Risk and Reward of Embracing Globalization: The Governance Factor

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"Shui Ke Zai Zhou, Yi Ke Fu Zhou." (Water can carry a boat; It can also sink a boat.)

WEI Zheng, Prime Minister for Emperor Tang Taizhong,
in the Chinese Tang Dynasty, early 7th century

1. Introduction and Overview

The statement by a 7th century Chinese prime minister quoted above can be applied aptly to the current discussion on globalization as well. Globalization can be good, and globalization can be bad. So which is it? Does it depend on the home country conditions, and particularly, the quality of public governance? Would globalization itself provide impetus for the home country to change its public governance? These are the questions that this paper hopes to shed some light on.

Many things in life have a beneficial and a less beneficial sides. Rains can help crops to grow, but can also make some people sick, especially if they don't carry umbrellas. The Internet facilitates information exchange, but can also spread computer viruses (remember the "I Love You" bug?), especially if one is not equipped with an appropriate anti-virus kit.

In the 1980s and early 1990s, there was a broad consensus that embracing globalization, liberalizing trade, foreign direct investment, and other forms of capital flows is a sure way for developing countries to develop. Starting from the late 1990s, there has been a new conventional wisdom that not all forms of globalization are necessarily good for all countries at all times. Some (Bhagwati, 1998; Rodrik, 1998; Stiglitz, 1999) have advocated the position that unfettered international capitals can do as much harm to some developing countries as do good. Others have chosen to express themselves more vocally (and sometimes physically) such as those protesting outside the World Trade Organization meeting in Seattle in November, 1999, and those protesting outside the IMF/World Bank in April, 2000.

This paper reflects on Asia's recent experience in embracing globalization. The most central message is that globalization and domestic public governance go hand in hand. The risk and reward for a country to embrace globalization depends in part on the quality of its public governance. This can be expanded into five main points which are elaborated later in the paper.

- First, embracing globalization has been, is and still will be a key ingredient for successful economic development. Perhaps the biggest economic miracle of the last two decades in the world is China. Its "open door" policy has played an essential role in promoting its rapid growth and the rise of a non-state sector. We don't need to reply on national aggregate numbers to know this (though national export and foreign investment growth rates are certainly positively associated with national GDP growth rates). China is a vast countries, with different regions having different growth patterns. By nature or by policy design, some regions have been more exposed to international trade and investment than others. Examining data from over 300 Chinese cities, we can see that those cities that have been more open also tend to grow faster.

- Second, globalization does carry new dangers for some countries. In particular, there is the possibility that international financial capital flow is inherently volatile (and hence, there may be a need for some sort of capital controls). Dissecting a particular country case, namely, Korea, we can find evidence that foreign portfolio investors may engage in momentum trading (buying when prices are rising and selling when prices are falling) and/or herding, which are strategies that potentially can increase the volatility in the emerging markets. However, we also find evidence that lumping all foreign investors together may be too simplistic. Foreign investors that have a physical presence in the emerging market (e.g., having a branch or subsidiary in the country) are much less likely to engage in potentially destabilizing trading strategies than those purely investing from abroad. So if one wants to consider regulating international capital flows, one may want to consider policies that encourage foreign investors to have a physical presence in the emerging markets, or to invest more resources in acquiring and analyzing information. [This is separate from the usual discussion on policies that aim to influence the maturity structure of capital inflows.]

- Third, the quality of public governance in a developing country – of which, the extent of bureaucratic corruption is an aspect – plays an important role in a country's ability to absorb the beneficial aspects of globalization. For example, while foreign direct

investment (FDI) can bring new technology and new managerial knowhow into a developing country, corruption can severely hamper a country's ability to attract FDI. An increase in corruption from a level that prevails in Singapore (i.e., low) to a level that prevails in Mexico (i.e., relatively high) would have the same negative effect on inward FDI as raising marginal corporate tax rate by fifty percentage points! Contrary to the popular belief, China is not an exception in this regard. In fact, China is a substantial under-achiever as a host of FDI from the world's major source countries. Investment from Hong Kong helps but doesn't overcome this problem.

- Fourth, the quality of public governance also affects a country's ability to minimize the negative effects of globalization. For example, while the extent of corruption does not predict the exact timing of a currency crisis, countries that are relatively more corrupt also tend to have a capital inflow structure that is heavier in bank borrowing relative to FDI. Such a composition of capital inflows makes them more vulnerable to volatile shifts in international financial capital and increases their likelihood of running into a currency crisis. Poor quality of public governance often leads to a weak domestic banking system laden with non-performing loans. Countries with weak a banking system are more prone to banking crises and are less able to defend their currencies when under attack by currency speculators.

- Fifth, globalization may offer new incentives and impetus for developing countries to improve the quality of public governance and to reduce corruption. Corruption and poor public governance drive out international trade and investment opportunities. As globalization deepens, the foregone trade and investment opportunities will also increase rapidly for countries that don't improve upon their public governance. The gap between countries with good governance and those with poor ones becomes wider. [I believe that it is not accidental that rapid economic globalization and the renewed attention to governance and corruption take place at the same time.] This may provide new impetus for the public and the government in developing countries to reform and to improve their governance infrastructure.

2. Embracing globalization and jumpstarting the growth: the Chinese experience

Perhaps the largest "economic miracle" in the last quarter of the 20th century was China's emergence out of the economic abyss of Mao Zedong's "culture revolution" (read: economic, political and cultural disaster). While the officially reported annual growth rates of GDP and industrial output under Mao looked high, anyone who lived in China during the period and had to deal with rationing on rice, soap, sugar, and cooking oil on a daily basis would take the official growth numbers as a dark humor. China's real economic miracle started with Deng Xiaoping's reform program, of which the "open-door policy" is an essential component. (See Hu and Khan, 1997 for a analysis of the factors contributing to the Chinese growth).

The ever widening door

The "open door" policy includes gradual liberalization of the trade regime, enthusiastic courting of foreign direct investment, sending Chinese students and scholars to study/research abroad, and receiving foreign experts, scholars and consultants in China. On each score, the process may look slow, shaky and reversible in a week/month/year, but cumulatively, the country has made a remarkable transformation.

China's trade regime before 1978 was an extreme version of import substitution. Many official statements made this very explicit. One official in 1955 said that "the purpose of importing … is to lay the foundation of China's industrial independence, so that in the future China can produce all of the producer goods it needs and will not have to rely on imports from the outside" (quoted in Lardy, 1992).

A few characteristics highlight the nature of the pre-reform trade regime: (1) The state monopolized trade through state-owned trading corporations. No Chinese firms could import or export goods without the intermediation of the trading corporations. (2) There was no close link between international and domestic prices. The trading corporations purchased exportable goods from Chinese firms at a price pre-set by a state plan, and sell them at the world market at the going price. Similarly , the trading corporations purchase the imports at the world price and then sell them in the Chinese market at a price also pre-set by a state plan. (3) Foreign exchange was tightly

controlled. All foreign exchange earnings from exports were retained by the state. All imports needed to be part of a state plan to take place.

Since 1979, several reforms have been taking place to open China wider to the world market. First, state trading companies were decentralized so that regional branches can make their own exports/imports decision (partly still subject to a state plan). Many regional governments have been allowed to set up their export/import corporations. Over time, non-state-owned entities are allowed to set up trading corporations. Second, foreign exchange controls have been relaxed overt time. On January 1, 1994, the dual exchange rate, which had penalized trade outside the state plan, was abolished. Now, China has (almost complete) current account convertibility for its currency, Yuan. Third, ad hoc and numerous administrative restrictions on trade have been replaced by a more transparenct system of tariffs, quotas and licenses. Overtime, quotas and licenses have been systematically replaced by tariffs, and the level of tariffs has been slashed several times in the 1980s and particularly 1990s, and is expected to have one more big reduction when China formally joins the World Trade Organization.

It is worth a separate mention that a series of special economic zones (SEZs) were set up that not only were authorized to pursue more liberal exports and imports, but also were used to attract foreign direct investment and to experiment a host of other policies that were more market-oriented than the rest of the country(e.g., those concerning labor mobility and managers' ability to decide on salaries, hiring and firing). Starting from scratch (or literally from a fishing village in the case of Shenzhen) and occupying relatively a small amount of land, SEZs is now the powerhouse of China's export and the leading destinations of foreign invested firms.

How open has China become after two decades of trade reform? To get a concrete handle, one can look at import-to-GDP ratio, export-to-GDP ratio, or total trade-to-GDP ratio over the last two decades[1]. Rows 1-3 report these ratios (including services) for selected years. In 1978, the year before the "open door" policy was started, the total trade to GDP ratio was a mere 9.7%. In 1985, it rose to 24%, nearly tripled. In 1995, it

[1] One should be careful about using such ratios for cross-country comparison of relative openness. First, using market exchange rate to convert GDP/GNP may overstate developing countries' openness as non-tradable goods are less expansive and the GDP/GNPs are underestimated. Second, factors other than trade policies can affect the trade-to-GDP ratio. For example, small countries would naturally have higher trade-to-GDP ratios than large economies even if trade policies are the same.

reached 46%, more than five times the ratio in 1978. The ratio has since stayed at that level, or slides down a bit in part because of the recent crises in China's neighboring countries.

Foreign direct investment (FDI) is another manifestation of the open door policy. FDI was virtually non-existent before 1979. It was a mere 1.7 billion US dollars in 1983, but grew to $5.3 billion in 1988, $11.4 billion in 1991, and peaked at around $43 billion in 1997 and 1998. Table 1, Row 4, reports the inward FDI-to-GDP ratio for China over time. We can clearly see a remarkable increase in the FDI penetration ratio over the last two decades, from nothing in 1978 to 0.55 in 1985, and to 5% in the last half of the 1990s.

