cutoff levels of production and exporting respectively (see section 2.2.1).

Welfare of consumers is given by the indirect utility function:

$$U = 1 + \frac{1}{2}\left(\eta + \frac{\gamma}{N} \right)^{-1} (\alpha - \bar{p})^2 + \frac{1}{2}\frac{N}{\gamma}\sigma_p^2. \tag{2.2}$$

Firms

Labor is the only factor of production and is inelastically supplied in a competitive market. The numeraire good is produced under constant returns to scale at unit cost,

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and its market is competitive. These assumptions imply a unit wage.

Production in the differentiated product sector exhibits constant returns to scale at a marginal cost c. Throughout the paper we assume firms' productivities to be Pareto distributed, which means that marginal costs are distributed according to

$$G(c) = \left(\frac{c}{c_m}\right)^k,$$

with support over $[0, c_m]$. The parameter $k > 1$ determines the shape of the distribution.

The marginal cost of an individual firm is only known after it has made an irreversible investment of f^e required for entry. In addition, once a firm has drawn its cost level, it is assigned to a domestic official, and (if it would like to enter the export market) to an export official. The assigned official(s) quote the firm a bribe. Firms that refuse to pay the bribe are forced to exit the relevant market, while the firms that agree are allowed to start production.

As markets and bribes are segmented, and firms produce under constant returns to scale, domestic- and export profits are maximized independently. Domestic profits π^d and export profits π^x are given by

$$\pi^d(c) = (p^d(c) - c)q^d(c) - d,$$

$$\pi^x(c) = (p^x(c) - \tau c)q^x(c) - x,$$

where $p^d(c)$ denotes the prices charged in the domestic market and $p^x(c)$ the price

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charged in the export market. τ is the variable iceberg-type trade cost, and d and x are the bribes charged by the domestic and the export official respectively. The profit maximizing domestic and export output levels, $q^d(c)$ and $q^x(c)$, are given by:

$$q^d(c) = \frac{1}{2\gamma}\left(\frac{\alpha\gamma + \eta N\bar{p}}{\eta N + \gamma} - c\right), \tag{2.3}$$

and

$$q^x(c) = q^d(\tau c). \tag{2.4}$$

Only firms with a low enough marginal cost of production will generate high enough profits to be able to cover the bribe.[5] Thus there exists a production cutoff level c^* and an export cutoff level c_x^*. Firms with a cost level higher than c^* will choose to exit rather than paying the bribe, and firms with a cost level higher than c_x^* will choose only to serve the domestic market.

Equilibrium

The equilibrium of the economy is determined by goods market clearing, the zero cutoff profit condition and the free entry condition. Appendix II specifies how the algorithm used to obtain the solution is constructed.

Goods Market Clearing: Combining optimal demand (2.1) with optimal supply for the domestic market (2.3), and the export market (2.4), yields the price which clears

[5]Even in absence of bribes, i.e. $d = x = 0$, there exist cutoff levels of production and exporting. This is due to the specification of the demand structure. Above a certain threshold price, demand is driven to zero. Hence firms with a cost structure forcing them to charge prices above this threshold can not make positive profits and have to exit the market.

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the market for the good produced by a firm with marginal costs c. The domestic goods market and the export goods market clear at the following prices:

$$p^d(c) = \frac{1}{2}\left(\frac{\alpha\gamma + \eta N\bar{p}}{\eta N + \gamma} + c\right), \tag{2.5}$$

$$p^x(c) = p^d(\tau c). \tag{2.6}$$

Zero Cutoff Profits: The production and export cutoff levels are given by the zero-cutoff profit conditions $\pi^d(c^*) = 0$ and $\pi^x(c_x^*) = 0$ respectively. All firms with costs $c < c^*$ will serve the domestic market, and all firms with costs $c < c_x^*$ will supply the export market.

Free Entry: A firm only considers entry if its expected profits are large enough to cover the fixed entry cost f^e. The free entry condition is therefore given by:

$$\frac{1}{2\gamma}\left[\int_0^{c^*}\left(\left(\frac{\alpha\gamma + \eta N\bar{p}}{\eta N + \gamma} - c\right)^2 - d\right)dG(c) + \int_0^{c_x^*}\left(\left(\frac{\alpha\gamma + \eta N\bar{p}}{\eta N + \gamma} - \tau c\right)^2 - x\right)dG(c)\right] = f^e. \tag{2.7}$$

The number of entrants in the economy is determined by $N_e = \frac{N}{G(c^*)+G(c_x^*)}$.

2.2.2 The Officials Problem

So far we have considered bribes as a fixed cost of production and exporting. In the current section we will present the officials problem and describe how bribes are endogenized. Before we move on, we would however like to highlight two important assumptions.

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Firstly, officials are atomistic. By this we mean that each official is assigned only one or a small number of firms, and that their corrupt activities are not coordinated. This implies that each individual official takes the average bribe level as given, even though the level of bribes affects the economy in equilibrium. The problem of each individual official can therefore be treated as the problem of an official acting in a bribe free economy.

Secondly, the cost c of an individual firm is private information. Though the officials do know how the economy works, as well as the distribution of costs, they do not know the cost level of the individual firm(s) assigned to them[6]. Further, high cost firms have no possibility to signal their status. This implies that officials are constrained to charging a uniform bribe from all firms.

A firm will only be willing to pay the quoted bribe if its future expected profits from the relevant market exceeds the amount of the bribe. The official therefore faces a trade-off. If he quotes a too high bribe, the firm's profits might not be high enough to cover the payment, and the firm will exit leaving the official empty-handed. On the other hand, if the quoted bribe is too low, potential revenue is forfeited. The domestic and export officials' problems are therefore to maximize expected revenue[7] according to

$$Exp(R(d)) = d \times Pba(\pi_0^d(c) - d > 0), \tag{2.8}$$

[6]If the cost level of each firm had been common knowledge, domestic and export officials would have quoted each firm with a bribe equal to its future profits in the domestic- and export market respectively. The cost cutoff levels would then be equal to the cost cutoff levels in an economy with $d = 0$ and $x = 0$ regardless of the size of the bribe.

[7]We assume the official to be risk neutral

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and,

$$Exp(R(x)) = x \times Pba(\pi_0^x(c) - x > 0), \tag{2.9}$$

respectively. $Exp(R(d))$ is the expected revenue of a domestic official and $Exp(R(x))$ is the expected revenue of an export official. $Pba(\pi_0^d(c) - d > 0)$ and $Pba(\pi_0^x(c) - x > 0)$ represent the probabilities of the domestic and export officials to receive the bribe d and x. The subscript 0 stands for the bribe-free economy.[8]

In a bribe free economy, i.e. in an economy where $d = 0$ and $x = 0$, profits in equilibrium can be rewritten as $\pi_0^d(c) = \frac{1}{4\gamma}(c_0^* - c)^2$ and $\pi_0^x(c) = \frac{1}{4\gamma}\tau^2(c_0^*/\tau - c)^2$.[9] Given these expressions and the Pareto assumption, we can find an expression for the probability that a randomly assigned firm would be willing to pay the bribe:

$$Pba(\pi_0^d(c) - d > 0) = c_m^{-k}\left(c_0^* - (4\gamma d)^{1/2}\right)^k, \tag{2.10}$$

$$Pba(\pi^x(c) - x > 0) = c_m^{-k}\left(c_0^*\tau^{-1} - (4\gamma x)^{1/2}\,\tau^{-1}\right)^k. \tag{2.11}$$

We plug equation (2.10) into equation (2.8), and equation (2.11) into equation (2.9), and by maximizing we obtain the equilibrium bribes d^* and x^*. As it turns out, under symmetry, the equilibrium domestic bribe and the equilibrium export bribe are the same.[10], i.e. $d^* = x^*$. To simplify notation we will therefore denote the optimal bribe in both the domestic and export markets by m^*, where $m^* = d^* = x^*$.

The equilibrium bribe level is given by

[8] The bribe free economy is equivalent to the original Melitz and Ottaviano (2008) model.
[9] See Melitz and Ottaviano (2008) for a detailed derivation.
[10] Note that this result is dependent on the distributional assumption made.

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$$m^* = d^* = x^* = \frac{1}{\gamma(k+2)^2}\left(\frac{\gamma\phi}{(1+\tau^{-k})}\right)^{2/(k+2)}, \tag{2.12}$$

where $\phi = 2c_m^k(k+1)(k+2)f^e$.

Three things are interesting to note about the size of the bribe. Firstly, the bribe depends negatively on γ, the parameter for love of variety. The intuition for this is quite simple: The higher γ, the more consumers value a heterogeneous consumption basket, and hence the more equal is the share of their expenditures spent on each variety. A higher γ therefore implies a higher cost-cutoff level and lower average profits. Lower profits means lower bribes. Secondly, the bribe depends positively on f^e, the fixed cost of entry. The higher the entry cost, the higher do expected profits have to be for firms to enter. Higher profits mean higher bribes. Thirdly, the bribe depends positively on τ, the variable trade costs. This will be the topic of the next section.

2.3 Trade Liberalization

In the current section we will analyze how trade liberalization affects equilibrium outcomes in an economy with bribes. Trade liberalization takes the form of a bilateral[11] reduction in the per unit trade cost τ.

2.3.1 Bribe level

Does freer trade lead to less corruption? In the current model this is the case.

[11] This as we are studying a symmetric two country model.

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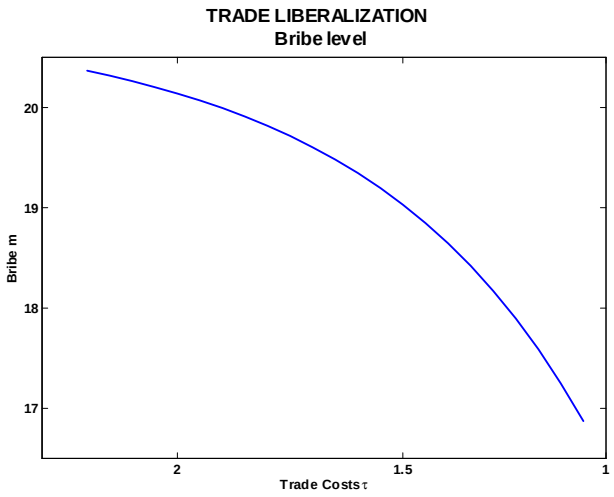
Figure 2.2: Trade liberalization and the bribe



$$\frac{\partial m^*}{\partial \tau} = \frac{2\phi k}{(k+2)^3} \frac{1}{\tau^{k+1}(1+\tau^{-k})^2} \left(\frac{\gamma\phi}{L(1+\tau^{-k})} \right)^{-k/(k+2)} > 0 \qquad (2.13)$$

As can be seen in equation 2.13, the derivative of m^* with respect to τ is always positive. Hence bilateral trade liberalization always decreases the optimal bribe charged by corupt officials.

