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Where A Contract Is Signed Determines Its Value: Chinese Provincial Variation In Utilized vs. Contracted FDI Flows

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ABSTRACT

There are major differences between ex ante corporate investment plans and ex post investments. The case of China is useful for understanding this problem because there is substantial time series and cross sectional variation in the ratio of utilized to contracted FDI (*UC* ratio), which is less than one in most province-year observations. Provinces may believe that they are rewarded for reporting higher levels of contracted FDI, which would lead to lower *UC* ratios and higher policy incentives in subsequent years. Alternatively, provinces may be rewarded for reporting data more accurately, which would lead to higher *UC* ratios and policy incentives in subsequent years. Empirical analysis supports the second, institutional theory and suggests that provinces may increase their rate of utilizing pledged FDI by strengthening their legal systems and reducing government bureaucracy.

JEL Code: F23
Keywords: foreign direct investment (FDI); China; policy; institutions

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ABSTRACT

There are major differences between ex ante corporate investment plans and ex post investments. The case of China is useful for understanding this problem because there is substantial time series and cross sectional variation in the ratio of utilized to contracted FDI (*UC* ratio), which is less than one in most province-year observations. Provinces may believe that they are rewarded for reporting higher levels of contracted FDI, which would lead to lower *UC* ratios and higher policy incentives in subsequent years. Alternatively, provinces may be rewarded for reporting data more accurately, which would lead to higher *UC* ratios and policy incentives in subsequent years. Empirical analysis supports the second, institutional theory and suggests that provinces may increase their rate of utilizing pledged FDI by strengthening their legal systems and reducing government bureaucracy.

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1. Introduction

Corporations regularly announce investment projects and their expected monetary value. Large variations are often observed later with regards to the scale of project implementation. The discrepancies between the monetary values of ex ante announcements and ex post implementations are of great importance to economic planners and policy analysis. It is ambiguous a priori if this gap would be systematically related to macro-economic conditions, local infrastructure, or local institutional characteristics, or simply reflect unanticipated macro-economic shocks (e.g., exchange rate fluctuations) or firm anomalies.

China is a good case study for exploring this gap. China is the only country to systematically release data on contracted FDI which allows analysis of the gap between planned and actual FDI inflows. [1,2,3] Utilized FDI in China is often significantly less than the reported levels of contracted FDI. Moreover, China is regularly one of the top three recipients of FDI world-wide in recent years (UNCTAD, 2007). In addition, there is large domestic variation among the 27 provinces and four provincial-level municipalities on many dimensions, including utilized and contracted FDI, measures of economic growth, policy environment, and local institutions. The parts of China that have experienced the highest levels of utilized FDI inflows have also systematically recorded

[1] Utilized FDI represents actual paid-up, implemented foreign capital received in a particular year, while contracted FDI represents monies that foreign investors pledge to invest and are the total value of the approved investment projects, and are attributed to the year in which the project is approved. The terms "utilized" and "contracted" are used here in a manner that is consistent with the Chinese government's use of these two terms.

[2] The availability of the contracted FDI data in China may reflect the presence of a strong, centralized government, although other countries with similar governmental structures do not release data on contracted FDI (e.g., Vietnam). Thus, this appears to be a China-specific phenomenon. On the other hand, in many countries contractual foreign investment agreements are sometimes publicly released for large or strategic projects (e.g., Honda's production facility in Ohio).