A close examination of the source country composition of the FDI into China reveals a very interesting thing. The five most important source countries in the world (the U.S., Germany, Japan, Britain and France) in fact do not invest very much in China in relative terms. In fact, contrary to popular perception, China is a significant under-achiever, rather than an over-achiever, as a host of FDI from these countries (Wei, 1996, 1999). However, China is lucky enough to have a large overseas Chinese diaspora who is quick to answer the call to invest. In particular, investment from Hong Kong has flocked to China, making Hong Kong the single largest source of FDI every year from 1979 to now. Hong Kong accounts for roughly half of the total investment. The U.S. and Japan are distant number two and three (the exact ranks between the two fluctuate from year to year). Investment from Taiwan and Singapore are also significant.

Effect of the open door policy on China's economy: City-level evidence

Over the last two decades when China has been pursuing the "open door" policy and other reforms, it has managed to achieve close to 10% annual GDP growth rate on average. This equates or surpasses the best growth record that Korea, Taiwan, Singapore, Hong Kong or other economies have had in their respective post-war "miracle" periods, except that the Chinese growth takes place on a substantially larger scale than the other economies. Has the "open door" policy played a significant role in China's rapid growth? Has it been indispensible?

Of course, observing that the "open door" policy and the fast growth take place in the same time period does not say much about the role of "open door" per se. After all,

the average temperature of the earth had also risen in the same period. And we would not want to conclude that the global warming was a reason for China's rapid growth (though China's growth may have contributed a bit to the global warming).

To do somewhat better than running a regression of annual Chinese GDP growth rate on annual export growth rate, we can look for clues by examining regional differences within China. China is a vast country in which the regional growth rates can deviate quite a bit from the national average. The extent of openness also varies widely. The variation is both due to nature (foreign investors naturally would come to the coastal areas first), and due to policy design (a subset of cities in the coastal area were authorized to attract FDI and engage in trade with policy inducements not available elsewhere in the country). We can get data for a sample of 350 or so cities in the country. It can be informative to look at the growth pattern of these cities and compare it their openness pattern. Wei (1995) reported results from two samples of city data (1988-90 and 1980-90). Here, we concentrate on reviewing the growth patterns over 1988-90.

From firm's maximization problem, one can firm-level output growth rate as related to the growth rate of inputs and productivity. One can aggregate the firm's output growth rates to a city's growth rate, which is also related to its input growth rates and a measure of productivity (See Wei, 1995, see details). Assuming that the city-level productivity may be linked to the city's exports or inward FDI, we obtain the following sort of specification:

$$G_k = \text{constant} + \beta_1 FDI_{k+} \beta_1 EXP_{k+} \beta_3 Y_{k0} + \alpha G_{Lk} + e_{k,}$$

where G_k and G_{Lk} are the growth rates of city k's industrial output and labor force over the period, FDI_0 and EXP_0 are inward FDI and exports (either growth rate or beginning of period value) for city k, respectively and Y_{k0} is the beginning-of-period output for city k. e_k is a city-specific error term, assumed to be independent across cities but can have different variances.

The Solow growth model would suggest a negative coefficient for the initial size of the industrial sector in city k, Y_{ko}. On the other hand, the notions of increasing returns to scale as advanced by Romer (1986), or of learning by doing as emphasized by Young (1991), would suggest a positive coefficient.

FDI is a primary mechanism for the transfer of technology from developed countries to developing countries. In the context of China, it is also a primary mechanism for the transfer of foreign management methods and worker discipline into the country. Exports expose exporting firms to the rigor of international competition as well as to new techniques in marketing and processing.

FDI can enter the regressions in one of two ways, as a share of the city's total investment or in absolute scale. If the role of FDI is merely as an infusion of capital into a city- that is, the technology brings with it does not spill over to other firms in the city- then its contribution to the city's growth will be proportional to its share in the city's total capital stock. I will call this an "intensity effect." On the other hand, there may be a substantial amount of spillover across firms through interactions of workers or managers between the foreign-owned/managed firms and those that do not receive foreign investment directly. The actual channels of spillover may include dinner table conversations of friends or family members who work in different firms. The physical presence of foreign firms in the city facilitates the transfer. Suppose all domestic firms that do not receive foreign investment directly always obtain a constant fraction of the benefits (in terms of extra growth rates) that foreign-invested firms obtain and suppose further that foreign-invested firms accounted for a small fraction of total output, then the contribution of FDI to a city's growth will be proportional to the total FDI the city receives. I will refer to this as a "scale effect." In other words, the presence of a scale effect signals the existence of positive spillover across firms in the same city.

Similarly, exports can also enter regressions in two ways. Exporting firms can learn new ideas about marketing, design, or technology from interacting with buyers in the world market. If the benefits of learning are confined to those firms who actually do the exporting, then its contribution will be proportional to the share of exports in a city's total output. On the hand, the newly learned ideas are likely to travel to other firms that may not do any exporting at all. This transfer of ideas can also be accomplished through dinner table conversations, or formal business meetings. Alternatively, non-exporting firms can simply imitate the management or marketing concepts exporting firms have demonstrated. As far as this spillover is concerned, the benefit of exports to the city is more closely related to the total exports of all the firms in the city collectively than to the

share of exports in total industrial output. That is, one can also use the scale effect to detect the presence of positive spillover from exports.

The basic regression results are reported in Table 2. The coefficients on the level of 1988 output are negative although not statistically significant except for one two. In other word, for this two-year sample, there is no evidence that a large initial industrial scale of the city helps it to grow faster. The coefficient for the population growth rate is 0.60 and significant at the 5 percent level.

Exports and FDI are used as measures of the open door policy. The export variable enters the regressions in two ways: in absolute scale or as a percentage of total output. If various measures of exports are entered separately, all are positive (although only the scale of exports and export growth rate are significant statistically at the 10 percent level). This is a finding often reported in some form in cross-country studies: openness correlates with high growth. Using the point estimate in the first regression, a one percent increase in the scale of exports is associated with a higher two-year growth rate by 2.5 percentage points.

If the growth rate of exports is used as an explanatory variable, its estimated coefficient is 0.046 and is significant at the 10 percent level. Because of the possibility of reverse causality, I will not read too much into this result.

We next turn to the effect of FDI. Ideally, we would like to use the stock of FDI, but the data are not available at the city level, so we use flow data. Similar to the export variable, the FDI variable can enter the regression in one of two ways: in absolute scale(in U.S. dollars) or as a percentage of total fixed capital investment.

If the two measures of FDI are entered in the regression separately, only the absolute scale of FDI is significant. A one percent increase in the size of FDI is associated with a 1.3 percentage point higher growth rate for the two-year period. This lends some support to the notion of an externality effect of FDI. Extra growth by 1.3 percentage points is not negligible, but neither is it overwhelming for Chinese cities. The growth rate of FDI over 1988-90, when included as an explanatory variable, is significant at the fifteen percent level.

In further regressions, we have done some probing of including measures of FDI and exports in the same regressions (not reported). If the absolute scales of both FDI and exports enter the regression, only FDI is statistically significant. If one also adds the

growth rates of FDI and exports to the last regression, both the scale and growth rate of FDI and exports to the last regression, both the scale and growth rate of FDI are statistically significant, but neither measure of exports is.

To summarize, our analysis indicates that cities that engage in more exports activities and/or have attracted more foreign investment also tend to grow more rapidly in subsequent periods. Foreign investment contributed more to cross-city differences in industrial output than did exports. Furthermore, the scale effect of foreign investment is significant and supports the hypothesis of spillover of technological or managerial know-how across firms within cities.

3. Is International Financial Capital Inherently Volatile?

For a while, embracing globalization was seen as a key to economic takeoff. Countries after countries had been advised by international financial institutions and eminent economists to liberalize imports, liberalize FDI, liberalize currency convertibility for current account, and liberalize currency convertibility for capital account. The Asian economic crisis during 1997-99 suddenly has called into question the wisdom of a premature liberalization of the capital account liberalization. The main worry is that the combination of a weak domestic banking system and very volatile international financial capital movement is dangerous for developing countries. Both Mexico and Korea, which had a relatively weak banking sector, were asked by the OECD to liberalize their capital accounts when they wanted to join the rich-country club in the early and mid-1990s, respectively. Shortly after their getting into the club, each ran into a severe currency and financial crisis in 1994 and 1997, respectively, triggered or exacerbated by the sudden withdraw of financial capital by international investors. Some semi-jokingly have commented that the OECD membership became a good leading predictor of the incidence of a currency crisis.

We will discuss currency crises later. Here, let us focus on the question of whether international financial capital flows are inherently volatile as the investors have less information about the market that they invest in, they are more likely to purse trading strategies that are destabilizing to the emerging markets. We draw our analysis from a

paper by Woochan Kim and myself (Kim and Wei, 1999) that examined the experience of a particular Asian country, namely, Korea.

It has been alleged that foreign portfolio investors may have been positive feedback traders (e.g., rushing to buy when the market is booming and rushing to sell when the market is declining), and eager to mimic each other's behavior ignoring information about the fundamentals. Behaviors such as these could have exacerbated the crisis to an extent not otherwise warranted by economic fundamentals. Concerns about possibly destabilizing behavior of foreign investors also underlies the recent discussion on capital controls. Careful statistical documentation of investor trading behavior to prove or disprove these hypotheses has been relatively lacking. But the hypothesis can be connected with an emerging literature on behavioral finance, mostly in the domestic finance context. For example, it has been argued that individual investors' trading is often driven by irrational, sentimental shocks (for example, see Lee, Shleifer and Thaler, 1990 and 1991 for an explanation of the discounts on the closed-end funds). As another example, again using evidence from domestic market data, it has been argued that institutional investors often exhibit herding behavior, though the tendency is quantitatively small (see Lakonishok, Shleifer and Vishny, 1992). There are also theoretical models in which there are irrational noise traders, and rational investors pursue positive feedback strategies, destabilizing the prices in the process (De Long, Shleifer, Summers, and Waldmann, 1990).