The result is illustrated in Figure 2.2. The bribe charged by both domestic- and export officials, m^*, is always increasing in τ. Trade liberalization leads to increased import competition in the domestic product markets, resulting in a lower cost cutoff level and lower markups. This leaves less resources to extract for the official, and thereby to a lower equilibrium bribe. Trade liberalization does not only decrease the individual bribes charged by officials, but also total bribes charged over total revenue.

Having concluded that lower trade costs implies lower levels of bribes, we can now

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move on to analyze how trade liberalization impacts the cost cutoff level, and thereby the competitiveness of the economy, under the existence of bribes.

2.3.2 The cutoff

Bilateral trade liberalization opens up both countries for competition from foreign firms, thus forcing the most unproductive domestic firms to exit. The production cutoff level is thereby reduced. This is the standard Melitz-Ottaviano (2008) result. As can be seen in Figure 2.3, the introduction of bribes into the model has two interesting effects. Firstly, the cutoff level is lower under bribes for all values of τ, i.e. the bribe economy is more competitive than the non-bribe economy[12]. Secondly, the slope of the bribe economy curve is somewhat flatter, i.e. trade liberalization has a weaker pro-competitive effect under bribes.

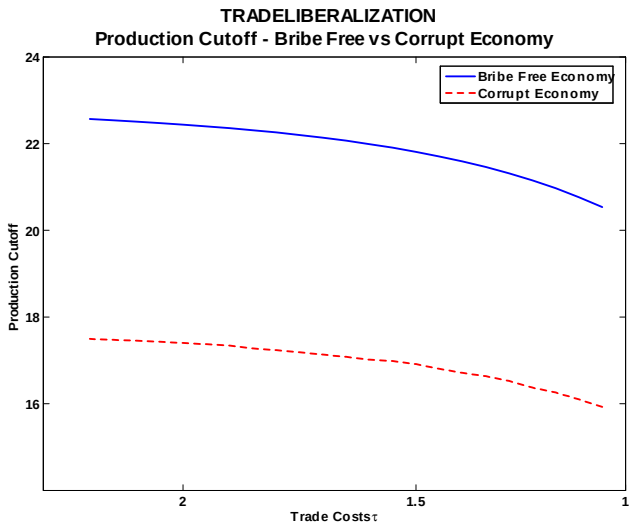
The presence of bribes affects the cut-off level through two opposing channels:

(1) For a given number of entrants (N_e) corruption lowers the cutoff level. The intuition is simple: In a bribe free economy all firms that are able to cover their marginal costs will enter. In the bribe economy, however, firms also need to be able to cover the cost of the bribe. Hence, some potential entrants with high cost draws will choose not to enter. The cutoff cost level is thereby decreased.

(2) Secondly, bribing works as a distortion which decreases the number of entrants (N_e), while leaving demand and marginal costs unaffected. This increases the

[12]This result is somewhat similar to the findings of Bardhan (1997). Bardhan (1997) argues that even without pre-existing distortions, corruption can lead to an efficient outcome in the sense that it allocates government licenses and permits to the lowest cost producer. This argument of course assumes that other goals are not violated. For example, in the current model, corruption hurts consumer welfare by limiting the number of product varieties available.

Figure 2.3: Competition and Trade Costs



cutoff level. The intuition is again simple; bribing transfers some profits from firms to officials, hence lowering average expected profits. Paying the fixed cost of entry thereby becomes less attractive, and the number of potential entrants decreases. In the bribe economy, less potential entrants are therefore available to serve the market. Competition for entry is reduced, and the cutoff level is thereby increased.

It turns out that the first effect domintates, and the bribe economy is therefore characterized by a lower cost cutoff level than the no-bribe economy.

This also explains the flatter slope of the bribe economy. Trade liberalization leads to lower bribes, and hence to a lessened pro-competitive effect from corruption. Trade liberalization still leads to a more competitive market, but the effect is weakened by the decrease in bribes.

The next step is to look at how the welfare of consumers and officials is affcted by

lower trade costs.

2.3.3 Welfare

Figure 2.4 plots consumer welfare (normalized by the welfare level of $\tau = 1.4$), see equation 2, against trade costs for a corrupt (endogenously determined m) and non-corrupt (m is exogenously set to zero) economy respectively. The red dotted line represents consumer welfare in an economy with bribes, the solid blue line consumer welfare in an economy without bribes. As in the original Melitz-Ottaviano (2008) model trade liberalization boosts consumer welfare by increasing competition and by making more product varieties available in the economy. This effect remains when corruption is introduced in the model. However, as trade costs are decreased, the level of bribes is also reduced. Bribes distort the entry desicion of firms and reduces the number of product varaities in the economy. As the bribe distortion is abated, the welfare enhanicing effect of lower trade costs is enhanced. Welfare therefore increses faster in a corrupt economy (as apparent by the steeper slope of the bribe economy curve) when trade is liberalized

What about the welfare of officials?. Export- and domestic official's welfare[13] (normalized by the welfare level of $\tau = 1.4$) is plotted in Figure 2.5. Welfare of export officials is represented by the dotted yellow line and welfare of domestic officials by the solid green line. Not surprisningly, Export official's gain in welfare when trade is liberalized. Though trade liberalization leads to a lower bribe beeing charged to each individual exporter, lower trade costs also lead to more export activity. The latter

[13]The officials ' welfare is defined as total revenue of export- and domestic officlas respectively.

Figure 2.4: Welfare Consumers

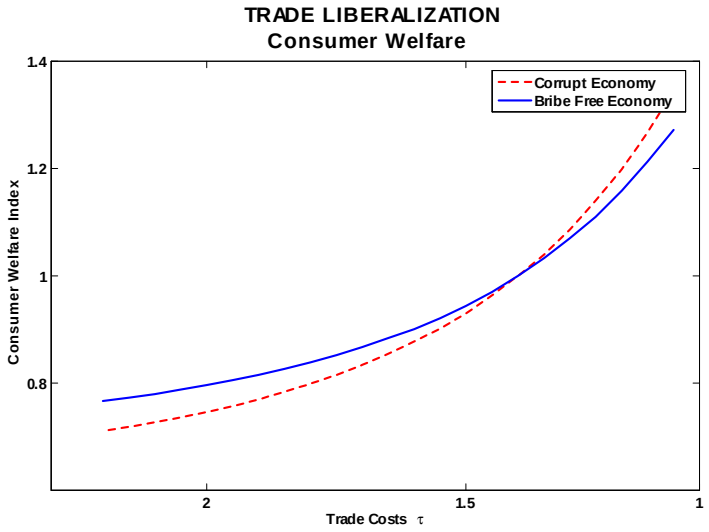
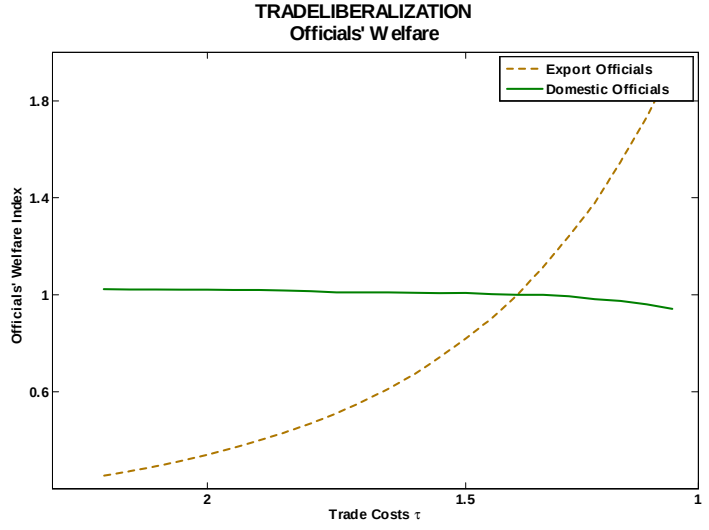


Figure 2.5: Welfare Officials



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effect dominates, and total revenue to export officials is thereby increased. Domestic officials, on the other hand, loose out when trade is liberalized. This due to the reduced bribe level.

The result is interesting from a coalition building perspective. Despite the fact that trade liberalization reduces corruption, corrupt export officials could still benefit from joining consumers in demanding lower tariffs, and thereby lower trade costs.

2.4 Trade liberalization and corruption control

Until now the officials of the economy have been free to set their bribe level without interference from any anti-corruption authority or law enforcement agency. In the current section we relax this assumption and introduce a government body. This body, below called the government, has as its only role to oversee the officials and to try to curb corruption. We show that trade liberalization leads to more effort being put into reducing corruption, and thereby to a lower overall level of graft.

We assume that the government has at its disposal a bribe reducing technology. We are agnostioc about exatctly what this technology is, but one could think about incresed monitoring of officials or longer jail sentences for those that are caught. In any case, reducing the bribe level requires the governmnet to put in some effort. Effort can be transformed into reduced bribes given the following production function:

$$m_i^f = m^* - \Gamma e_i^{\frac{1}{\delta}} \tag{2.14}$$

Where m_i^f is the post effort bribe level and e_i is the effort level of the government

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in country i. Γ is a scalar that determines how potent effort is in reducing the bribe. We assume decreasing returns to effort, i.e. $\delta > 1$.

The government is benevolent and interested in maximizing consumer welfare However, it also receives disutility from exerting effort. Its objective function takes the following form:

$$U_i^{GOV} = W_i^c - \theta_i e_i$$

Where W_i^c is consumer welfare (as per equation 2) in country i, θ_i is a parameter which determines how much weight the government put on welfare versus the disutility of effort exertion.

The government chooses its effort level by maximizing its utility with respect to e_i, subject to the corruption reducing production function (2.14). Governments are assumed to not coordinate their corruption reducing activities. To solve for the welfare maximizing effort level we therefore have to rewrite the model from Section 2.2 in a form that allows assymetry in bribes. This version of the model is presented in Appendix III.