[3] Comparable data on domestic corporate investments are not available. Thus the analysis herein uses only utilized and contracted FDI data to examine the gap between planned and actual investments.

the highest levels of economic growth, measured both as year-on-year changes in GDP and in sheer levels of GDP per capita. However, there is an inconsistent relationship between the ratio of utilized to contracted FDI (the *UC* ratio) and the local economy.[4]

National policymakers may react differently to utilized and contracted FDI flows, which represent *ex post* verifiable data versus *ex ante* data that is difficult to verify. For example, since it is widely believed that provincial governments report inflated levels of economic activity (e.g., GDP growth), the central government is believed to have responded by attaching less weight to local government reports of economic growth.[5] However, as the central government continues to push local authorities to grow local economies, the central government may continue to take locally reported data – even when not fully verifiable (e.g., contracted FDI) – under consideration when evaluating potential policy changes that could affect future growth. If provinces are rewarded for reporting higher levels of contracted FDI, then the *UC* ratio should decline and policy incentives improve in subsequent years. On the other hand, if provinces appear to be rewarded for reporting more accurate data, then the utilized and contracted flows should converge – or differ by less – and policy incentives would improve. The evidence supports the latter theory.

There are three general groupings of provinces based on the variation in contracted and utilized FDI (see Figure 1) and the *UC* ratio (see Figure 2). The *UC* ratio is below 1.0 in most province-year observations, and no province always has a ratio

[4] Utilized FDI and GDP growth have a correlation of 0.21 and the *UC* ratio and GDP growth have a correlation of -0.24; both of these correlations are statistically significant at the 1% level. On the other hand, the correlation of utilized FDI and GDP per capita is 0.55 and is statistically significant at the 1% level while the correlation of the *UC* ratio and GDP per capita is -0.08 and it is not statistically significant at any conventional significance level.

[5] We thank an anonymous referee for raising these points.

greater than 1.0 even while two provinces (Hainan and Hubei) have average *UC* ratios that are greater than 1.0. The first grouping contains those provinces where utilized FDI almost perfectly mirrors contracted FDI, and the *UC* ratio appears stable. This group includes Anhui and Shaanxi – that is, not the wealthiest provinces. The second cluster contains provinces where utilized FDI appears to follow a stationary process while contracted FDI bounces around. This group includes some of the wealthier provinces such as Jiangsu and Zhejiang. Finally, the third group is the provinces where both utilized and contracted FDI appear to swing markedly from year-to-year. This group includes such disparate provinces as Guangdong and Qinghai.

[INSERT FIGURE 1]

[INSERT FIGURE 2]

That the *UC* ratio is generally less than 1.0 provides a theoretical underpinning to the empirical analysis reported herein. Since nearly all provinces receive less FDI than is promised, it is appropriate to focus the empirical analysis on understanding why provinces might consistently realize lower levels of FDI than expected. It is possible that certain investments may systematically require a longer implementation time and thus generate lower *UC* ratios, or that knowledge acquired after investments are announced could lead companies to reduce the levels of their actual investments, as documented in lower ex post utilized FDI flows.

Drawing on the well-known facts that China has experienced uneven regional growth, and has substantial inter-provincial variation in the quality of institutions and operating environments, two explanations for the observed variation in the *UC* ratio are proposed. First, there is an uneven regional distribution of FDI whereby larger projects

are more likely to be located in the wealthier coastal regions. If larger projects require a longer investment period, that would yield lower *UC* ratios for the provinces with higher levels of contracted FDI and could also lead to lumpiness in the data that is used to construct the *UC* ratio. The corporate finance and corporate strategy literatures make evident that there is no firm rule regarding whether project scale systematically affects the speed of implementation. Firms may find it profitable to implement a project quickly even if investment costs are higher in order to avoid revenue losses (e.g., Pacheco-de-Almeida *et al.*, 2008). However, managerial myopia and personal interests may lead to slower project implementation (e.g., Grenadier and Wang, 2005). There is also conflicting evidence regarding the financial tradeoffs associated with expediting the pace of project implementation. Firms that are slow at project implementation may incur substantial revenue losses (e.g., Eisenhardt, 1989; Teece et al., 1997) or firms that accelerate investments may encounter higher investment costs (e.g., Scherer, 1967; Dierickx and Cool, 1989). It is thus ambiguous whether project scale would affect the speed with which a project is actually realized.