The aim of the Kim-Wei paper is to provide an account of the behavior of foreign portfolio investors in a particular emerging market -- Korea before and during its currency crisis in late 1997. We examine whether or not they engage in herding and/or positive feedback trading. However, our more important contribution is to highlight heterogeneity in the behavior of different types of foreign investors. We think that lumping foreign investors together as if they behave in the same way can be too simplistic. For example, if one thinks that regulating foreign capital inflow is desirable, our findings suggest that policies that can influence the composition of foreign investors in a way that encourages more information production by them could reduce the possibility of destabilizing trading behavior.

Our project is possible due to a unique data set. It details monthly positions of every foreign investor in every stock in the Korean stock market (both First and Second

Sections) from December 1996 to June 1998. We can separate investment made by foreign individuals versus those made by foreign institutions. Moreover, we can distinguish non-Korean investors who reside in Korea (for individuals) or who have an office in Korea (for institutions) from those who invest from aboard. Whether or not a foreign investor has a physical presence in Korea may affect how informed the investor is, and informational asymmetry may give rise to difference in trading behavior. Our data set allows us to look into this explicitly.

Classification of the sub-periods

The data set spans from December 1996 to June 1998. We break our sample into three sub-periods.

a) *December 1996 – May 1997, tranquil period*. This was the time when Korea was regarded as one of the miracle economies in East Asia, and foreign investors were enthusiastic about investing in Korea.
b) *June 1997 – October 1997, pre-currency crisis period*. While Korea's own currency crisis would come later in November of that year, the currency of Thailand, Baht, (and maybe other currencies in Asia) started to be under several speculative attacks in June. The Thai collapsed at the beginning of July, marking the beginning of what we now call "the Asian financial crisis." The Thai crisis has sent repercussion throughout the region. The Korean stock market also started its slide in June and continued more or less during the period.
c) *November 1997 – June 1998, in-crisis period*. On November 18, the Bank of Korea gave up defending the Korean Won. And on November 21, the Korean government asked the IMF for a bail out. The crisis began in November 1997 and continued beyond the end of our sample.

Do Foreign Investors Engage in Momentum Trading

Positive feedback (or momentum) trading strategy is one with which an investor buys past winners and sells past losers. A negative feedback (or contrarian) trading strategy does the reverse: buying past losers and selling past winners. Positive feedback trading can destabilize the market by moving asset prices away from the fundamentals.

We begin our investigation with the possibility that foreign investors pursue momentum or positive feedback trading strategy. This trading pattern can result from extrapolative expectations about prices, from stop-loss orders --automatically selling when the price falls below a certain point, from forced liquidations when an investor is unable to meet her margin calls, or from a portfolio insurance investment strategy which calls for selling stocks when the price falls and buying it when the price rises.

At least since Friedman (1953), many economists believe that positive feedback traders cannot be important in market equilibrium as they are likely to lose money on average. This view has been challenged in the last decade or so. De Long, Shleifer, Summers, and Waldmann (1990) argued that in the presence of noise traders, even rational investors may want to engage in positive feedback trading, and in the process destabilizes the market.

Empirical examination of this issue has emerged recently. Using quarterly data on U.S. pension funds in the U.S. market, Lakonishok, Shleifer, and Vishny (1992, LSV for short in later reference) did not find evidence of significant amount of positive feedback trading. On the other hand, using transaction-level data, Choe, Kho, and Stulz (1998) do find evidence that foreign investors as a group engage in positive feedback trading in Korea.

Our objective is to examine the connection between the trading behaviors of the investors (within a given sub-group) and the previous month performance of the stocks. Following a metric proposed in Kaminsky, Lyons, and Schmukler(1999), which is in turn modified from Grinblatt, Titman, and Wermers (1995), we examine the following measure of momentum trading for investor group k (whose subscript will later be omitted without confusion):

$$M(k,\, j,t) = [\frac{Q(k,\, j,t) - Q(k,\, j,t-1)}{Q^*(k,\, j,t)}]R(\, j,t-1)$$

where Q(k,j,t) is the number of shares of stock j held by investor (or investor group) k at time t, Q*(k,j,t) is the average of Q(k,j,t) and Q(k,j,t-1), and R(j,t-1) is the return on stock j from t-1 to t

The momentum measure for a particular investor (or investor group) k over a given sample period is

$$M(k) = \frac{1}{JT} \sum_{t} \sum_{j} M(k, j, t)$$

where J is the total number of stocks traded by k, and T is the total number of time periods under consideration.

Under the null of no momentum trading, the mean value of M(k) is zero. Furthermore, M(k) is asymptotically normal (as J and T approach infinity). If there is systematic positive momentum trading (buying past winners and selling losers), then M(k) would be positive. On the other hand, if there is systematic negative momentum trading (buying past losers and selling past winners, or contrarian trading), then M(k) would be negative.

We report the basic measures of momentum trading for each category of investors in Table 4. There are a few prominent features in the table. First, for foreign investors who are in Korea (or have an office there in the case of institutions) and for each of the three sub-periods, there is no statistically significant evidence that they engage in positive or negative feedback trading (except in one case – institutional investors in the pre-crisis period).

Second, in contrast to the (foreign) investors with a presence in Korea, in the two sub-periods leading up to the Korean currency crisis, those who invest from abroad display significant tendency for engaging in positive feedback trading, regardless of whether they are individuals or institutions.

Third, once the currency crisis broke out, the non-resident institutions increased their intensity of positive feedback trading (from a measure of 0.51 during June-October, 1997, to a measure of 0.70 after November, 1997). This mainly took the form of selling stocks whose prices had been falling fast. On the other hand, individual investors from aboard display some evidence of switching to a negative feedback trading strategies (mainly in the form of buying stocks whose prices had recently fallen dramatically. While the momentum measure takes a negative coefficient for them, it is only marginally significant at the 15% level.

The results reported in Table 4 are based on a definition of returns in the local currency (Korean won). One may argue that international investors may care more about returns that take into account the exchange rate movement. The exchange rate movement was big during the currency crisis period by definition. However, it is worthwhile to note

that for a given foreign investor in a given period, the same exchange rate change would be applied to the returns on all Korean stocks. In any case, we redo the analysis with returns that take into account exchange rate movement (not reported here to save space, but can be found in Kim and Wei, 1999). We found that the qualitative results are very similar to what we have obtained here.

One could also ask the question of whether momentum trading may be justified at least on the basis of ex post profitability. That is, if momentum trading makes money ex post, perhaps one cannot say it is destabilizing. Kim and Wei examined this possibility and conclude that the trading strategy does not yield systematic profits for most of the sample at hand.

Do Foreign Investors Engage in Herding?

Herding is the tendency that investors of a particular group mimic each other's trading. Portfolio investors may herd rationally or irrationally. Informational asymmetry may cause uninformed but rational speculators to choose to trade in the same way as informed traders (Bikhchandani, Hirshleifer and Welch, 1992; and Banerjee, 1992). Since informational problem may be more serious when it comes to investing in a foreign market than the domestic one, herding may be more severe correspondingly.

This logic suggests that (1) individual investors may herd more than the institutions as the latter may have more resources to assemble and process information about a foreign market; and (2) non-resident investors may herd more than resident foreign investors assuming the latter have more timely information about the country they live in.

There is an alternative explanation for herding among institutional investors. Unlike individual investors, fund managers face regular reviews (e.g., quarterly for mutual funds, and annually for pension funds) on their performance relative to a benchmark and/or to each other. This may induce them to mimic each other's trading to a greater extent than they otherwise would (See Scharfstein and Stein, 1990). This logic suggests an opposite prediction from the informational asymmetry story, that (1) institutional investors may herd more than individual investors, and that (2) there is no presumption to argue for greater herding for non-resident institutional investors than their

resident counterparts (assuming both face the same regular relative performance comparisons).

There have been several empirical papers that quantify herding behavior. Using data on institutional investors, the pioneering paper by Lakonishok, Shleifer, and Vishny (or LSV, 1992), followed by work by Grinblatt, Titman, and Wermers (1995), and Wylie (1997), all report evidence of herding among US or UK institutional investors. Using data on foreign investors (or U.S. investors) in Korea as a single group, Choe, Kho, and Stulz (1998) find evidence of herding. None of the previous papers that we are aware of compares different herding tendencies by different investor types on data from a single source, which is the central focus of this section of our paper.

We employ the herding indices proposed by LSV (1992) but construct the sample in a way that takes into account the Wylie (1997) correction for possible bias induced by short-selling constraint. Let $B(i, j,t)$ be the number of investors in group i that have increased the holdings of stock j in month t (i.e., number of net buyers), and $S(i, j,t)$ the number of investors in group i that have decreased the holdings of stock j in month t (number of net sellers). Let $p(i,t)$ be the number of net buyers in group i aggregated across all stocks in month t divided by the total number of active traders (number of net buyers plus number of net sellers) in group i aggregated across all stocks in month t. Then, $H(i, j,t)$ is defined as the herding index for investors in group i, on stock j, in month t.

$$(1) \qquad H(i, j,t) = \left| \frac{B(i, j,t)}{B(i, j,t) + S(i, j,t)} - p(i,t) \right| - E\left| \frac{B(i, j,t)}{B(i, j,t) + S(i, j,t)} - p(i,t) \right|$$

$$(2) \qquad p(i,t) = \frac{\sum_{j=1}^{N} B(i, j,t)}{\sum_{j=1}^{N} B(i, j,t) + \sum_{j=1}^{N} S(i, j,t)}$$

$$(3) \qquad H(i,t) = \frac{1}{N} \sum_{j=1}^{N} H(i, j,t)$$

$$(4) \qquad H(i) = \frac{1}{NT} \sum_{t=1}^{T} \sum_{j=1}^{N} H(i, j,t)$$

H(i, t) is the herding index for group i in month t, averaged across all stocks. H(i) is the herding index for group i, averaged across all months in the sample. In the definition of H(i, j, t), $p(i,t)$ is subtracted to make sure that the resulting index is insensitive to general market conditions (i.e., a bull or bear market). By taking absolute values, the first term in equation (1) captures how much of the investment is polarized in the direction of either buying or selling. The second term in equation (1), also called as adjustment factor, is subtracted to correct for the mean value of the first term under the assumption of no herding.[2] The second term can be computed under the assumption that $B(i, j,t)$ follows a binomial distribution. Note that for large N and T, $H(i,t)$ and $H(i)$ follow normal distributions by the central limit theorem.