We are interested in how trade liberalization impacts the government's incentive to exert effort to curb corruption. Figure 2.6 below plots the optimal effort level against trade costs τ.

The effort level is clearly increasing with lower trade costs. The intuition for this result is quite straight forward. The larger the number of firms willing to enter the

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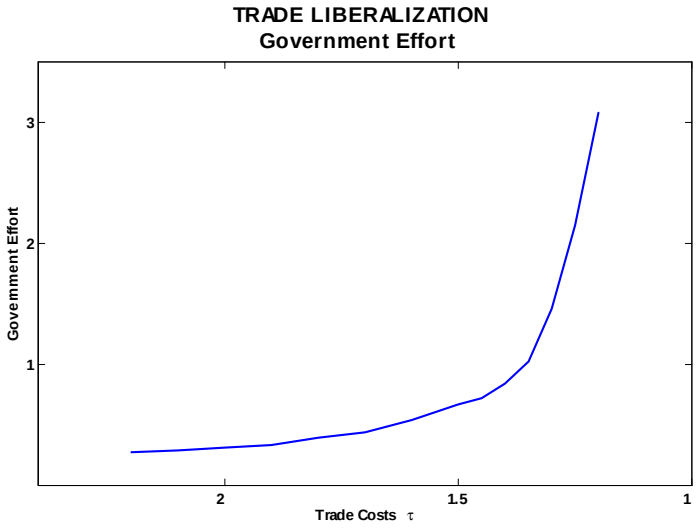
Figure 2.6: Government effort and trade liberalization



domestic economy, the larger is the number of avaliable product varaities and the lower is the average price level. Governments therefore have a strong incentive to try to convince firms to locate in their own country rather than in the neighboring state (this is true as long a $\tau > 1$). When trade costs are high, exporting is expensive and firms that want to supply the market of a specific country have a strong bias towards locating in that country. However, as trade costs are reduced, firms become increasingly more flexible in their location decision. This means that they also become more sensitive to the relative bribe levels in the respective countries. The lower the trade costs, the more important it therefore becomes to offer a relatively uncorrupt domestic economy that can attract firms from neigbouring countries and deter local firms from leaving. Governments consequentely increase their effort in corruption curbing. As long as the other country has access to the same corruption curbing technology the end-result is lower corruption and higher welfare in both countries. It should however also be noted

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that countries that lack the capacity to reduce corruption might lose out when trade is liberalized. Though reduced trade costs are beneficial both from a corruption curbing and pro-cometitive perspective, countries that fail to control graft might still suffer as firms relocate to less corrupt contries. In such cases the overall welfare effect of trade liberalization is ambigious.

2.5 Corruption and Remoteness

Our model implies that high trade costs should be associated with high levels of corruption. In the Introduction we showed that this is indeed the case. Countries with high levels of trade protection in terms of tariffs also tend to suffer from higher levels of corruption as measured by the Transparency International Corruption Perception Index. However, if countries fail to liberalize trade due to the existence of strong special interest groups or poor institutions, this result could be driven by reverse causality. To overcome this problem we need to consider trade costs that can argubly be considered as exogenous to corruption. One alternative would be to use real transport costs. However, transport costs are correlated to the quality of infrastructure and therefore suffer from potential endogeneity problems. Further, reliable data on transport costs for a large number of countries is almost impossible to come by (Hummels and Lugovskyy (2006))[14]. As a solution we will instead make use of geographical proxies for trade costs. Distance to major trading centres as well as geographical characteristics, such

[14]Limao and Venables (2001) investigate the determinants of trade costs. Landlocked countries, and countries located far from potential trading partners are found to suffer from high trade costs, whereas islands are found to benefit from lower costs of trade. Overland transportation is found to be as much as 7 times as expensive as sea transportation, and of the top 15 export performers between 1965-90, 8 are islands, and none are landlocked.

as the lack of sea access, have been shown to be important determinants of transport costs (Limao and Venables (2001)). Using these proxies we show that, in line with the predictions of the model, more remotely located and less easily accessible countries, do indeed suffer from higher levels of corruption.

As a proxy for distance we construct two different, but closely related, measures. We want proxies that incorporate not only a country's degree of geographical remoteness, but also how far it is located from potential trading partners. We define $GDPdist_i$ as the average distance from country i's main city or agglomeration to the most important city or agglomaration of all other countries, weighted by GDP. $Tradedist$ is the same measure, but instead weighted by total exports. The data on geographical distance is obtained from CEPII, the GDP data from the World Bank and the trade data from UN Comtrade. Appendix IV provides a more in-depth explanation for how these measures are calculated.

The inclusion of distance as a proxy for trade costs requires some additional comments. Though it is clear that distance is exogenous to transport costs, distance might also impact corruption through other channels. Countries located at close distance to each other are likely to share cultural ties and similar institutions. Further, richer countries are likely to be both larger exporters and to experience lower levels of perceived corruption. An observed negative relationship between our distance measures and corruption could therefore be due to institutional and cultural factors, rather than to transport costs. The results presented below should therefore be interpreted with some care.

To take into account the difference between overland and oversea transport costs we introduce the dummies $Island_i$, equal to one if country i is and island, and $Landlocked_i$,

equal to one if country i is landlocked. We also introduce the variable $sea\%_i$, which is the percentage of country i's border that is made up by coast line (data from CIA World Fact Book). The more coast line a country has as a proportion of its total border, the easier should it be to access different parts of the country by sea. A higher value for $sea\%_i$ should hence be associated with lower transport costs.

As a proxy for a country's level of corruption we use the Transparency International Corruption Perception Index (CPI) and the Wall Street Journal-Heritage Foundation index of Freedom from Corruption (WSJ). Both indices are commonly used in the literature. We use data from 2009, as this year includes the most countries.

We regress our proxy for corruption on the proxies for distance and geographical characteristics. The results are available in Table 2.1. All our trade cost proxies are statistically significant and have the right sign regardless of model specification and corruption index used. The best model specification explains almost 25% of the variation in the corruption index and the magnitude of the coefficients are economically significant. A reduction in $TradeDist_i$ by 2400 KM (equivalent to one standard deviation), is associated with an improvement in the CPI Index ranking by on average almost 6 places out of 65. A 40 percentage point increase in $sea\%_i$ (equivalent to one standard deviation) is associated with an improvement in the CPI Index ranking by on average more than 8 places. These findings are in line with the predictions of the model; more remote and harder to access countries do indeed seem to suffer from higher levels of corruption.

Table 2.1: Results

	CPI 2009	**CPI 2009**	**CPI 2009**	**WSJ 2009**	**WSJ 2009**	**WSJ 2009**
TradeDist (1000km)	-0.30**	-0.29**		-0.31**	-0.32**	
	(0.09)	(0.09)		(0.09)	(0.09)	
GDPDist (1000km)			-0.34**			-0.36**
			(-0.11)			(0.10)
%Sea		2.6**	2.54**		2.67**	2.6**
		(0.37)	(0.37)		(0.36)	(0.37)
Island	1.64**			1.63**		
	(0.45)			(0.42)		
Landlocked	-0.75*			-0.77*		
	(0.33)			(0.34)		
R-Square	0.14	0.24	0.23	0.15	0.25	0.23
N	179	179	179	181	181	181

* Significant at 5% level, ** Significant at 1% level.
Robust standard errors.

2.6 Conclusion

In the current paper we have identified a link between trade openness and bureaucratic corruption. Trade liberalization enhances product market competition and reduces the rents available for extraction by corrupt officials. As a result, bribes charged to firms are reduced and welfare is enhanced. In addition, we argue that among the determinants to corruption identified in the literature, trade openness can be singled out as one of the most policy relevant. History and culture are exogenously given, and institutions are hard and time consuming to change. Trade policy, on the other hand, is generally under direct control of policy makers.

We further analyzed the incentives for governments to fight corruption, and showed that benevolent governments exert more effort in combating corruption when trade costs are low. Trade opening makes firms more sensitive to other features of the business climate, like corruption, and thereby increases the return to good governance.

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It should however be pointed out that this argument comes with a downside. While openness to trade helps countries to control corruption and provides incentives for the creation of good institutions, lower trade costs also raises the stakes. Countries that are able to improve their business climate attract new firms, but countries that fail to do so might suffer. This could help explain why, in some cases, empirical studies of trade liberalization fail to identify the beneficial effects predicted in standard trade theory (for an overview see Lopez (2005)).

Our model predicts that countries which experience higher transport costs should suffer from higher levels of corruption. We test this prediction empirically, and show that more remote and harder to access countries do indeed tend to exhibit higher levels of perceived corruption. However, we also acknowledge that our identification strategy falls short of a full causal identification.

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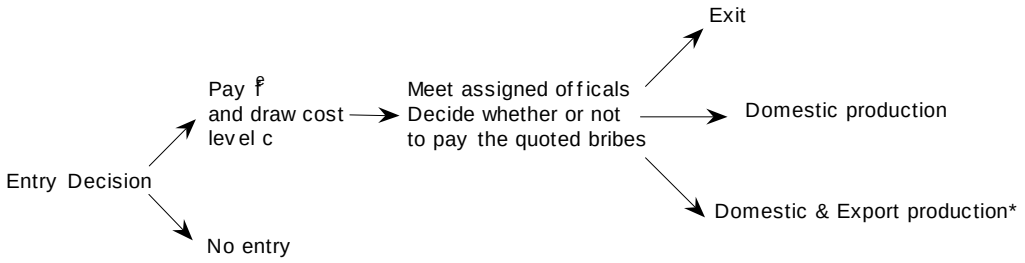
Appendix I: Timing of the model

Figure 2.7 illustratetes the timing of the model. In the first period prospective firms need to decide whether or not to pay the fixed cost of entry, f^e. A firms that has decided to enter then draws a cost level, c. Once the firm knows its cost level it meets the assigned domestic official, and if it also wants to export, the assigned export official. The official(s) then quote a bribe. If the firm agrees to pay the quoted bribe(s) it can start production for the relevant market(s).

Figure 2.7: Timing of the model



* In equilibrium all exporters always produce also for the domestic market

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Appendix II: Algorithm

The Algorithm to obtain the numerical solution of the economy presented in section 2.2 is constructed in the following way.