Second, inter-provincial variation in the operating environment and in the quality of local institutions may have asymmetric impacts on the flows of contracted and utilized foreign capital. To the extent that foreign investors care about the efficiency and impartiality of government institutions, foreigners may preferentially plan to locate in jurisdictions that are perceived to be better managed, and be even more likely to fulfill pledges to invest in such locations. Thus contracted FDI and the *UC* ratio would both be higher in locations that are perceived to be better managed.

Foreign investors appear to be more likely to honor their pledges (i.e., the *UC* ratio is higher) when the host province offers a better operating environment. Foreign investment pledges are more likely to be fulfilled in provinces that have a smaller state-owned sector, lower average wages, less government interference with private enterprise, and more lawyers and accountants. This suggests that investors make initial decisions (i.e., contracted FDI) based on easily accessed information regarding the local environments and use updated information sets on these criterion when actually investing (i.e., utilized FDI). Thus, the *UC* ratio is higher in provinces with more favorable operating environments. The *UC* ratio is also systematically higher in poorer provinces, which may reflect the fact that these provinces are likely to offer comparatively lower and more stable wage rates. These results are consistent with the broad literature on the determinants of utilized FDI (e.g., Graham, 1996; Grubaugh, 1987), specifically the effects of firm-specific factors such as relative production costs and technologies (e.g., Vernon, 1966; Markusen, 1995), export-substitution strategies (e.g., Buckley and Casson, 1976), and macro factors such as exchange rates (e.g., Froot and Stein, 1991; Blonigen, 1997). These results are also consistent with the agglomeration theory of investments (e.g., Head *et al.*, 1995), and the general finding that foreign firms prefer to co-locate near other foreign firms in order to enjoy spillovers and access to preferential resources (e.g., special economic zones (SEZs)), which has been studied extensively in the China context (e.g., Cheng and Kwan, 2000; Head and Ries, 1996).

These results suggest that provinces that want to increase their rate of utilizing pledged FDI should make strategic changes to their operating environment. Lu *et al.* (2009) find that enterprise productivity is significantly affected by inter-provincial

variation in property rights protection, which they use as a measure of the extent to which private property is effectively safeguarded by formal and informal laws and rules. To the extent that FDI is concentrated in more productive firms, it would therefore be advantageous for provinces to make it easier for market intermediaries such as accountants and lawyers to operate as a constraint on government interference. The *UC* ratio is significantly higher in provinces with stronger market intermediaries. Surprisingly, the *UC* ratio is significantly lower in provinces with stronger producers' rights as measured by the Chinese National Economic Research Institute (NERI), consistent with *de facto* protection of the status quo.

Section 2 presents an examination of contracted FDI data and the *UC* ratio. The dataset is discussed in Section 3, and the empirical models and results are presented in Section 4. Section 5 concludes.

2. Contracted FDI and the *UC* Ratio

2.1 Contracted FDI

China is the only country to systematically release data on contracted FDI. This may reflect the fact that foreign investors were required to obtain advance government approval for all investment projects, with the central government approving projects of a certain scale or in certain, strategically-controlled industries. Most rules on FDI were loosened when China joined the World Trade Organization in 2001 so that nearly all foreign investments could occur without governmental approval, and there are no apparent changes in the FDI data – contracted or utilized – after 2001.

Until 2005 contracted FDI data was reported by provinces and then re-released by the Ministry of Foreign Trade and Economic Cooperation (MOFTEC), which was later incorporated into the Ministry of Commerce. The central government has since stopped releasing this data while many provincial governments have continued to release it directly. Some observers believe the central government stopped releasing this data due to a belief that local governments may report inflated levels of contracted FDI in pursuit of special incentives from the central government (US-China Business Council, 2006). Local governments have continued to release this data, which suggests that they believe contracted data remains a useful signal – distinct from utilized FDI data – for projecting future economic growth prospects.