The basic results are presented in Table 5. For each investor group i and each sub-period, we report the corresponding herding statistics, H(i), with standard errors in the parenthesis below. Then we perform a sequence of difference-in-mean tests between individual and institutional investors (reported in Rows 3, 6, and 9), and between non-resident and resident investors of any given group (reported in Column 3).

A number of patterns stand out. First, except for foreign institutions with a subsidiary/branch in Korea, all other three categories of foreign have engaged in statistically significant herding. This is true in each of three sub-periods.

Second, based on the point estimates, foreign investors outside Korea (the non-resident individuals or institutions) always herd more than their counterpart inside Korea in each of the three sub-periods. The values of the herding statistic for the non-resident foreign investors are often twice as high or more than resident foreign investors. In half of the cases, the differences are statistically significant.

Third, individual investors always herd more than institutions. The herding measure for the individuals are generally twice as big or more than institutional investors. In five out of the six cases, the difference is statistically significant.

These patterns are consistent with the theory that herding is induced by informational asymmetry. At the same time, the contrast between institutional investors (who are subject to regular relative performance evaluations) and individuals (who are

[2] Also, the adjustment factor [the second term in equation (1)] is a decreasing function of the number of

not) suggests that the incentive to herd driven by the relative performance review considerations is probably not the dominant feature of the data.

Summary

The Kim and Wei paper studied foreign investors' trading behavior in the Korea Stock Exchange (KSE) during December 1996 – June 1998. There are a number of findings that are worth highlighting here. First, different categories of foreign investors have different trading patterns. Lumping them together could give misleading pictures. One striking feature in the data is that foreign investors living in Korea or having an office in Korea seem to less likely to engage in positive feedback trading during the tranquil period. Second, resident foreign investors are also likely to engage in herding, or engage in a smaller amount of herding. Third, among the non-resident foreign investors, institutions are more likely to engage in positive momentum trading, but they are less likely to herd.

It is important to note that foreign investors in the sample was a small part of the overall Korean market (their positions were about 15% of the market capitalization). In part of because of their size, their trading is unlikely to have had a big impact on the prices (Cho, Kho, Stulz, 1998). However, as more and more emerging markets are made more open to international investors, their impact could increase. Even in Korea, more capital account and equity market openness have taken place. The trading pattern by the foreign investors as revealed in this paper, if confirmed by future studies from other emerging markets, could potentially translate into more market instability in the developing countries.

If an emerging market were to liberalize its capital account and to open up its equity market to foreign investors, it is useful to note that the composition of foreign investors may make a difference. For example, foreign institutional investors that have an office in the emerging market are less likely to engage in positive feedback trading and less likely to herd. Again, if this is confirmed by future studies, governments may consider not just a blanket capital account liberalization, but also policies that could affect the composition of foreign investors.

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traders active [$B(i,t) + S(i,t)$].

4. Governance, Benefits of Globalization and Currency Crisis

The quality of public governance – the quality and efficiency of a country's bureaucracy—varies widely across countries. In this section, we discuss how public governance may affect a country's absorption of the beneficial effects of globalization, and how it affect its ability to minimize the negative effects of globalization..

Local Corruption and International Direct Investment

Reversing an attitude in the 1960 or even 1970s, many developing countries are now eager to attract foreign direct investment. The expect to benefit from the FDI not just from the extra capital per se, but more importantly, from the technological and managerial know-hows that may be embodied in the FDI. Such beneficial effects of FDI are not associated with other forms of capital inflow such as portfolio investment or bank borrowing.

Yet, the quality of governance could have an effect on FDI. In particular, bureaucratic corruption could act as a tax that discourages foreign investment. Using data on bilateral FDI from 14 major source countries to 41 host countries in the world, I (Wei, 2000a) found that the local corruption does have a negative and statistically significant effect on inward FDI. Moreover, the effect is quantitatively large: a rise in corruption from a level that prevails in Singapore (i.e., low) to a level that prevails in Mexico (i.e., relatively high), it has the same negative effect on FDI as raising the marginal corporate tax rate by fifty percentage points!

Thus, to the extent foreign direct investment can bring new technology and new management skills into a host country, a corrupt country would not be able to take full advantage of it.

Corruption, Composition of Capitals

A natural question to follow is whether local corruption affects the composition of capital flows in a way that makes the country more susceptible to the shifts of volatile international capitals.

The recent currency crises in East Asia, Russia and Latin America have stimulated the research on the causes of currency crises. On the one hand, it is increasingly common to hear assertion that the so-called crony capitalism may be partly responsible for the onset and/or the depth of the crises. [There is virtually no systematic evidence on this so far, one way or the other[3].] On the other hand, many researchers argue that the (fragile) self-fulfilling expectations by international creditors are the real reason for the currency crisis. Crony capitalism and self-fulfilling expectations are typically presented as rival explanations.

There may be a linkage between the two explanations. It is possible that crony capitalism increases the chance of a future currency crisis driven by self-fulfilling expectations. Specifically, the extent of corruption in a country may affect that country's composition of capital inflows in a way that makes it more vulnerable to international creditors' shifts in their self-fulfilling expectations. Corruption here refers to the extent to which firms (or private citizens) need to pay bribery to government officials in their interactions (for permits, licenses, loans, and so forth)[4].

Several studies (starting with Frankel and Rose, 1996, and followed by Radlet and Sachs, 1998, and Rodrik and Velasco, 1999) have shown that the composition of international capital inflows is correlated with incidence of currency crises. In particular, the lower the share of foreign direct investment in total capital inflow, or the higher the short-term debt to reserve ratio, the more likely a country may run into a currency crisis. One possible reason for this is that bank lending or other portfolio investment may be more sentiment-driven than direct investment. Hence, a small (unfavorable) change in the recipient countries' fundamentals may cause a large swing in the portfolio capitals (e.g., from massive inflows to massive outflows). This can strain the recipient country's currency or financial system sufficiently to cause or exacerbate its collapse (Radelet and Sachs, 1998; Rodrik and Velasco, 1999; Reisen, 1999).

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[3] For recent surveys of the literature on corruption and economic development, see Bardhan (1997), Kaufmann (1997), and Wei (1999). None of the survey covers any empirical study that links crony capitalism with currency crisis.

[4] We use the term "crony capitalism" interchangeably with "corruption." Strictly speaking, "crony capitalism" refers to an economic environment in which relatives and friends of government officials are placed in positions of power and government decisions on allocation of resources are distorted to favor friends and relatives. In reality, "crony capitalism" almost always implies a widespread corruption as private firms and citizens in such an environment find it necessary to pay bribes to government officials in order to get anything done.

To see the differences in the volatility of various types of capital flows, we compute the standard deviations of three ratios (portfolio capital inflow/GDP, borrowing-from-banks/GDP, and inward FDI/GDP) during 1980-1996 for every member country of the IMF for which data on all three variables are available. Table 6 presents a summary of the results. We see that for the subset of OECD countries (with membership up to 1980), the volatility of FDI/GDP ratio is substantially smaller than the other two ratios. For non-OECD countries as a group, the FDI/GDP ratio is also much less volatile than the loan/GDP ratio, although it is higher than the portfolio flow/GDP ratio. The lower part of the same table presents the volatility of the three ratios for a number of individual countries that featured prominently in the recent currency crises. Each country shows a loan/GDP ratio that is at least twice and as much as fifteen times as volatile as the FDI/GDP ratio. For each of these countries, the portfolio capital/GDP ratio is also more volatile than the FDI/GDP ratio. If we extend the sample period to include the last two years, the differences in volatility would be even more pronounced (not reported). Therefore, the data is consistent with the hypothesis that FDI is less sentiment-driven and hence more stable as a source of foreign capital.

Corruption is bad for both international direct investors and creditors. Corrupt borrowing countries are more likely to default on bank loans, or to nationalize (or otherwise diminish the value of) the assets of foreign direct investors. When this happens, there is a limit on how much international arbitration or court proceedings can help to recover the assets, as there is a limit on how much collateral the foreign creditors or direct investors can seize as compensation[5].

One may argue that domestic investors have an informational advantage over international investors. Among international investors, international direct investors may have an informational advantage over international portfolio investors (and presumably banks). International direct investors could obtain more information about the local market by having managers from the headquarters stationing in the country that they invest in. As a consequence, the existence of cross-border informational asymmetry may lead to a bias in favor of international direct investment. This is the logic underlying Razin, Sadka and Yuen's theory of (1998) of "pecking order of international capital

[5] In the old days, major international creditors and direct investors might rely on their navies to invade a defauting countries to seize more collateral. Such is no longer a (ready) option today.

flows." However, the existence of corruption could temper with this effect. The need for international investors to pay bribery and deal with extortion by corrupt bureaucrats tends to increase with the frequency and the extent of their interactions with local bureaucrats. Given that international direct investors are more likely to have repeated interactions with local officials (for permits, taxes, health inspections, and so forth) than international banks or portfolio investors, local corruption would be more detrimental to FDI than other forms of capital flows. Along the same line, direct investment involves greater sunk cost than bank loans or portfolio investment. Once an investment is made, when corrupt local officials start to demand bribery (in exchange for not setting up obstacles), direct investors would be in a weaker bargaining position than international banks or portfolio investors. This *ex post* disadvantage of FDI would make international direct investors more cautious *ex ante* in a corrupt host country than international portfolio investors[6].