First we discretize costs, i.e. we build a grid of costs c. The number of grid points is set to 1000. We then guess the number of firms operating in each market, N, and the average price level $\bar{p}$. Given the guessed N and $\bar{p}$, the following expressions can the be computed: Equations (2.5) and (2.6), which yield the prices charged in the domestic and export market. Knowing prices, the consumers first order condition, equation (2.1), which determines demand, gives the quantities consumed $q^d(c)$ and $q^x(c)$. This in turn allows us to know the firms profits $\pi_d(c)$ and $\pi_x(c)$. Hence the cost cutoff levels of production c^* and exporting c_x^* can be determined given the zero cutoff conditions. We can then obtain the number of entrants N_e. Now we can use the expression for average prices in order to verify our initial guess for $\bar{p}$. We then iterate untill $\bar{p}$ converges. Once we have found the correct average price for the initial guess of N, we can use the free entry condition (2.7) to verify our guess on N.

Appenix III: Asymmetric Economy

In this appendix we show an asymmetric specification of the model. The symmetry assumption is relaxed only regarding bribes.

On the demand side the introduction of asymmetry has no impact. Consumers have the same linear demand for each variety as before, given by the following equation:

$$q_i(\omega) = \frac{\alpha}{\eta N_i + \gamma} - \frac{1}{\gamma} p_i(\omega) + \frac{1}{\gamma} \frac{\eta N_i}{\eta N_i + \gamma} \bar{p}_i, \tag{2.15}$$

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where $\bar{p}_i = \frac{N_i^e}{N_i} \int_0^{c_i^*} p_i^d(c) g(c) dc + \frac{N_j^e}{N_i} \int_0^{c_{xi}^*} p_j^x(c) g(c) dc$.

Domestic and export profits are now given by:

$$\pi_i^d(c) = (p_i^d(c) - c) q_i^d(c) - m_i,$$

$$\pi_i^x(c) = (p_i^x(c) - \tau c) q_i^x(c) - m_i.$$

The equilibrium conditions are given by the following equations.

Goods market clearing:

$$p_i^d(c) = \frac{1}{2}\left(\frac{\alpha\gamma + \eta N_i \bar{p}_i}{\eta N_i + \gamma} + c\right),$$

$$p_i^x(c) = \frac{1}{2}\left(\frac{\alpha\gamma + \eta N_j \bar{p}_j}{\eta N_j + \gamma} + \tau c\right).$$

Zero cutoff profit conditions: $\pi_i^d(c_i^*) = 0$ and $\pi_i^x(c_{xi}^*) = 0$

Free entry condition:

$$\frac{1}{2\gamma}\left[\int_0^{c_i^*}\left(\left(\frac{\alpha\gamma + \eta N_i \bar{p}_i}{\eta N_i + \gamma} - c\right)^2 - m_i\right) dG(c) + \int_0^{c_{xi}^*}\left(\left(\frac{\alpha\gamma + \eta N_j \bar{p}_j}{\eta N_j + \gamma} - \tau c\right)^2 - m_i\right) dG(c)\right] = f^e.$$

The equilibrium can be obtained by solving this system of equations numerically. The algorithm is constructed in a very similar way as the one used for the solution of the symmetric economy. To find the optimal effort level e_i we iterate over the full model to find the effort level which maximizes the government's objective function.

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Appendix IV: Remoteness

Table 2.2 lists the worlds least and most remote countries ranked in terms of $TradeDist$.

$Tradedist$ for country i is calculated as:

$$TradeDist_i = \frac{\sum dist(km)_{i,j} * TotalExports_j}{\sum TotalExports_j}$$

Where $dist(km)_{i,j}$ is the distance between country i and j, and $TotalExports_j$ is the Total Exports in USD in year 2000 of country j.

$GDPDist$ for country i is calculated as:

$$GDPDist_i = \frac{\sum dist(km)_{i,j} * GDP_j}{\sum GDP_j}$$

Where $dist(km)_{i,j}$ is the distance between country i and j, and GDP_j is the Total GDP in USD in year 2000 of country j.

For the purpose of Table 2.2 we also calculate the unweighted distance, or average geographical distance, $GEODist$ as:

$$GEODist_i = \frac{\sum dist(km)_{i,j}}{N}$$

Where $dist(km)_{i,j}$ is the distance between country i and j, and N is the number of countries in the sample.

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Table 2.2: Distance

The most and least remote countries sorted by TradeDist			
Country	**Trade Dist**	**GDP Dist**	**GeoDist**
New Zealand	14,804	13,730	13,265
Australia	13,557	12,917	12,656
Tonga	13,374	12,608	13,153
Fiji	13,070	12,367	12,998
Vanuatu	12,858	12,221	12,796
Netherlands	4739	5983	6693
Germany	4752	5990	6656
Belgium	4762	6008	6671
Denmark	4781	5942	6720
Luxembourg	4788	6028	6632

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Chapter 3

The impact of trade agreements for LDCs: The case of the South Asian Free Trade Agreement

Joint work with Sarah Stölting

3.1 Introduction

The South Asia Region, comprising Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, Sri Lanka and Afghanistan, is the world's largest regional bloc in terms of population, being home to almost 23 percent of the total world population. It is also one of the world's poorest regions. Despite rapid economic growth in recent years, South Asia accounts for as little as 3% of total world GDP. In terms of international trade, the region is becoming an increasingly important player and is evolving as a major exporter of labor intensive goods such as textiles and jewelry. The intraregional trade share, at 4%, is however extremely low by international standards, leading some commentators to describe it as the most poorly integrated region in the world.

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It is therefore not surprising that the signing, in 2004, of the South Asian Free Trade Agreement (SAFTA) has spurred a lively debate among international policy makers and academics. The treaty is set to almost completely eliminate tariffs within the region for a large number of product categories, and was implemented in 2006.

On the one hand, critics have argued that SAFTA has little trade creating potential, and risks being heavily trade diverting. This argument has been based on the following four points: Firstly, the pre-treaty level of intraregional trade in the region is very low, indicating that the SAFTA countries are unlikely to be 'natural trading partners' (see for example Panagariya (2007)).[1] Secondly, strong non-tariff barriers within the region, including corruption, poor infrastructure and heavy delays at border points, constitute a serious impediment for intraregional trade.[2] Tariff reductions under SAFTA are therefore unlikely to increase trade flows to any larger extent. Thirdly, all South Asian countries maintain very high tariffs towards the rest of the world (Pitigala (2005)). Fourthly, the treaty incorporates a so called negative (or sensitive) list feature, which provides countries with a large amount of discretion in deciding which products should, or should not, be subject to tariff reductions under the treaty. Protectionist governments are likely to protect the relatively uncompetitive industries, thereby excluding from tariff reductions exactly those sectors in which trade creation is likely to occur.

Proponents of the treaty have on the other hand argued that the implementation of the SAFTA treaty is likely to lead to significant trade creation. A recent

[1] According to the natural trading partner hypothesis, welfare gains from trade integration are increasing in the pre-integration regional trade proportion (Lipsey (1960)). However, Iapadre (2000) argues that the intraregional trade share is a poor measure of regional integration and hard to compare across regions. He argues instead for the use of regional bias. The regional bias in trade within the Sout Asia region is similar to regional bias within for example the EU or ASEAN.

[2] See for example Banik and Gilbert (2008) and Ahmed and Ghani (2007).

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ADB/UNCTAD (2008) report finds "...an enormous potential for intraregional trade among SAFTA economies." This assessment is based primarily on observed recent improvements in complementarities between the product baskets produced by South Asian countries. The shift in emphasis from production of agriculture goods to manufacturing, it is argued, has greatly improved the regions potential for intraregional trade. Rapid growth in intraindustry trade is seen as another indicator of the regions potential as an integrated trade bloc. In addition, it is argued, SAFTA could work as a commitment tool, fostering improved policy credibility in the region by locking in uniform trade and investment policies.

In the current paper we aim at contributing to this debate by formally estimating the treaty's impact on intraregional trade flows, as well as how it has affected the region's trade with the rest of the world. Previous papers on SAFTA have in most cases been written prior to the actual implementation of the treaty and have therefore been unable to provide any sort of post implementation assessment. We, on the other hand, have access to post-treaty data and can therefore estimate actual trade creation and diversion[3] resulting from the first wave of tariff reductions. In addition, we provide relatively in-depth descriptive statistics on the extent of trade protection provided under the treaty's negative list provision. We do this firstly as the negative provision plays a direct role in our estimation strategy and secondly because this is an area that has been largely ignored in the previous literature.

The paper also makes a couple of relatively minor methodological contributions.

[3]Trade creation occurs when the lowering of tariffs within the PTA induces agents to switch suppliers from an inefficient producer in the home country, to a more efficient foreign producer based within the PTA. Trade diversion, on the other hand, occurs when the lowering of tariffs induces agents to switch suppliers from an efficient producer based outside the PTA, to a less efficient producer based within the PTA.

The literature on regional trade integration has traditionally relied heavily on gravity equations. Though this methodology has some empirical support, it has been criticized by several authors (see for example Balgati (2001)). When gravity equation models are used it is often very hard to distinguish between regional bias in trade and trade creation resulting from the formation of a regional Preferential Trade Agreement (PTA). Estimates are further likely to suffer from endogeneity. In an attempt to deal with these issues we make use of the fact that, in the case of SAFTA, some goods have been excluded from the treaty. This allows us to estimate both trade creation and diversion using a difference in difference estimator. Though we think that this is an improvement on the standard literature, we still fall short of a full causal identification, as this would require the negative lists to be constructed randomly. We also depart from the standard literature in that we use a quasi maximum likelihood estimator instead of OLS with log-transformations. OLS with log-transformation has been shown to introduce significant bias under presence of heteroskedasticity (Santos Silva and Tenreyro (2006)).

According to our estimates, the first wave of tariff reduction under SAFTA has give rise to significant trade creation. Intraregional trade flows for eligible products have increased, on average, by as much as 35-40%. This figure is comparable to Cheng and Wall (2005)'s estimates for MERCOSUR and significantly higher than estimates for other trade blocs such as the EU and NAFTA. Certain sectors have benefited more than others, and in line with the predictions of ADB/UNCTAD (2008), we find that increased trade in agriculture and textile products have been one of the main drivers of the results. We do not find any strong evidence of trade diversion. In fact, our basic estimates indicate that the SAFTA treaty, somewhat surprisingly, has increased trade

with the rest of the world. Though this result, sometimes called Open Block effects (Eicher, Henn and Papageorgiou 2008)), is not unknown in the literature, it is hard to explain theoretically. In the case of SAFTA however, the implementation of the treaty has been accompanied by significant reductions in MFN tariffs towards outside trading partners. When we control for tariffs the Open Block effects are greatly diminished and with some specifications disappear altogether.