As reported levels of contracted FDI reflect expectations for future inflows of utilized FDI, contracted and utilized FDI flows may be jointly determined even though actual FDI inflows materialize in a subsequent period. See the Appendix for simultaneous equations modeling of contracted and utilized FDI. Simultaneous equations modeling is appropriate if contracted and utilized FDI are each conditioned on prior levels of inflows and are jointly determined based upon a common set of covariates. These results show that current FDI inflows are strongly influenced by contemporary and past FDI inflows of either type. This suggests strong support for agglomeration of foreign investors but does not enable analysis of why proposed and actual investment levels may differ systematically. Thus it is appropriate to analyze the *UC* ratio.

2.2 Exploring the gap between utilized and contracted FDI flows

The *UC* ratio is designed to indicate how accurately contracted FDI flows predict actual utilized flows. If the contracted flows are systematically related to utilized flows,

then the authorities and market observers can use these data to plan more effectively for future economic activity.[6]

The *UC* ratio is modeled as the ratio of utilized FDI flows in one or more consecutive years to the stock of contracted FDI associated with one or more consecutive years, where the years used in the numerator and denominator may not line up perfectly. The utilized flows represent the current value of all *actual* cash flows associated with a particular project in *one* time period whereas contracted flows represent the sum of present values of all future *expected* cash flows associated with a particular project in *all* subsequent time periods. This construction of the *UC* ratio is designed to mitigate potential timing mismatches between contracted and utilized FDI flows such as those caused by year-end project announcements. Given the design of this ratio, it is possible for a province to consistently have ratios that differ significantly from 1. Section 4 discusses how the *UC* ratio is estimated where the numerator and denominator are different functions of current and lagged values of utilized and contracted FDI.

The utilized and contracted FDI flows associated with a project could differ for many reasons. First, investment plans could be modified because of newly-received or newly-interpreted information (e.g., about the locale or about competitors). But, if the only sources of variation between utilized and contracted FDI flows are project-specific, then there would be no strong theoretical rationale for believing that utilized FDI flows should differ systematically from contracted FDI flows.

[6] While both contracted and utilized FDI levels for a particular project may well be a function of location (e.g., costs are higher in some provinces), the province choice decision is assumed to be a predetermined variable. This is necessary as our data do not indicate what other locations were considered for a particular project. Moreover, the data are aggregated at the province-year level.

Second, the substantial inter-provincial variation in the regulation of FDI and the overall operating environment may affect the gap between utilized and contracted FDI flows if investors learn more about the local operating environment after making initial investment plans.[7] To the extent that investors generally have greater familiarity with and knowledge of the areas with SEZs (e.g., Guangdong), it is therefore likely that investors would be more concerned about the local operating environment in locations without policy zones. Given the high degree of opacity in the Chinese government, it is possible that a foreign investor might deal with different sets of government agents before and after making initial investment decisions. A large literature has established a connection between overall flows of utilized FDI and the host country's institutional environment (e.g., La Porta *et al.*, 1997, 1998; Acemoglu *et al.*, 2003; etc.), and in China in particular (e.g., Fan *et al.*, 2007). Lu *et al.* (2009) find that enterprise productivity is highest in locations with better property rights protection, and Du *et al.* (2008) show that U.S. multinationals co-locate in the regions of China that have more market-friendly institutions. This then presents consistent evidence that companies, be they domestic or foreign, benefit from improvements in the local operating environment.

Next, the utilized and contracted values could differ due to fluctuations in relevant exchange rates or input costs. However, macro-economic factors such as exchange rates would affect all firms nation-wide and are thus excluded from our analysis. On the other hand, local cost structures (e.g., average wages) do vary significantly nation-wide and could have disparate impacts on contracted and utilized FDI flows.

[7] There may be considerable variation among the foreign investors with regards to the range of locales they would consider investing in. For example, export-oriented businesses predominate along the coast and would likely consider the relative merits of just a small number of locations whereas a domestically-oriented business might consider inland provincial locations as well.