There is a second reason for why international direct investment is deterred more by local corruption than international bank credit or portfolio investment. The current international financial architecture is such that international creditors are more likely to be bailed out than international direct investors. For example, during the Mexican (and subsequent Tequila) crisis and the more recent Asian currency crisis, the IMF, the World Bank, and the G7 countries mobilized a large amount of funds for these countries to prevent or minimize the potentially massive defaults on bank loans. So an international bailout of the bank loans in an event of a massive crisis has by now been firmly in market expectations. [In addition, many developing country governments implicitly or explicitly guarantee the loans borrowed by the private sector in the country[7]]. In comparison, there have are no comparable examples of international assistance packages for the recovery of nationalized or extorted assets of foreign direct investors except for an insignificant amount of insurance that is often expensive to acquire. This difference further tilts the composition of capital flows and makes banks more willing than direct investors to do business with corrupt countries.

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[6] Tornell (1990) presented a model in which a combination of sunk cost in real investment and uncertainty leads to under-investment in real projects even when the inflow of financial capital is abundant.

[7] McKinnon and Pill (1996 and 1999) argue that the government guarantee generates "moral hazard" which in turn leads the developing countries to "overborrow" from the international credit market.

Both reasons suggest the possibility that corruption may affect the composition of capital inflows in such a way that the country is more likely to experience a currency crisis. Of course, the composition of capital flows impacts economic development in ways that go beyond its effect on the propensity for a currency crisis. Indeed, many would argue that attracting FDI as opposed to international bank loans or portfolio investment is a more useful way to transfer technology and managerial know-how.

As some concrete examples, Table 7 shows the total amount of inward foreign direct investment, foreign bank loans, portfolio capital inflows, and their ratios for New Zealand, Singapore, Uruguay and Thailand. On the one hand, New Zealand and Singapore (are perceived to) have relatively low corruption (the exact source is explained in the next section) and relatively low loan/FDI and portfolio investment/FDI ratios. On the other hand, Uruguay and Thailand (are perceived to) have relatively high corruption and relatively high loan/FDI and portfolio investment/FDI ratios. So these examples are consistent with the notion that local corruption is correlated with patterns of capital inflows. Of course, these four countries are just examples. As such, there are two questions that need to be addressed more formally. First, does the association between corruption and composition of capital flows generalize beyond these four countries? Second, once we control for a number of other characteristics that affect the composition of capital inflows, would we still find the positive association between corruption and the loan/FDI ratio?

The central question of this section is whether corruption affects the composition of capital inflows. So we now examine whether the ratio of bank loans to FDI is affected by local corruption. We proceed as before starting with a fixed-effects regression using the TI-index as the measure of corruption:

$$\text{Log}(\text{Loan}_{jk} / \text{FDI}_{jk}) = \underset{\text{source country}}{\text{fixed effects}} + \beta\, \text{corruption}_k + X_{jk}\Gamma + e_{jk}$$

The regression result is reported in Column 1 in Table 8. As expected, the coefficient on corruption is positive and statistically significant at the 5 percent level. Hence, a corrupt country tends to have a composition of capital inflows that is relatively light in FDI and relatively heavy in bank loans.

Also note that because FDI is more relationship-intensive (as proxied by physical and linguistic distances) than bank loans, the coefficients on geographic distance and the linguistic tie dummy are positive and negative, respectively, in this regression which examines the determinants of the loan-to-FDI ratio.

We proceed with a slew of robustness checks employing alternative measures of corruption (GCR and WDR) and alternative specification (i.e., random-effects). The results are reported in the last five columns of Table 8. The qualitative results are similar. In particular, the coefficient estimate on the corruption variable in each of the six regressions is positive and statistically significant. Hence, the evidence is overwhelming and robust that corrupt countries tend to have a particular structure of capital inflows characterized by a relatively light foreign direct investment.

One might be concerned with endogeneity of the corruption measure. For example, if survey respondents may perceive a country to be corrupt in part because they observe very little FDI going there. In this case, the negative association between the FDI-to-loan ratio and corruption is due to the reverse causality. This is of a particular concern here since our reliable measures of corruption were derived in 1996 or later, whereas the most recent FDI and loan data (on a bilateral basis) are from 1996 or earlier.

In this subsection, we perform instrumental variable (IV) regressions on our key regressions. Mauro (1995) argued that ethnolinguistic fragmentation is a good IV for corruption. His ethnolinguistic indicator measures the probability that two persons from a country are from two distinct ethnic groups. The greater the indicator, the more fragmented the country. If we regress our corruption measures on a constant (not reported) and the same measure of ethnolinguistic fragmentation as Mauro, the slope coefficient is positive and statistically significant: the greater the heterogeneity in the population, the greater the corruption on average. We also add one more regressor, namely, the extent of democracy. This variable is also statistically significant. More democracy means less corruption. The reason seems intuitive. More democracy means more accountability (either through check-and-balances across different branches of government, or through greater responsiveness of the government to people, or both). And more accountability implies less corruption. It is interesting to observe that once one controls for democracy, the ethnolinguistic fragmentation variable is no longer statistically significant.

In Table 9, we use two-stage least square on determinants of the composition of capital inflow question. There is some weak evidence that corrupt countries may also receive less bank loans (Columns 1 and 2). They still receive significantly less FDI (Columns 3-4). Most importantly, because corruption deters FDI more than bank loans, countries that are more corrupt tend to have a capital inflow structure that relies relatively more on bank borrowing and less on FDI.

Portfolio and Direct Investments from the U.S.

While bilateral data on portfolio investment other than bank credits are not available for the whole set of capital-exporting countries examined in the previous sub-sections, we can obtain data on portfolio investment from the US (to a set of developing countries). We again perform fixed-effects and random-effects regressions pruning the relationship between portfolio-investment-to FDI ratio. The results are reported in Table 10. We see again that, at least for this sub-sample, the portfolio-investment-to-FDI ratio is also positively related to the capital-importing country's corruption level. The more corrupt a country, the less FDI it tends to receive relative to portfolio capital.

Summary

Corrupt countries receive less foreign direct investment. On the other hand, corrupt countries may not be disadvantaged in obtaining bank loans (or at least not by as much). As a result, corruption in a capital-importing country tends to tilt the composition of its capital inflows away from foreign direct investment and towards foreign bank loans. The data supports this hypothesis. Furthermore, the effect of corruption on the ratio of borrowing from foreign banks to inward FDI is robust across different measures of corruption and different econometric specifications.

There are two possible reasons for this effect. First, foreign direct investments are more likely to be exploited by local corrupt officials *ex post* than foreign loans. As a result, fewer FDI would go to a corrupt countries *ex ante*. Second, the current international financial architecture is such that there is more insurance/protection from

the IMF and the G7 governments for bank lenders from developed countries than for direct investors.

Previous research (starting with Frankel and Rose, 1996) has shown that a capital inflow structure that is relatively low in FDI is associated with a greater propensity for future currency crisis. It may be that international bank loans (or other portfolio flows) swing more than direct investment in the event of a bad news (real, or self-generated by the international investors) about economic or policy fundamentals. If so, this paper has provided evidence for one possible channel through which corruption in a developing country may increase its chances of running into a future crisis.

In the literature on the causes of currency crises, crony capitalism and self-fulfilling expectations by international creditors are often proposed as two rival hypotheses. Indeed, authors that subscribe to one view often do not accept the other. The evidence in this paper suggests a natural linkage between the two. Crony capitalism, through its effect on the composition of a country's capital inflows, make it more vulnerable to self-fulfilling expectations type of currency crisis.

Corruption could also lead to a financial crisis by weakening domestic financial supervision and producing a deteriorated quality of banks' and firms' balance sheets. This also feeds back to a higher likelihood of currency crisis as the country would be less able to defend its currency with an interest rate policy.

5. Globalization and the Fight Against Corruption

In the last section, we have discussed how quality of bureaucracy may affect a country's ability to absorb the beneficial effects of globalization: by altering the volume of inward FDI, by altering the composition of capital inflows, and by changing the likelihood of running into a currency and financial crisis. In this final section, we would like to discuss, or rather, speculate about possible effects in the reverse direction, from globalization to the quality of bureaucracy.

My conjecture is that globalization may strengthen developing countries' incentive in improving public governance and reducing corruption. Poor public governance and corruption discourage international trade and investment. As globalization is deepening, trade and investment barriers being slashed all around the world, the foregone investment

and trade increase rapidly for those countries that continue to have severe corruption problem and poor public governance. The gap in the economic progress between countries with good governance and those with poor ones widens along the extent of globalization. This may give the public and the government in the developing world a new impetus to reform and to improve their public governance. This doesn't say that corrupt countries will necessarily become less corrupt, but they would lag behind at a faster rate if they stay equally corrupt. This conjecture is based my recent research on "natural openness and good government" (Wei, 2000b).

Openness and Public Governance: A New Interpretation

Several authors have documented that more open countries tend to have a lower level of corruption (Ades and Di Tella, 1999; Treisman, 1998; and Gatti, 1999). One could imagine that the direction of causality can go either way: greater competition induced by greater openness helps to reduce corruption; and corrupt bureaucrats like to set up trade barriers to extract bribes, reducing openness as a consequence.