Though the SAFTA treaty has so far been largely successful in spurring intraregional trade, substantial room for improvement still exists. In order to boost trade creation, and limit the risk of trade diversion, the scope of the negative list provision should be greatly reduced. One possibility would be to introduce rules that regulate the total trade value that can be subject to exemption. Such rules would discourange countries from putting relatively more important intraregional trading products on the negative list.

The remainder of the paper is organized as follows: In Section 3.2 we provide key statistics and an overview and of trading relationships in South Asia. Section 3.3 provides the historical background to the treaty and describes its most important features. In Section 3.4 we take a closer look at the negative list provision and discuss its implications. Section 3.5 provides a brief overview of the structure of external tariffs in the SAFTA countries. In Section 3.6 we discuss trade creation and trade diversion and provide estimates for SAFTA. Section 3.7 concludes.

3.2 The South Asia Region

Though growing rapidly, South Asia is still a small player in international trade. Since 2000 the region's share of world trade has been steadily increasing from around 1.2% in 2000 to 2.2% in 2008, but it is still very small compared to most other trading blocks.[4] Textiles and Textile Articles are by far the regions top export products, making up 29% of total exports, followed by Pearls, Precious Stones and Metals (13%) and Mineral Products (11%). The most important import goods are Mineral Products, representing 31% of total imports, followed Machinery and Mechanical Appliances (16%) and Pearls, Precious Stones and Metals (13%).[5] The importance of Precious Stones and Metals on both the import and export side illustrates India's strong position in Gem and Jewelry[6] industry.

Europe is the region's most important trading partner, making up around 16% of total trade[7], followed by North America (9%). The region also has strong trade links with Japan and China. As pointed out in the introduction, as a whole, the South Asian countries trade relatively little with each other. The intra-regional trade share is a mere 4%. However, as illustrated in Figure 3.1, some countries are heavily dependent on intraregional trade. For example, Nepal and Bhutan both rely on the region for over 50% of their trade. Figure 3.1 also illustrates India's dominance in intraregional trade relationships: Overall 45% of trade between South Asian countries take place with India as the importer or exporter. The equivalent figure for Nepal is 99% and for Bhutan 94%. India's dominance is based on two factors. Firstly, it is by far the regions

[4]The trade data is obtained from the COMTRADE database.

[5]All numbers as an average 2000-2008.

[6]For example, India's market share in diamonds is 55% in terms of value and 95% in terms of pieces.

[7]Total tade is Imports plus Exports.

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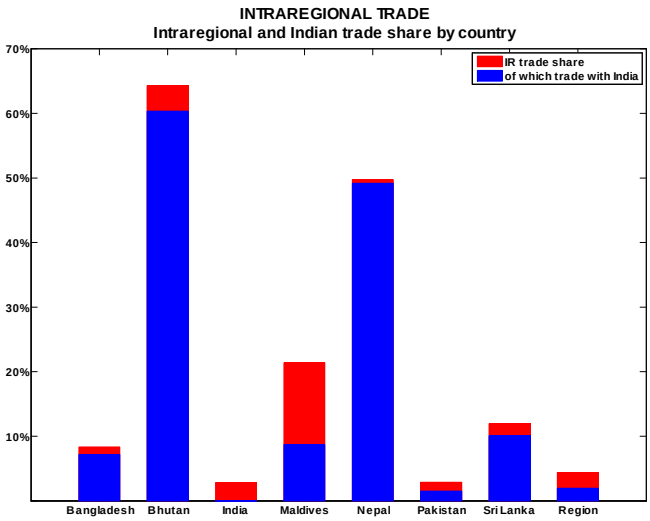
Figure 3.1: Intraregional trade (Source Comtrade, 2000-2008 averages)



largest economy. Secondly, the country occupies a central geographical position. In fact, all countries in the region, with the exception of Afganistan, boder India, and for most countries India constitutes the only regional neighbour.

In terms of intraregional trade, Textiles and Textile Articles is the most important product category, making up 18% of total intraregional trade flows, followed by Agriculture (15%) and Chemical products (13%).

3.3 SAFTA: History and Background

The South Asian Free Trade Agreement is the most recent, and by far the most ambitions, in a series of treaties aimed at promoting integration within the South Asian

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region.[8] The treaty was signed by seven founding members[9] in Pakistan in January 2004, and came into force in January 2006. The first wave of tariff reductions took place in July of the same year. The schedule for tariff reductions consists of two stages, as shown in Appendix I, Table 3.3, and gives the least developed countries of the region (LDCs)[10] more time to reach the goal of tariffs between 0 and 5 percent.

A priori all products are destined for tariff reductions. However, the principle of a negative (or sensitive) list applies, which means that some products can be excluded from the liberalization process. Each member country is allowed to put up to 25 percent of the total number of products at a 6-digit HS classification on its negative list. This substantial amount of protected goods is to be gradually reduced over the next years[11]. Section 3.4 provides a more in-depth description of the negative list provision of the treaty.

In addition to the negative list, products have to fulfill the rules of origin (RoO) restrictions in order to benefit from tariff reductions. To comply with RoO, goods have to undergo substantial manufacturing process in the member countries before being exported. Sufficient transformation is achieved by the twin criteria of change of tariff

[8]The first step towards further regional integration in South Asia was taken in 1985 with the creation of the South Asian Association of Regional Cooperation (SAARC). SAARC aimed at fostering regional economic cooperation, as well as promoting collaboration on social and cultural issues, but had limited implications in regards to trade relations. A second step was made in 1993, with the signing of the South Asian Preferential Trade Agreement (SAPTA) by all SAARC members. The treaty was implemented in 1995 and its main objective was the creation of a multilateral framework for region-wide trade integration. However SAPTA suffered from too restrictive rules of origin, lack of trade facilitation measures and trade preferences were granted only on a product-by-product basis. The agreement therefore had limited success in fostering intraregional trade (Baysan, Panagariya and Pitigala (2006)).

[9]Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka. Afghanistan joined the FTA as eighths member in 2007.

[10]LDCs: Afghanistan, Bangladesh, Bhutan, Maldives and Nepal.

[11]A first revision round took place in 2009.

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heading at a 4-digit HS level and a domestic value added content of 40% for non-LDCs, 35% for Sri Lanka and 30% for LDCs. The SAFTA treaty also establishes a mechanism for compensation of customs revenue loss and technical assistance for LDCs.

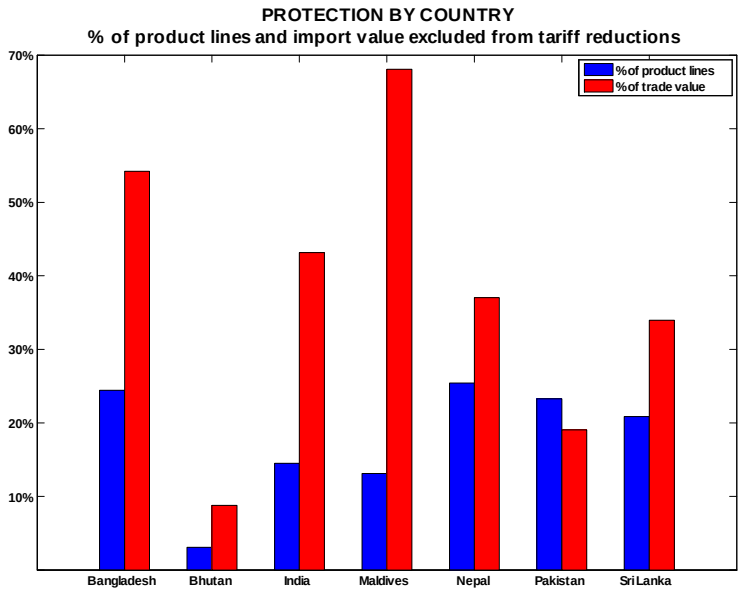
3.4 The Negative List

Having provided a basic overview and background to SAFTA we will now take a closer look at the negative list provision of the treaty. The negative list is arguably one of the most problematic features of the SAFTA treaty. By leaving governments free to choose how to allocate tariff reductions across sector groups, the treaty provides significant scope for governments to protect uncompetitive industries while opening up for trade in sectors where the country already has a regional competitive edge. If countries choose to negative the list product categories in which they have a regional comparative disadvantage, very little trade will be created.

As explained above, the SAFTA treaty allows member countries to exclude from tariff reductions a total of 25% of all product lines on the 6-digit (HS classification) level. When the SAFTA treaty was signed in 2005 it was agreed that a revision of the list would take place every four years, and indeed revised negative lists have been published by the SAARC secretariat in 2009. However, a clear agenda about the extent of reductions over the next years has never been set.

The actual number of categories excluded differs significantly between member countries. While most countries keep more than 20 percent of all items on the negative list, India and the Maldives protect around 15 percent and Bhutan only around 3 per-

Figure 3.2: Protection by country (Source Comtrade, 2000-2005 averages)



cent.[12] The proportion of product categories included on the negative list is however a poor measure of how important these lists are as an impediment to trade. Firstly, as discussed above, the mere fact that products can be excluded is problematic if this is done to protect industries in which complementarities in comparative advantages exist. Secondly, 25% of product categories does not necessarily correspond to 25% of import flows. By designating important import products as negative listed, and leaving little traded, or not at all traded, items on the positive list, protectionist member countries can effectively exclude a large proportion of trade from the treaty.

Figure 3.2 illustrates this. We calculate the proportion of total imports (average

[12]Bangladesh, India and Nepal maintain two separate lists, one for non-LDC and one for LDC members. In all three cases the negative list pertaining to LDCs feature a marginally lower number of product categories. Details can be found in Table 3.4, Appendix 1.