Finally, a higher ratio of utilized to contracted FDI could reflect the scale of proposed FDI projects in a province. It may be harder to estimate accurately the true cost of a large project, leading to larger deviations of the associated utilized and contracted FDI flows. Large projects may also require more time to become fully operational and thus the utilized/contracted ratio would need to span more time periods.[8] However, the timing of a firm's actual investments is decided by a manager, whose personal interests may diverge from those of the firm. Thus, some firms may implement investments on an expedited scale due to managerial empire-building and entrenchment (Jensen, 1986; Shleifer and Vishny, 1989; and Morck and Yeung, 1992). In a similar vein, Narayanan (1985) and Stein (1989) show that managerial short-termism may lead to faster investments. The real options model built by Grenadier and Wang (2005) suggests that managers have greater incentives to delay investments longer than optimal. Thus, investments may be implemented at a sub-optimal pace but it is difficult to hypothesize a stable relationship between investment characteristics and speed of project implementation.

3. Data

The unbalanced panel dataset covers 1995 to 2005.[9] The contracted FDI data are reported by the Chinese Ministry of Foreign Trade and Economic Cooperation (MOFTEC) and were obtained from China Data Online and also the CEIC database.

[8] We thank an anonymous referee for this useful suggestion. The empirical results presented herein are robust to use of alternate constructions of the *UC* ratio that incorporate more time periods. See Table 2 Panel B for descriptions of these alternate measures and the correlation of these measures with the baseline measure of the *UC* ratio.

[9] Tibet is excluded from the empirical analysis due to the low level of FDI, incomplete available data, and the fact that for political reasons Tibet is regulated and governed differently than the rest of China.

Since the central government stopped releasing contracted FDI data after 2005, a second round of analysis used all available data, 1994-2007. These results are not reported herein as the key independent variables are not available after 2005. NERI has created a marketization index through principal component analysis of statistical and survey data from 1997-2005.[10] All other data were obtained from China Data Online. All data are at the province-year level.[11]

The data show both a secular increase and marked inter-provincial variation in utilized and contracted FDI flows over time. Figure 3 shows the temporal variation by province for utilized and contracted FDI during the period 1995-2004, during which time the utilized FDI received by provinces ranged from $4.6 mn (Qinghai 1999) to $13.2 bn (Jiangsu 2005). Figure 4 shows the variation in the *UC* ratio by province over time. See Table 1 for definitions and summary statistics of all the variables. While utilized and contracted FDI are concentrated in the relatively developed, coastal provinces, many poorer provinces have higher yields of utilized FDI relative to contracted FDI (see Figure 5 and Table 2). Since most FDI is so heavily concentrated in a small number of locales, foreign investors may conduct more due diligence prior to announcing projects in other provinces. That would be consistent with a higher *UC* ratio in the poorer provinces. Alternatively, the provinces that attract higher levels of utilized FDI may have overly optimistic expectations for future FDI inflows and thus report over-estimated levels of contracted FDI, consistent with lower *UC* ratios for these provinces.

[10] While the three volumes of this index (Fan, Wang and Zhang, 2001; Fan and Wang, 2003; Fan, Wang and Zhu, 2008) use the same sources and methodology, there are some seeming discontinuities between them as the data for years that overlap (e.g., 1999) are not consistent between the reports, and some provinces report lower values for 2001 than 2000 even while all other years show a steady increase in the values. Accordingly, the latest available data for a given year is used.

[11] As a result it is not possible to identify if a particular province-year observation should be excluded because of unusual patterns in the value or types of projects proposed or established in a particular year.