In Wei (2000b), I offer a possibly new interpretation. The basic story is the following. Fighting corruption is costly. The cost function is likely to be positive and increasing. The resources that a society devotes to build up good institutions is endogenous, depending on marginal cost and marginal benefit comparison. Since international traders and investors are more footloose than domestic ones, bad governance and bureaucratic corruption in a country drives out international trade and investment more than domestic trade and investment[8]. A country that is naturally more open – as determined by its size, geography and other factors – would find it optimal to devote more resources to build up good institutions. In equilibrium, such economies may display less corruption and higher quality of government than naturally less open economies.

It is possible to formalize it in a simple model (see Wei, 2000b). We won't repeat the model here. Instead, we concentrate on reviewing some key empirical results. We

[8] Wei (2000) shows that foreign investors are very averse to corruption: a rise in corruption from a level that prevails in Singapore (i.e., low) to a level that prevails in Mexico (i.e., high) has the same negative effect of on inward foreign direct investment as raising the marginal tax rate by fifty percent points!. Tamirisa and Wei (2000) show that corruption also deters international trade significantly. It doesn't appear to act as a grease to reduce the negative effect of tariffs and other trade barriers.

examine two different types of indicators of government quality. The first is an indicator of the output of public governance, namely the level of bureaucratic corruption. The second is an indicator of an input of public governance, namely, the public sector salaries relative to their private sector alternatives

We now examine in the data the connection between good government and a measure of natural openness. We look at two indicators of quality of government. The first is an output of public governance, namely level of bureaucratic corruption. The second is an input of public governance, namely the civil servant salaries relative to their private sector alternative.

We proceed in the following way. We first explain how "natural openness" is defined and constructed, but leaving a complete explanation of the source and definition of the other variables in a separate data appendix. We then proceed to show a sequence of regressions. Our measures of corruption were for early 1980s and late 1990s, respectively. So we discuss our empirical tests for the two periods sequentially.

Measuring Natural Openness

We decompose the conventional measure of openness – exports plus imports, including service, as percentage of GDP – into "natural openness" and "residual openness" by estimating what level of openness a country should have based on its size, geographic and linguistic characteristics. Specifically, we run the following regression:

$$\log[\frac{\exp ort(k)+import(k)}{GDP(k)}] = \beta_1 \,\mathrm{Re}\, moteness(k) + \beta_2 \log[\, population(k)]$$
$$+ dummies\_for\_major\_languages + other\_geographic\_characterisitcs + e(k)$$

We define the fitted value from such a regression as a measure of the country's "natural openness," and label the residual as "residual openness."

Such a regression resembles the empirically highly successful gravity equation in the trade literature except that its dependent variable is a country's trade-to-GDP ratio rather than bilateral trade. One can find a long list of empirical papers using the gravity equation. Recent applications include Frankel, Stein and Wei (1995) and Rose (1999). Frankel and Romer (1999) applied the gravity equation to construct an instrumented

variable for openness, which is a close cousin of our "natural openness" measure. The theoretical foundation of the gravity equation has been provided by Helpman and Krugman (1985), and Deardorff (1998), among others.

We construct "Remoteness" to capture how far a country is from the rest of the world. Intuitively, Argentina, being at the tip of South America, is further away from the world market than France, being in the heart of the European continent. If other things were equal, France would naturally have a higher trade-to-GDP ratio than Argentina. An empirical measure of "remoteness" was first constructed by Wei (1996). Here, we construct country k's remoteness as a weighted average of its distance to all other countries in the world, with other countries share of total trade in the world's total trade as the weights[9].

$$\text{Re}\,motenss(k) = \sum_{j \neq k} w(j) \log[\,Dis\tan ce(k, j)]$$

$$\text{where} \quad w(j) = \frac{trade(j)}{\sum_{i \neq j} trade(i)}$$

and trade(j) is country j's exports plus imports, averaged over three years.

For language abilities, we construct three dummies, "English," "French," and "Spanish," each of which taking the value of one if the country speaks the respective language, and zero otherwise. For other geographic characteristics, we construct a dummy, "landlock," if the country is landlocked; another dummy, "island," if the country is an island, and finally, the ratio of the length a country's sea coast to its land area, labeled as "coast-to-land area ratio."

We first explain the construction of "natural openness" in the late 1970s/early 1980s. Table 11 reports a succession of regressions on openness (exports plus imports divided by GDP, averaged over 1978-80. In column 1, only remoteness and log(population) are included. The coefficient estimates are both negative and statistically significant: countries that are far away from the world market are less open; and large countries are less open.

[9] For this measure, the "world" consists of 169 countries in our 1978-80 sample, and 184 countries in our 1994-96 sample. The distance measure for a particular pair of countries is the "greater circle distance" between the economic centers of the two countries, typically the capitals.

In Columns 2-4, we successively add dummies for landlocked countries, islands, and the ratio of coastal length to land area. While they often have the correct signs, they are not statistically significant when included together. In Column 5, we add three dummies for the three major international languages, English, French and Spanish. The English dummy is positive and significant at the five percent level: English language ability facilitates international trade. The French and the Spanish dummies are not statistically significant. In Column 6, we report a regression that only includes the three regressors that are significant at the ten percent level or better (Remoteness, log Population, and English) in the previous columns.

In the subsequent empirical tests, we will use Column 5 in this table as the benchmark. We will define the fitted values from this regression as a measure of "natural openness" and label the residuals as "residual openness."

Natural Openness and Corruption

We regress a measure of corruption (by Business International, or BI) on the measure of "natural openness." Table 12 reports the basic regressions. In Column 1, when natural openness is entered by itself, its coefficient is negative and significant at the five percent level: naturally more open economies exhibit less corruption, exactly as our theoretical discussion has predicted. In Column 2, we add "residual openness," or the deviation of actual openness from the natural level. One possible reason for this deviation is government trade policies, which can cause the country to engage in more or less trade than its natural openness would have suggested. Somewhat surprisingly, the coefficient on the "residual openness" is not different from zero. In other words, the correlation between openness and corruption does not appear to go beyond what can be explained by geography, size and language abilities. Trade policies, in particular, appear to have played a relatively small role if at all in explaining corruption.

As we see from our theoretical discussion, richer countries tend to build better public institutions and display less corruption (and, outside our model, the reverse causality is also possible). In Column 3, we include per capital GDP as an additional control variable. Not surprisingly, the coefficient on this variable is negative and significant, confirming the notion that rich countries tend to have less corruption. Once per capital GDP is controlled for, the coefficient on natural openness drops substantially

in absolute value (from –2.6 to –1.3). However it remains negative and significant. In other words, naturally more open economies have less corruption, and this relationship goes beyond the fact rich countries are both more open and less corrupt.

One remedy for corruption is democratic institutions. Democracy offers a mechanism to monitor the behavior of government officials more closely and to throw them out of the office if they are found to be corrupt. One would expect that democracy helps to deter corruption. To check this, we include a measure of democracy as another control variable in Column 4. Unfortunately, democracy is not statistically different from zero (though it does have a negative coefficient). In Column 5, we add democracy by itself. Its coefficient is negative and significant: more democratic countries tend to have less corruption. However, the significance of the coefficient on democracy does not survive the addition of per capital GDP as a regressor. Hence, the democracy-corruption association merely reflects the fact that many rich countries are democracies and at the same time have less corruption.

In Table 13, we add a few more regressors that other people in the literature have found to be important. First, we include "ethno-linguistic fractionalization." Somewhat surprisingly, this measure if not statistically significant in our regressions.
[Some further probing indicates that if the ethno-linguistic fractionalization variable enters the regression by itself, it is positive and significant, exactly as in Mauro (1995). However, adding per capital GDP to the regression renders it to switch the sign and become insignificant.]

Treisman (1998) argued that federal states produce more corruption than unitary states. We include his dummy variable for federal states in Column 3. Contrary to his findings, we found that federal states have a coefficient point estimate that is essentially zero. On the other hand, Fisman and Gatti (1999) used different measures of fiscal decentralization and found that more decentralized economies tend to have lower corruption. Their two measures of decentralization are either the share of the provincial and local governments in total government expenditure, or the share of the provincial and local governments in total government revenues. In the last two columns of Table 13, we include the two Fisman-Gatti measures of fiscal decentralization. We confirm their finding that more decentralized economies do tend to have lower level of corruption as well. Here we do not want to get into the issue of direction of causality between

federalism and corruption. Instead, we wish to emphasize that controlling for the degree of decentralization, the coefficient on "natural openness" continues to be negative and significant.

As a robustness check, we also use an alternative measure of corruption generated by a different organization (Transparency International, or TI) at a different time period (1998). Using the TI corruption ratings, we replicate the key regressions in the earlier tables (with the regressors lagged by an appropriate period). We don't report the results here to save space. Broadly speaking, the results are qualitatively the same as before. First, the natural openness is always associated with less corruption. Second, residual openness is found to be insignificant throughout the tables. Third, high per capital GDP is associated with less corruption. Four, "democracy" does show up with a negative coefficient, consistent with the conventional wisdom. Fiscal decentralization as measured either by expenditure share or the revenue share of the local government in total governments' finance is also associated with less corruption.

Natural Openness and Public Sector Pay

Bureaucratic corruption can be viewed as an indicator of the government performance. So the previous discussions centered on the connection between natural openness and the outcome of the public institutions. Here, we turn to look at how natural openness may affect an intermediate building block of public institutions, namely the salaries of the government officials relative to their private sector alternatives.

Piecing together information from several sources including internal IMF's Recent Economic Development (RED), national statistical sources, the IMF's Government Fiscal Statistics, the International Labor Organizations' annual statistical books, and occasionally World Bank memos, Van Rijckeghem and Weder (1999) constructed a measure of civil servant salaries relative to their manufacturing sector wages. Manufacturing wage may not be a correct measure of the bureaucrat's private sector alternative. However, under the assumption that the bureaucrat's true private sector alternative is a constant multiplier of the manufacturing wage across countries (plus a random error), then their measure would be exactly right in terms of getting the appropriate cross-country variation in a regression. In any case, van Rijckeghem and

Weder reported fairly clear evidence that low public sector wages tend to be associated with high bureaucratic corruption[10].