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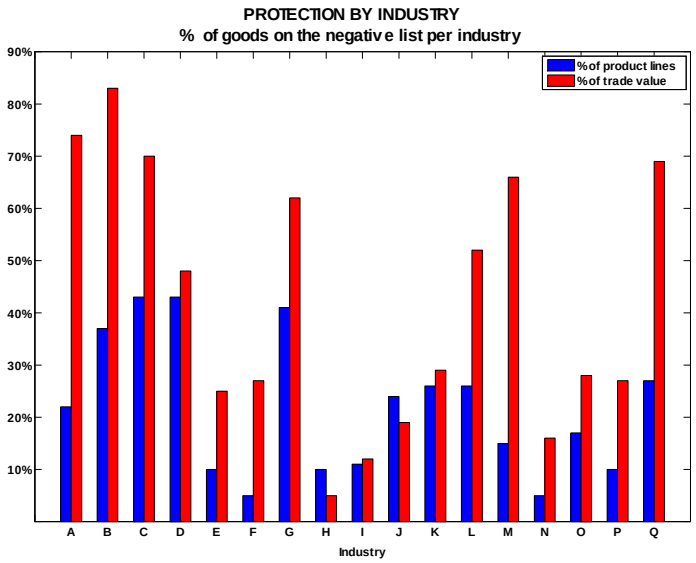
Figure 3.3: Protection by Industry (Source, Comtrade, 2000-2005 averages)



from 2000 to 2005) excluded from tariff reductions due to the negative list. Though India has placed only around 15% of product categories on its negative list, these represent 43% of the country's intraregional imports, the equivalent figure for Bangladesh is 54% and for the Maldives 68%. Overall, approximately 43% of total intraregional imports of SAFTA members pertain to product categories excluded from tariff reduction. It is clear that with the exception of Pakistan, all countries in the region have opted to place relatively important import products on the negative list, while eliminating tariffs on less central products. As the product lines which pre-treaty were the most traded also are likely to be the ones in which the member countries are natural trading partners, this practice greatly reduces the scope for trade creation.

The next step is to look at which industries the member countries' have chosen to

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exclude. Naturally this differs from country to country; however, we can present a broad overview. We calculate the proportion of product lines, as well as the proportion of trade value, pertaining to negative list items on average for all SAFTA countries for 17 HS Sector Categories[13]. As can be seen in Figure 3.3, Agriculture products, represented by sector categories A and B, are to a large extent excluded from the treaty. In these categories between 70% and 85% of pre-treaty trade took place in products which post treaty are not be subject to tariff reductions. For individual countries the figures are even higher, Sri Lanka has for example excluded 96% of its vegetable imports from tariff reductions. Other heavily protected industries include Plastics and Rubber (G), Footwear (L), Articles of Stone (M) and Transport Equipment (Q).

What can we say about how product categories have been selected for negative list inclusion? In the introduction to this section, we argued that the negative list provision would be the most harmful if countries negative listed products in which they have a regional competitive disadvantage, while reducing (or eliminating) tariffs on product categories in which they already have regionally competitive industry. Naturally, uncompetitive industries have more to fear from import competition, and are therefore likely to lobby harder for negative listing. The question is to what extent such demands have been accommodated.

If they have, we should be able to observe a negative correlation between negative list inclusion and some measure of relative regional comparative advantage. However, as comparative advantage per se is not observable, testing for such a correlation not straight forward. We therefore have to resort to what in the literature is called Revealed Comparative Advantage (RCA) (Balassa 1965). RCA uses observed trade patterns to

[13]See Appendix 2 for a more detailed description of these Sector Categories.

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deduce patterns of comparative advantage[14]. Note however that as observed trade patterns are partly a result of existing levels of trade protection, regressing trade protection on RCA gives rise to significant endogeneity problems. The results presented below should therefore be interpreted with caution.

We calculate average regional RCA for 2000-2005 on a 6-digit product category basis (see Appendix III for calculation) and run a probit on negative list inclusion country by country. Estimates are presented in Table 3.6, Appendix III. Overall the results are mixed. The larger countries in the region, especially India, do indeed seem to bias their negative lists towards products in which they have a comparative disadvantage, thus limiting the potential for trade creation. In India's case, an increase in the RCA index by 1, is associated with a 50% decrease in the probability of negative list inclusion. For Bangladesh and Pakistan the estimates are however much smaller, and for the smaller countries reversed. I.e. the smaller countries in the region, especially Sri Lanka, seem to favor including products for which they have a comparative advantage on the negative list, thus limiting the scope of the negative list contributing to trade diversion. However, as stated above, these estimates should be interpreted with caution.

3.5 Tariff structure

To analyze the impact of tariff reductions under SAFTA, we need to understand the tariff structure in place prior to the treaty, as well as the changes in external tariffs adopted alongside of the treaty.

[14]The higher the RCA rating, the stronger is the country's reveled regional comparative advantage in the relevant product line. An RCA rating of one implies a neutral degree of comparative advantage.

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The South Asian countries[15] have traditionally maintained high levels of tariffs across product categories, and this has been one of the main arguments put forward against the formation of a regional PTA. However, though tariff levels in South Asia in general, and India in particular, are still relatively high by international standards, they are on a clear downward trend. Figure 3.4 shows an unweighted average of SAFTA area MFN tariffs between 2000 and 2009.[16] Since we are interested in analyzing the potential for trade diversion stemming from the SAFTA treaty we distinguish between negative and positive list products. As negative list products are excluded from the treaty, it is the level and the adjustment of tariffs in positive list item that should be our main concern.

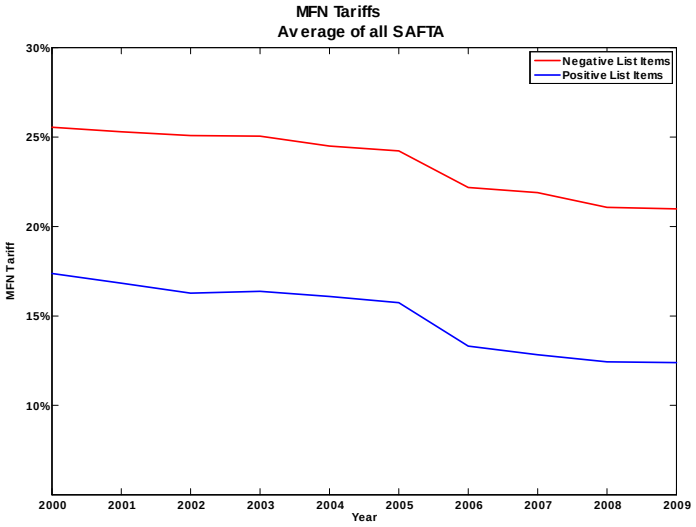
The first thing to note in Figure 3.4 is that negative list tariffs are on average 50-70% higher than tariffs on positive list items. This is not only true on average, but also for each country individually. The product lines that the SAFTA countries have decided to protect from regional competition is the same as those that enjoy strong protection from competitors outside the region. The second thing to note is that MFN tariffs, on average, have been reduced significantly over the period. The implementation of SAFTA has hence coincided with substantial tariff reductions with respect to the rest of the world.

Figure 3.5 provides a closer look at the magnitude of tariff reductions by country over the period. We calculate the percentage change in MFN tariffs between the pre-

[15] With the exception of Afghanistan and Bhutan, all nine SAFTA members are also members of the WTO.

[16] Data WTO. We assume that if a country does not report tariffs for a specific year, that means that tariffs were unchanged from the previous year. Bhutan and Afganaistan have been excluded since we do not have reliable tariff data for these countries.

Figure 3.4: MFN tariffs (Source WTO)



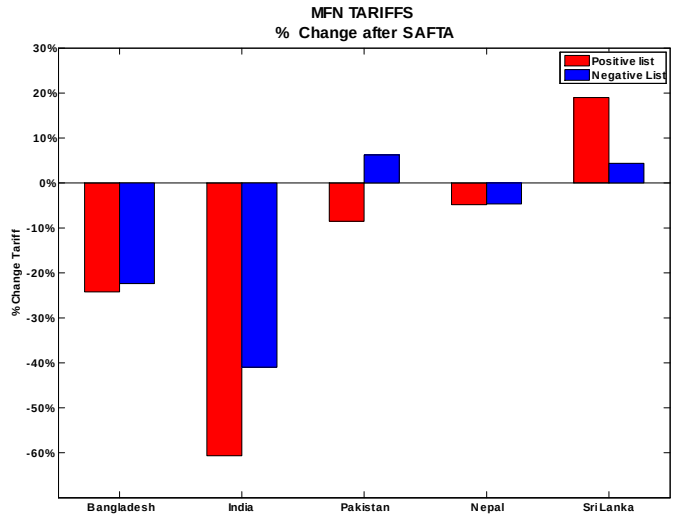


Figure 3.5: Change in MFN tariffs (Source WTO)

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and post SAFTA period for negative- and positive list items respectively.[17] Pre SAFTA tariffs are calculated as average MFN tariffs for the years 2000-2005, post SAFTA tariffs are calculated as average MFN tariffs for the years 2006-2009. The average reduction in tariffs noted in Figure 3.4 is clearly to a large extent driven by Indian tariff reductions. Indian tariffs were also the highest in the pre SAFTA period, averaging around 38% for negative list items and 29% for positive list items, compared to an average of 22.5% and 12.5% respectively for the rest of the region. However, all countries in the region with the exception of Sri Lanka have reduced tariffs. An important observation is that tariffs have been reduced to a larger extent for positive list items than for negative list items. Pakistan has in fact increased tariffs on negative list items, while reducing them for positive list items. This emphasis of reducing tariffs for product lines eligible for tariff reductions under SAFTA should ease concerns about a trade diverting outcome of the treaty.

In the next section we will move on to formally testing trade creation and trade diversion stemming from the first wave of tariff reductions under SAFTA.

3.6 Trade Creation and Trade Diversion

The welfare impact of PTAs on member and non member countries has long been an important issue for policy makers and economists, especially given the large increase in the number of such treaties in recent years. In theory the welfare effect of the creation of a PTA is ambiguous as it represents a move from one second best equilibrium to another second best equilibrium. Viner (1950) suggested an approach to identify

[17] Data WTO. The Maldives, Afghanistan and Bhutan have been excluded due to lack of reliable data.

welfare improving and welfare deteriorating PTAs. He argued that PTAs that are trade creating are beneficial, whereas those that are trade diverting are detrimental to welfare.

Trade creation occurs when the lowering of tariffs within the PTA induces agents to switch suppliers from an inefficient producer in the home country, to a more efficient foreign producer based within the PTA. Trade diversion, on the other hand, occurs when the lowering of tariffs induces agents to switch suppliers from an efficient producer based outside the PTA, to a less efficient producer based within the PTA. Trade creation therefore implies that the PTA gives rise to more trade between member countries, wheres trade diversion implies that trade is decreased with countries that are not members of the PTA.

More recent research has shown that trade diversion is not necessarily detrimental for welfare (for an overview of the literature see Cheong and Wong (2009)). In general Viner's theory holds under perfect competition. However, under imperfect markets, gains from trade diversion can occur as profits are shifted from non PTA member suppliers to PTA member suppliers. Having said that, the estimation of trade creation and diversion still remains the workhorse for determining the welfare effects of individual PTAs.

In the following section we will estimate trade creation and diversion stemming from the first wave of tariff reductions under SAFTA. We do this to provide a first evaluation of the success of the treaty.

3.6.1 Estimation Strategy and Results

The standard literature on regional PTAs has relied almost exclusively on cross sectional gravity models for the estimation of trade creation/diversion. In such models, the log of aggregated trade values are typically regressed on a set of gravity controls, while trade creation and diversion are estimated by the inclusion of dummies for regional PTAs. As pointed out by several authors (for an overview see Baltagi (2001) or Egger (2005)) gravity equations suffer from a number of both theoretical and empirical problems, and generally lead to highly biased estimates. For example, cross sectional models cannot distinguish between trade creation resulting from the creation of a PTA, and regional bias in trade. If the member countries of a PTA had strong trade links already before its implementation (which might have been a reason for the creation of the PTA in the first place), the estimates for trade creation are likely to suffer from a heavy upward bias. In the current paper we will therefore instead rely on panel data estimation in a framework similar to that suggested by Cheng and Wall (2005).

Like in the standard literature, Cheng and Wall (2005) regress the log of aggregated trade values on a set of gravity controls, and include dummies to estimate trade creation/diversion. However, instead of using cross sectional data, Cheng and Wall (2005) use a panel data set with period- and country pair fixed effects. The country-pair effect picks up omitted variables that are cross-sectionally specific but remain constant over time. Such variables could include distance, common culture/language, contiguity etc. Trade creation and diversion can then be estimated by the inclusion of dummies for PTA membership. The country pair fixed effects eliminate the endogeneity problem caused by endogenous formation of PTAs and regional bias present in cross sectional models. This type of difference estimator is however not necessarily very robust. The

problem is that it only picks up the change in total trade flows before and after the introduction of the treaty, without using any appropriate controls. Any changes in bilateral trade relationships, apart from the introduction of the PTA, are supposed to be captured by the period fixed effects, which are common for all trading partners. To solve this problem we try to improve upon Cheng and Wall (2005)'s approach by using a difference in difference estimator. We can do this as the negative list provision of the treaty effectively excludes almost half of trade flows from tariff reductions, and thereby provides us with an appropriate set of controls. By using within region controls we can also estimate trade creation on within region trade data.

We also depart from the mainstream gravity equation literature by estimating our model using pseudo-maximum-likelihood (PML) rather than, as is the industry standard, using a log linearized model estimated by OLS. This means that we can use raw trade values, rather than trade values in log form. Santos Silva and Tenreyro (2008) show that log-linearization lead to severely biased estimates under the presence of heteroscedasticity. In addition, by using PML and non-log linearized trade data, we do not have to worry about potential bias introduced due to the large number of zero value observations.[18]

One drawback with our difference in difference methodology is that it does not allow us to estimate trade creation and trade diversion in a single model. Doing so would require the estimation of two separate difference-in-difference-in-difference estimators, and significantly complicate the interpretation of our results. Instead we create separate data sets, and run separate models for estimation of trade creation and diversion. It should also be noted, that even though we do believe that we are improving upon

[18] When log-linerization is used zero trade values are either ignored completely, or treated by adding 1 to all trade values before taking logs.

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the methodologies traditionally used in the literature, we still fall short of full causal identification. The assignment of product lines to the respective countries negative and positive lists should be seen as the outcome of a political economy model, rather than as an outcome of a random assignment. How is this likely to effect our estimates? Earlier in the paper we have argued that the excluded product categories are likely to be the ones for which trade creation is the most likely to occur. If this is the case our estimates would be biased downwards, and should be considered a lower bound for potential trade creation.

Estimation of trade creation

We estimate within SAFTA trade creation using two separate data sets. The first dataset contains data on intraregional imports for each SAFTA member on the 6-digit product category level between 2000 and 2008. The second dataset again contains data on intraregional imports for the same period, but instead of using the 6 digit level, we have aggregated the data to yearly observations of imports in positive and negative list items respectively. The disaggregated dataset allows us to look at individual industries separately, while the aggregated dataset is less likely to suffer from measurement errors and potential errors related to product classification concordance. The aggregated dataset is also, as we will see below, more easily comparable to the dataset used for estimation of trade diversion.

We collect data on yearly intraregional trade flows between 2000-2008 from the UN Comtrade database. Using the HS-96 classification, data is available for all years for India, Maldives and Sri Lanka. Data is available for Bangladesh between 2000 and 2007 and for Pakistan between 2003 and 2008. For Bhutan we only have data for 2005

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and 2008. As we have only pre-treaty data for Nepal, and no data for Afghanistan, we are forced to exclude both these countries from our analysis. The disaggregated dataset is made up of 263,338 observations of bilateral 6-digit category trade flows, of these 52.8% are zero value observations. The aggregated dataset set is made up of 520 observations of bilateral negative and positive list trade flows, of these 10% are zero value observations. We further collect data on population and GDP from the WorldBank World Development indicators. The respective countries negative lists are obtained form the SAARC Secretariat and from national departments of commerce.

The following model is estimated on both datasets:

$$Y_{i,j,c,t} = \alpha_0 Z_{i,j,c,t}^{\beta_2} \varepsilon^{\alpha_t D_1 + \alpha_{i,j,c} D_2 + \alpha_{\text{positive},i,c} D_3 + \alpha_{SAFTA,t} D_4 + \beta_1 (D_3 D_4)}, \tag{3.1}$$

where $Y_{i,j,c,t}$ is the import value of country i from country j in commodities c at time t, c being either a 6-digit product line or the aggregated value of negative or positive list item imports. α_0 is the proportion of the intercept that is common to all years and trading pairs, α_t denotes the year-specific effect common to all trading pairs and $\alpha_{i,j,c}$ is the time in-variant country-pair effect. The country-pair effect is constructed differently for the two datasets. In the aggregated dataset it is a set of dummies for each country pair. In the disaggregated dataset it is instead a set of dummies representing each country-industry pair, where industries are aggregated to the 2 digit level. $\alpha_{\text{positive},i,c}$ is a dummy equal to 1 if the respective commodity group is listed on the positive list, i.e. is eligble for tariff reductions under SAFTA. $\alpha_{SAFTA,t}$ is a dummy equal to 1 if the observation is drawn from the period after the first wave of tariff reductions, i.e. 2006, 2007 and 2008. $Z_{i,j,c,t}$ is the 1*k vector of gravity controls.

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If SAFTA has had a positive impact on trade flows, trade volumes should increase in products on the positive list, but we should see no impact on those on the negative list. β_1, the coefficient for the interaction term $\alpha_{\text{positive}} * \alpha_{SAFTA}$, tests for the difference in difference between trade in negative list and positive list commodities before and after the implementation of the treaty. A positive and statistically significant value for β_1 should hence indicate that the treaty has increased intraregional trade flows. Note that β_1 can be interpreted both as a parameter for trade creation due to SAFTA and as a parameter for trade destruction due to the existence of a negative list. Hence, it does not only tell us something about what has happened so far, but also about the potential benefits in terms of trade creation that could be achieved by reducing the number of items on the negative list.

Table 3.1 summarizes the results. Columns (1) and (2) present results obtained using the disaggregated dataset (with and without fixed effect, FE), columns (3) and presents results obtained using the aggregated dataset.

According to our estimates SAFTA has increased intraregional trade flows for eligible goods by, on average, as much as 40%. This figure is comparable to Cheng and Wall (2005)'s estimates for MERCOSUR and significantly higher than their estimates for other trade blocs such as the EU and NAFTA. The results are similar regardless of specification and dataset used. Despite the significant non-tariff barriers to trade present in the region, the the implementation of the SAFTA treaty has led to significant increases in intraregional trade, and that in a relatively short period of time.

The negative coefficient on PosList in the disaggregated dataset simply reflects that, as discussed in Section 3.4, all countries have decided to place relatively important

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Table 3.1: Trade Creation - Estimation results

	(1)	**(2)**	**(3)**
	6-figure	**6-figure**	**AG0**
Safta*PosList	0.37*	0.39**	0.41**
	(0.16)	(0.09)	(0.15)
Safta	-4.6**	0.1	-0.74
	(1.90)	(0.13)	(0.6)
PosList	-0.84**	-0.94**	0.29**
	(0.08)	(0.07)	(0.085)
Time FE	YES	NO	YES
Industry-Partner FE	YES	NO	
Trading pair FE			YES
R-square	0.26	0.1	0.95
N	263,339	263,339	520

* Significant at 5% level, ** Significant at 1% level.
Robust standard errors.

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product categories on the negative list, and left less important ones on the positive list. The fact that the sign on the coefficient changes when we move to the aggregated dataset simply reflects that total trade is larger in positive list products as they on average represent more than 75% of product categories.

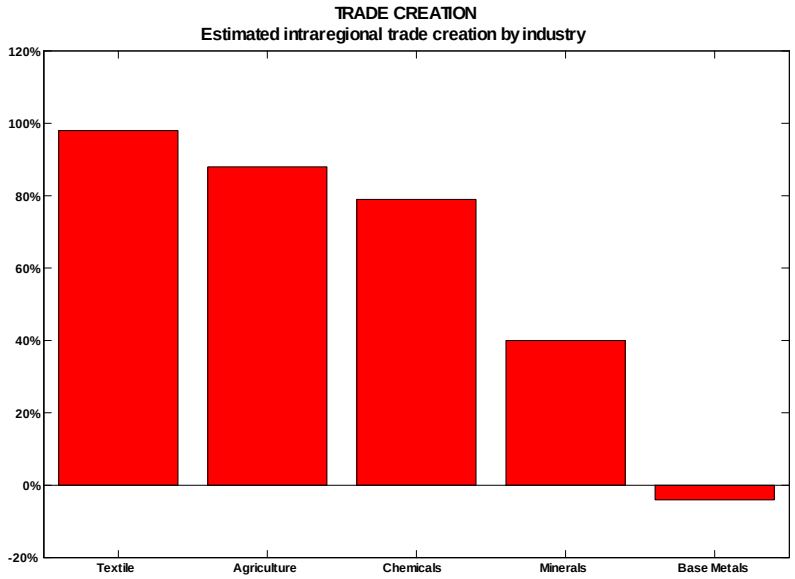
We can also estimate trade creation by industry. Figure 3.6 shows estimates for trade creation by industry for the top five intraregional trading sectors. Together they represent approximately 70% of intraregional trade (average 2000-2008). The corresponding results table can be found in Appendix IV. Trade creation seems very much driven by the most important intraregional trading products. According to our estimates SAFTA has almost doubled trade in Textile and Textile Articles (K), also Agricultural products (A+B), and Chemical Products (F) have enjoyed large increases in trade volumes due to the implementation of SAFTA. The fact that the major trading products are the ones driving trade creation is not very surprising. When trade is liberalized one would expect trade to expand mainly within those industries where strong trading relationships already exist.