Because the public sector relative salary is an input into the building of public governance rather than an output (such as corruption), it offers a good and separate channel to check our story on natural openness and quality of government. Table 14 reports the regression results on this question. In Column 1, we include "natural openness" as the only regressor. It has a positive and significant coefficient: a 10% increase in "natural openness" is associated with a 4% increase in the public sector salary relative to their private sector alternative. In Column 2, we add "residual openness." Both natural and residual openness have positive and significant coefficients. This suggests that, in addition to natural openness, other factors that promote openness, such as deliberate government policies, are also positively associated with the decision to pay civil servants better salaries. In Column 3, per capita GDP is added to the regression which has a positive coefficient: higher income countries on average choose to pay civil servants better. Controlling for the per capita income effect, both natural openness and residual openness continue to have a positive and significant effect on the public sector's relative salaries.

Globalization and corruption.

The results in Wei (2000b) offer a new interpretation of the connection between openness and quality of government. Countries are different in terms of their natural propensity to be open to international trade/business. Because foregone trade and business opportunities due to corruption and bad governance would be greater for naturally more open economies, they would choose to invest more in building up good public governance and display less corruption. Such a logic appears power in explaining the cross-country differences in bureaucratic corruption, and in civil servant salaries relative to their private sector alternatives. The type of public governance in a large

[10] Rauch and Evans (1997) constructed their own index of public sector relative salaries based on an average of the answers to two survey questions by developing countries officials, one on the level of public salaries, and the other on the growth rate of the salaries. They failed to find a statistically significant relationship between their measure of relative public sector wage and corruption. However, decomposing the Rauch-Evans index back to their components (wage level and wage growth), Rauch and Evans (1997, Column 3 in their Table 1) found that there is still a negative and significant relationship between corruption and the level of public sector wage.

number of countries does appear to respond to the incentive structure related to international trade and investment.

A country's "natural openness" rises when other countries liberalize their trade and investment, or when cost of international trade and business declines due to technological reasons. Both global trade/investment liberalization and technological advancement are ingredients of globalization. Therefore, globalization potentially can raise every country's "natural openness." This can enhance every country' incentive to build up good governance and to reduce corruption. Let me conclude with another Chinese proverb, "as the water rises, the boat gets higher." Globalization can reduce corruption.

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Table 1: Evolution of China's Openness

	1978	1980	1985	1990	1995	1998
Trade (% of GDP)	9.74	15.52	24.20	31.85	45.68	38.95
Imports of goods and services (% of GDP)	5.28	7.97	14.25	14.32	21.69	17.30
Exports of goods and services (% of GDP)	4.46	7.55	9.96	17.53	23.99	21.65
Inward FDI/GDP (%)	0	0.2	0.54	0.98	5.12	4.56

Table 2: Exports, Foreign Investment, and Industrial Growth in Chinese Cities, 1988-90

Variable	(1)	(2)	(3)	(4)	(5)	(6)
LY88	-.043*	-.016	-.015#	-.007	-.009	.006
	.023	.011	.009	.013	.008	.011
GPop	.598*	.604*	.617*	.271	.618*	.274
	.230	.231	.258	.201	.233	.203
LExp88	.025*					
	.015					
RExp88		.685#				
		.422				
GExp			.046*			
			.027			
LFDI88				.013*		
				.008		
RFDI88					.289	
					.192	
GFDI88						.008#
						.005
N	347	347	342	.142	341	124
SEE	.19	.19	.19	.13	.18	.13
Adjusted R^2	.18	.20	.21	.07	.19	.06

* and # denote significant at the 10% and 15% levels, respectively.

Table 3: Summary Information on Foreign Portfolio Investors in Korea

		All Investors		Residents		Non-residents	
		No. of Investors.	Average Position US$1000	No. of Investors	Average Position US$1000	No. of Investors	Average Position US$1000.
All Investors	Dec. 27, 1996 Nov. 29, 1997	2,594 2,202	5,651 3,023	529 527	272 330	2,065 1,675	7,029 3,870
Individuals	Dec. 27, 1996 Nov. 29, 1997	735 716	116 51	503 501	79 39	232 215	195 78
Institutions	Dec. 27, 1996 Nov. 29, 1997	1,859 1,486	7,839 4,455	26 26	4,001 5,928	1,833 1,460	7,894 4,428

Notes:

(1) This table only reflects investors who registered at the Korea Securities Supervisory Board (KSSB) before December 31, 1996 and who are portfolio investors.

(2) Resident foreign individual investors are non-Korean nationals who live in Korea. Resident foreign institutional investors are foreign institutions that have at least a branch or subsidiary in Korea. Non-resident foreign individual or institutional investors are those who invest from outside Korea.

(3) Number of investors calculated by the number of unique investor ID codes.

Table 4. Momentum Trading

		(1) Resident	(2) Non-Resident	(3) = (2) - (1)
Tranquil Period 96.12-97.5	(1) Individual	-0.039 (0.036)	0.118** (0.046)	*0.157*** *(0.058)*
	(2) Institution	0.167 (0.135)	0.046** (0.022)	*-0.120* *(0.136)*
	(3) = (2) - (1)	*0.206* *(0.139)*	*-0.072* *(0.051)*	
Pre-Crisis Period 97.6-97.10	(4) Individual	0.003 (0.022)	0.168** (0.045)	*0.165*** *(0.050)*
	(5) Institution	0.303** (0.128)	0.471** (0.021)	*0.168* *(0.130)*
	(6) = (5) – (4)	*0.300*** *(0.130)*	*0.303*** *(0.050)*	
In-Crisis Period 97.11-98.6	(7) Individual	-0.016 (0.059)	-0.149 (0.097)	*-0.133* *(0.113)*
	(8) Institution	-0.349 (0.322)	0.884** (0.060)	*1.232*** *(0.327)*
	(9) = (8) – (7)	*-0.332* *(0.327)*	*1.033*** *(0.114)*	

Notes:

(1) Each cell in Columns 1 and 2, and Rows 1,2, 4,5, 7 and 8, reports the momentum measure measured by $M_{kjt} = [(Q_{kjt} - Q_{kjt-1}) / \overline{Q}_{kjt}] \times R_{jt-1}$ where Q_{kjt} is number of shares held by investor k on stock j at month t; $\overline{Q}_{kjt}$ is an average of Q_{kjt-1} and Q_{kjt}. Each cell reports momentum measure in percentage terms.

(2) $R_{jt-1} \equiv (\ln P_{jt-1} - \ln P_{jt-2})$ where P_{jt} is price of stock j at month t.

(3) Standard errors are in the parentheses. ** and * denote significance levels at the 5% and 10% levels, respectively.

(4) Tranquil period: December 1996 - May 1997
Pre-crisis period: June - October 1997
In-Crisis period: November 1997 - June 1998.

Table 5. Herding

		(1) Resident	(2) Non-Resident	*(3) = (2) - (1)*
Tranquil Period	(1) Individual	7.102** (2.136)	13.241** (2.571)	*6.139** (3.343)*
	(2) Institution	0.971 (1.520)	5.781** (0.455)	*4.810** (1.587)*
	(3) = (2) - (1)	*-6.132** (2.622)*	*-7.460** (2.611)*	
Pre-Crisis Period	(4) Individual	8.301** (3.338)	11.860** (3.071)	*3.559 (4.535)*
	(5) Institution	-2.345 (1.548)	4.690** (0.487)	*7.035** (1.622)*
	(6) = (5) – (4)	*-10.646** (3.679)*	*-7.169** (3.109)*	
In-Crisis Period	(7) Individual	4.848** (2.093)	8.422** (2.160)	*3.574 (3.007)*
	(8) Institution	1.602 (1.487)	2.553** (0.401)	*0.952 (1.540)*
	(9) = (8) – (7)	*-3.246 (2.568)*	*-5.869** (2.197)*	

Notes:

$$H_{jt} = \left| \frac{B_{jt}}{B_{jt} + S_{jt}} - p_t \right| - E\left| \frac{B_{jt}}{B_{jt} + S_{jt}} - p_t \right|$$

$$p_t \equiv \frac{\sum_{j=1}^{J} B_{jt}}{\sum_{j=1}^{J} B_{jt} + \sum_{j=1}^{J} S_{jt}}$$

where B_{jt} is number of buyers on stock j at month t; S_{jt} is number of sellers on stock j at month t; and J is the total number of stocks listed in the exchange. Each cell reports herding measure in percentage terms.

Table 6: Standard Deviations over 1980-1996 of FDI/GDP, Bank Loan/GDP, and Portfolio Flow/GDP

	S.D. of FDI/GDP	S.D. of Loans/GDP	S.D. of Portfolio/GDP
OECD (20 countries)			
Mean	0.0073	0.0208	0.0199
Median	0.0062	0.0174	0.0192
Emerging markets: 73 countries			
Mean	0.0218	0.0437	0.0109
Median	0.0102	0.0346	0.0037
Whole sample: 93 countries			
Mean	0.019	0.039	0.013
Median	0.009	0.033	0.009

Selected Countries	S.D. of FDI/GDP	S.D. of Loans/GDP	S.D. of Ptf/GDP
Indonesia	0.007	0.017	0.009
Korea	0.002	0.037	0.014
Malaysia	0.023	0.034	0.023
Mexico	0.007	0.033	0.026
Philippines	0.009	0.026	0.017
Thailand	0.007	0.028	0.012

Notes:
1: Sources: Total inward FDI flows, total bank loans, and total inward portfolio investments: IMF Balance of Payment Statistics; GDP: World Bank's GDF & WDI Central Databases.

2. Only countries that have at least eight non-missing observations during 1980-1996 for all three variables are kept in the sample.