Estimation of trade diversion

For the estimation of trade diversion we collect data on extra-regional bilateral import flows, that is imports to all SAFTA countries from all countries outside the SAFTA region. We limit ourselves to constructing a dataset aggregated to the level of import flows in negative and positive list items.[19] The aggregated dataset is made up of 12,334 observations, of these 29% are zero value observations. We have also collected data on

[19] Collecting data on all trading partners on a 6 digit level would result in a dataset of approximately 30 million observations. This is significantly more than our software can handle.

Figure 3.6: Trade creation by industry



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MFN tariffs from the WTO.

Again, we estimate model (3.1). If SAFTA has been trade diverting, we would expect imports in positive list items from countries outside the SAFTA area to have been reduced as a result of the treaty. By the same reasoning as for the estimation of trade creation, we would therefore expect β_1 to be negative if the SAFTA treaty has been trade diverting with respect to the rest of the world.

Table 3.2 summarizes the results on trade diversion. At a first inspection the base case estimates in column 1 are quite surprising. The coefficient on β_1 is actually positive, indicating that the implementation of the SAFTA treaty has increased trade with the rest of the world. We are hence observing interregional trade creation instead of trade diversion. This result, called Open Block effects (Eicher, Henn, and Papageorgiou (2008)), is not unknown in the literature on PTAs , but is hard to explain with robust theory.

However, as noted in Section 3.5, the introduction of the SAFTA treaty has coincided with significant reductions in MFN tariffs for most countries. If these reductions had been uniform across negative and positive list items, they would have had no impact on our estimates. However as pointed out, they were not. Instead, trade liberalization has targeted mainly positive list items. We do not know if this has been done as a conscious effort to counter trade diversion or for some other reason, but these targeted reductions might explain the observed result. We therefore introduce log tariffs as a control in our model. The results are listed in column 2. β_1 is more than halved and is now no longer statistically significant. It seems as if a large part of the Open Block effects stem from tariff reductions.

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Table 3.2: Trade Diversion - Estimation results

	(1)	**(2)**	**(3)**
	AG0	**AG0**	**AG0**
Safta*PosList	0.22*	0.10	-0.09
	(0.11)	(0.11)	(0.12)
Safta	0.11	-0.11	0.32
	(0.25)	(0.24)	(0.33)
PosList	1.63**	1.50**	1.79**
	(0.07)	(0.08)	(0.09)
Tariffs		-0.38**	-0.37**
		(0.08)	(0.08)
Time FE	YES	YES	YES
Trading pair FE	YES	YES	YES
Excl. Bang,Bhut,Mal	NO	NO	YES
R-square	0.94	0.94	0.94
N	12,334	11,784	7,614

* Significant at 5% level, ** Significant at 1% level.
Robust standard errors.

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As mentioned in Section 3.5 we only have access to limited tariff data from Bangladesh, Maldives and Bhutan. We therefore re-estimate the model excluding these countries. The results are presented in column 3. The estimate for β_1 is now negative at 9%, i.e. we are observing trade diversion[20]. Note however that this result is not even close to being statistically significant on any reasonable level.

To conclude, our estimates indicate that at least the first wave of tariff reductions under SAFTA could have given rise to significant trade diversion, had they not been accompanied by significant reductions in tariffs towards the outside world. However, by reducing tariffs on positive list products such an outcome has been avoided.

3.7 Conclusion

The current paper provides an overview and analysis of the SAFTA treaty. We formally estimate trade creation and trade diversion stemming from the first wave of tariff reductions and find strong evidence of intraregional trade creation. According to our estimates the SAFTA treaty has increased trade between the member countries (in eligible goods) by, on average, as much as 40%. This is quite a high figure compared to estimates for other PTAs. Trade creation seem to have been particularly high in the region's most important trading goods, such as textiles and agricultural products. According to our estimates, trade in eligible textile products has increased by almost

[20] A reduction in outside trade by 9% represents a significantly larger volume of trade than the estimated increase in regional trade of 41%. In terms of volume the SAFTA treaty would therefore have been strongly trade diverting (the net effect would have been a reduction in trade volumes of around 8%.

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100% and trade in agriculture products by almost 90% as a result of the implementation of the treaty.

Trade diversion appears to have been limited. However, this is mainly a function of the fact that the implementation of the treaty has coincided with significant reductions in external tariffs. Had these tariff cuts not taken place, our most pessimistic estimate indicate that trade diversion could have been quite large, around 9% of extraregional trade. This figure is however not statistically significant, nor robust to model specification.

The negative list provision of the treaty severely limits its scope and constitutes one of SAFTA's most problematic features. Despite the fact that member countries are limited to assigning 25% of 6-digit product categories to their negative list, these lists represent over 42% of total trade flows.

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Appendix I: The SAFTA treaty

Table 3.3 provides an overview of the timing of the implementation of the SAFTA treaty. Table 3.4 lists the number of 6 digit product categories excluded from tariff reductions by country.

Table 3.3: The SAFTA treaty

	Non-LDCs	LDCs
Phase 1	Duration: 2 years. Existing tariff more than 20%: reduction to a maximum tariff of 20%. Existing Tariff less than 20%: annual tariff reduction by 10%	Duration: 2 years. Existing tariff more than 30%: reduction to a maximum tariff of 30%. Existing Tariff less than 30%: annual tariff reduction by 5%.
Phase 2	Duration: 5 years for India and Pakistan, 6 years for Sri Lanka. All tariffs have to be reduced to levels between 0 and 5%, in equal annual installments with at least 15% reduction annually.	Duration: 8 years. All tariffs have to be reduced to levels between 0 and 5%, in equal annual installments with at least 10% reduction annually.

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Table 3.4: The Negative List

	Total Number of products on the Negative List		**Coverage as % of 6-digit HS product line**	
Country	**Non-LDC**	**LDC**	**Non-LDC**	**LDC**
Afghanistan	1072		20.52%	
Bangladesh	1253	1249	23.99%	23.91%
Bhutan	158		3.02%	
India	863	742	16.52%	14.20%
Maldives	671		12.84%	
Nepal	1336	1300	25.57%	24.89%
Pakistan	1190		22.78%	
Sri Lanka	1067		20.42%	

Appendix II: HS Sector Categories

Table 3.5 lists the HS Sector categories used in this paper together with their respective category code.

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Table 3.5: HS Sector Categories

Category	HS-Code	Product description
A	01-05	Animals & Animal Products
B	06-14	Vegetable Products
C	15	Animal Or Vegetable Fats
D	16-24	Prepared Foodstuffs
E	25-27	Mineral Products
F	28-38	Chemical Products
G	39-40	Plastics & Rubber
H	41-43	Hides & Skins
I	44-46	Wood & Wood Products
J	47-49	Wood Pulp Products
K	50-63	Textiles & Textile Articles
L	64-67	Footwear, Headgear
M	68-70	Articles Of Stone, Plaster, Cement, Asbestos
N	71	Pearls, Precious Or Semi-Precious Stones, Metals
O	72-83	Base Metals & Articles Thereof
P	84-85	Machinery & Mechanical Appliances
Q	86-89	Transportation Equipment
R	90-97	Miscellaneous

Appendix III: RCA

RCA for country i and product category j in year y on a 6-digit level is calculated according to Balassa (1965):

$$RCA_{i,j,y} = \frac{E_{i,j,y}/E_{i,t,y}}{E_{n,j,y}/E_{n,t,y}}$$

where $E_{i,j,y}$ is intraregional exports of country i in commodity j in year y, $E_{i,t,y}$ is total intraregional exports of country i in year j, $E_{n,j,y}$ is total intraregional exports of all regional countries in commodity j in year y and $E_{n,t,y}$ is total intraregional exports in year y.

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Table 3.6: RCA - Estimation results

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Bangladesh	**Bhutan**	**India**	**Maldives**	**Nepal**	**Pakistan**	**Sri Lanka**
RCA	-0.03**	0.00	-0.51**	0.00	0.06**	-0.02	0.09**
	(0.01)	(0.01)	(0.05)	(0.00)	(0.01)	(0.01)	(0.01)
R-square	0.00	0.00	0.02	0.00	0.01	0.00	0.05
N	1480	333	4826	1167	2014	2858	3457

* Significant at 5% level, ** Significant at 1% level.
Robust standard errors.

Appendix IV: Trade Creation by Industry

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Table 3.7: Trade Creation by Industry - Estimation Results

	(1)	**(2)**	**(3)**	**(4)**	**(5)**
	K	**A+B**	**F**	**E**	**O**
Share IR trade	18%	15%	13%	12%	11%
Safta*PosList	0.98**	0.88*	0.79**	0.40	-.04
	(0.30)	(0.43)	(0.30)	(0.67)	(0.27)
Safta	-4.82*	-1.21	-1.85	0 .90	-3.18
	(2.34)	(1.70)	(2.35)	(0.75)	(1.77)
PosList	0.2	-2.36**	-1.21**	-0.77*	-0.75**
	(0.14)	(0.22)	(0.18)	(0.36)	0.18
Time FE	YES	YES	YES	YES	YES
Trading pair FE	YES	YES	YES	YES	YES
R-square	0.14	0.27	0.17	0.2	0.19
N	48,996	18,862	32,653	5,436	28,861

* Significant at 5% level, ** Significant at 1% level.
Robust standard errors.

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