Table 7: Quality of Public Governance and the Composition of Capital Inflows

	New Zealand	Singapore	Uruguay	Thailand
Corruption (Ti Index)	0.6 (less corrupt)	0.9	5.7	7.0 (more corrupt)
Ratios (ave. over 94-96)				
Loan / FDI	0.11	0.44	1.77	5.77
Portfolio / FDI	0.07	0.09	1.40	1.76
Absolute amount (ave. over 94-96)				
Loan	920	10500	794	2500
Portfolio	610	2200	627	761
FDI	8400	23600	448	432

1. Source: Total inward loans, portfolio investment, and FDI are from the IMF's Balance of Payment Statistics. The reported numbers are averages over 1994-96.

2. The lower half of the table reports the absolute amount of the three inflows in millions of US dollar.

Table 8: Corruption and Composition of Capital Inflows

Dependent variable: log(Loan) - log(FDI) specification	Fixed Effects	Random Effects	Fixed Effects	Random Effects	Fixed Effects	Random Effects
corruption	0.282**	0.288**	0.401**	0.387**	1.181**	1.214**
	(0.072)	(0.121)	(0.091)	(0.154)	(0.207)	(0.304)
measure of corruption	TI	TI	GCR	GCR	WDR	WDR
log gdp	-0.388**	-0.45**	-0.11	-0.174	-0.009	0.005
	(0.095)	(0.148)	(0.095)	(0.148)	(0.12)	(0.167)
log gdp per capita	0.15	0.201	0.092	0.108	0.193	0.199
	(0.126)	(0.221)	(0.095)	(0.162)	(0.176)	(0.266)
log distance between the two countries	0.388**	0.558**	0.331**	0.53**	0.682**	0.731**
	(0.105)	(0.119)	(0.098)	(0.116)	(0.126)	(0.139)
linguistic tie	-0.828**	-0.72**	-0.69**	-0.676**	-0.669#	-0.544
	(0.332)	(0.297)	(0.323)	(0.298)	(0.446)	(0.414)
source dummies?	yes	yes	yes	yes	yes	yes
Adjusted R^2 / Overall R^2	0.34	0.36	0.36	0.39	0.45	0.51
No. of obs.	261	261	241	241	146	146
Breusch and Pagan test Prob>chi2		0.00		0.00		0.00
Hausman test Prob>chi2		0.84		0.92		0.00

1. Breusch and Pagan lagrangian multiplier test for random effects. Ho: Var(u) = 0.
2. Hausman specification test. Ho: E[e(jk)|X(jk)] = 0. The p-value for Hausman's test in the last column might be a result of small sample.

Table 9: IV Regressions on Composition of Capital Inflows

Dependent variables:	log FDI		log Loan		Log(Loan/FDI)	
specification	Fixed Effects	Random Effects	Fixed Effects	Random Effects	Fixed Effects	Random Effects
corruption	-0.605*	-1.012*	-0.168	-0.208	0.793**	1.228**
	(0.341)	(0.531)	(0.152)	(0.223)	(0.328)	(0.615)
log gdp	1.276**	1.524**	1.059**	1.084**	-0.333**	-0.476**
	(0.119)	(0.183)	(0.040)	(0.058)	(0.114)	(0.212)
log gdp per capita	0.083	-0.007	0.184**	0.169*	0.074	0.189
	(0.145)	(0.234)	(0.062)	(0.091)	(0.139)	(0.273)
log distance between	-0.158	-0.783**	-0.541**	-0.851**	-0.126	0.241
the two countries	(0.159)	(0.172)	(0.087)	(0.102)	(0.153)	(0.170)
linguistic tie	0.604*	0.706**	0.680**	0.837**	-0.705**	-0.504*
	(0.349)	(0.303)	(0.141)	(0.134)	(0.335)	(0.291)
source dummies?	yes	yes	yes	yes	yes	yes
R^2	0.65	0.65	0.70	0.71	0.37	0.39
No. of obs.	197	197	708	708	197	197
Breusch and Pagan test Prob>chi2		0.00		0.00		0.00
Hausman test Prob>chi2		0.00		0.00		0.95

1. The results are similar if (Loan+0.1) and (FDI+0.1) are used.
2. The corruption measure (WDR) is instrumented by ethnolinguistic fragmentation and democracy93 indexes.

Table 10: Portfolio Versus Direct Investment from the US

Dependent variable: log (Portfolio/FDI)				
corruption	0.118	0.225*	-0.268	0.152
	(0.103)	(0.121)	(0.183)	(0.146)
measure of corruption	TI	GCR	WDR	GCR-IV
log GDP	0.290**	0.305**	0.296**	0.317**
	(0.124)	(0.138)	(0.121)	(0.112)
log GDP per capita	0.514**	0.508**	0.079	0.331**
	(0.164)	(0.100)	(0.155)	(0.071)
log distance	-0.197**	-0.200*	-0.162*	-0.236**
	(0.085)	(0.101)	(0.082)	(0.091)
linguistic tie	0.855**	0.872**	0.687**	0.510**
	(0.269)	(0.238)	(0.296)	(0.207)
constant	-9.322**	-9.857**	-4.685	-7.911**
	(4.443)	(4.425)	(3.308)	(3.420)
No. of Obs.	39	39	21	37
R^2	0.52	0.67	0.66	0.69

Notes:
1. Portfolio and FDI flows are averaged over 1994-96.
2. In the last regression, the corruption measure (GCR) is instrumented by ethnolinguistic fragmentation and democracy indexes.

Table 11: Explaining Openness
(averaged over 1978-80)

Dependent Variable: Log Openness						
	1	2	3	4	5	6
Remoteness	-0.272**	-0.269**	-0.277**	-0.299**	-0.329**	-0.316**
	(0.080)	(0.081)	(0.080)	(0.082)	(0.093)	(0.077)
Log population	-0.258**	-0.260**	-0.241**	-0.238**	-0.235**	-0.252**
	(0.021)	(0.021)	(0.024)	(0.024)	(0.024)	(0.021)
Landlock dummy		-0.161*	-0.115	-0.094	-0.099	
		(0.095)	(0.095)	(0.096)	(0.100)	
Coast length divided by land area			0.884#	0.629	0.561	
			(0.547)	(0.627)	(0.580)	
island dummy				0.133	0.107	
				(0.116)	(0.122)	
English dummy					0.174*	0.213**
					(0.091)	(0.080)
French dummy					-0.002	
					(0.091)	
Spanish dummy					-0.014	
					(0.101)	
R2	0.54	0.55	0.57	0.57	0.59	0.57
No. of Obs.	126	126	125	125	125	126

Note:
1. **, * and # denote significant at the 5%, 10%, and 15% level, respectively. Robust standard errors are in parentheses.

2. remoteness for country k $\equiv \sum_j W_{jt} \log(\text{Distance}_{jk})$.

$W_{kt} \equiv$ (total trade by country k in year t) / $\sum_{i \neq j}$ total trade$_i$. Total trade is the average over 1978-80.

Table 12: Natural Openness & Corruption
(Corruption = BI index, averaged over 1980-83)

Dependent variable: BI corruption					
	1	2	3	4	5
Natural openness	-2.454**	-2.613**	-1.300*	-1.284*	-1.945**
	(0.774)	(0.795)	(0.661)	(0.684)	(0.757)
Residual openness		0.359	0.428	0.008	-0.327
		(0.645)	(0.489)	(0.455)	(0.581)
Log per capital GDP			-1.817**	-1.469**	
			(0.268)	(0.416)	
Democracy				-0.127	-0.364**
				(0.096)	(0.066)
R2	0.14	0.15	0.54	0.57	0.43
No. of Obs.	66	65	65	63	63

Note:
1. natural openness is the predicted value of column 5 in table 2a .
2. residual openness is the residual from column 5 in table 2a.
3. Democracy is the sum of civil liberties index and political right index in 1983 (re-scaled so that a higher value indicates more democratic).

Table 13: Controlling Additional Determinants Of Corruption
(Corruption = BI index, averaged over 1980-83)

Dependent variable: BI corruption					
	1	2	3	4	5
Natural openness	-1.375*	-1.411*	-1.087#	-2.176*	-1.977*
	(0.703)	(0.807)	(0.715)	(1.115)	(1.073)
Residual openness	0.449	0.428	-0.472	-0.507	-0.599
	(0.510)	(0.996)	(0.481)	(0.700)	(0.723)
Log per capital GDP	-1.884**	-1.887**	-1.042**	-0.153	-0.163
	(0.303)	(0.317)	(0.302)	(0.559)	(0.576)
Ethno-linguistic fractionalization	-0.004	-0.009			
	(0.009)	(0.084)			
Ethno-linguistic fractionalization * natural openness		0.001			
		(0.022)			
Ethno-linguistic fractionalization * residual openness		0.001			
		(0.020)			
Democracy			-0.284**	-0.240	-0.278#
			(0.068)	(0.171)	(0.166)
Federalism			0.111		
			(0.426)		
Decentralization (expenditure)				-5.617**	
				(1.921)	
Decentralization (revenue)					-5.520**
					(1.993)
R2	0.53	0.53	0.63	0.59	0.57
No. of Obs.	64	64	63	39	39

Table 14: Natural Openness & Public Sector Salaries

Dependent variable: public sector salary / manufacture wage			
	1	2	3
Natural openness	0.421*	0.438**	0.316**
	(0.226)	(0.130)	(0.154)
Residual openness		0.669**	0.637**
		(0.194)	(0.180)
Log per capital GDP			0.219**
			(0.076)
R2	0.11	0.38	0.58
No. of Obs.	29	29	29

Note: Public sector relative salary on the left-hand-side is 1991 value (with four missing valued replaced by their 1990 values). All three variables on the right-hand-side are 1989 values.