[INSERT TABLE 1 HERE]

[INSERT TABLE 2 HERE]

[INSERT FIGURE 3 HERE]

[INSERT FIGURE 4 HERE]

[INSERT FIGURE 5 HERE]

There is some notable variation in yearly FDI flows, both contracted and utilized, which may reflect projects that are larger, subject to greater government review (e.g., in certain industries), or more complex, which can naturally skew the total for a particular year. The scale of the average investment – estimated as the ratio of FDI actually utilized in a given year divided by the number of new foreign-invested enterprises to open that year – varies markedly over time and across provinces.[12,13] The average scale variable is highly significantly correlated with the log of utilized FDI (0.30), the log of contracted FDI (0.25), GDP per capita (0.18) and the annual GDP growth rate (0.23). This is consistent with the agglomeration theory of FDI and a general risk aversion strategy among foreign investors (i.e., that they concentrate their larger investments in the wealthier provinces). However, project scale is not necessarily correlated with length of project implementation.

4. Empirical method and results

4.1 The *UC* ratio

[12] It would be preferable to estimate the scale variable separately for contracted and utilized FDI but data are not available for the count of proposed FDI projects, just the count of actual FDI projects. Accordingly, the scale variable reflects the actually utilized FDI data.

[13] Since data for the structure of foreign-invested enterprises are not available by province-year, a more nuanced scale variable that would differentiate between structures (e.g., greenfield vs. acquisition, wholly foreign owned vs. joint venture, etc.) cannot be constructed.

The *UC* ratio is constructed as the ratio of the current utilized FDI to the average of current and lagged contracted FDI inflows, or

$$UC_{pt} = \frac{U_{p,t}}{(1/2)*(C_{p,t} + C_{p,t-1})}. \qquad [1]$$

The mean *UC* ratio is 0.684 and the range of values is 0.057 to 3.389 (Table 2 Panel A). There are no provinces that always have a *UC* ratio of 1.0 or higher but two provinces have an average *UC* ratio above 1.0 (Hainan and Hubei). There is no clear-cut relationship between the *UC* ratio and local economic conditions. For example, Shanghai's *UC* ratio averages 0.544 and ranges from 0.332 to 0.645 and yet Shaanxi's *UC* ratio is similar, averaging 0.542 and ranging from 0.444 to 0.623, but GDP per capita is more than seven times higher in Shanghai. Thus, the *UC* ratio clearly does not reflect only the underlying economic conditions as Shanghai and Shaanxi are extremely different on many socioeconomic, geographic and political dimensions.

Table 3 shows that the *UC* ratio is not highly correlated with any of our independent variables in aggregate or in separate analyses of provinces with GDP per capita below or above the national mean. The largest correlation by magnitude in the whole sample is of the *UC* ratio with the degree of government intervention (0.274). When the observations are split based on levels of GDP per capita, the magnitudes of the correlations increase and yet the correlations are 0.45 or less in absolute value.

[INSERT TABLE 3 HERE]

To the extent that FDI was historically concentrated in the wealthier coastal provinces, the *UC* ratios should be higher in the poorer provinces. In fact, the provinces that have historically attracted less FDI have higher *UC* ratios only after SEZs are opened

in them (Figure 5). Thus, there is unambiguous evidence that policy changes can have direct consequences for business behavior. On the other hand, the *UC* ratio remains high in these poorer provinces after the initial surge from the opening of the SEZs. This therefore makes clear that the poorer provinces are indeed realizing a higher degree of the promised FDI. A province that has not held much prior appeal to foreign investors would thus have a higher *UC* ratio, *ceteris paribus*, due simply to the stock of contracted FDI being lower. Over time as a province begins to attract more FDI, its *UC* ratio would therefore decrease. Ningxia's *UC* ratio, for example, appears to be consistent with this theory.

Two general trends in the *UC* ratio are documented. First, the national average *UC* ratio is increasing over time (see Figure 4). This could suggest that the ratio is approaching a steady-state equilibrium. Second, as noted above, when comparing the average *UC* ratio in provinces with GDP per capita below and above the national mean, it is evident that the *UC* ratio is generally substantially higher, and occasionally greater than 1.0, in the poorer provinces. The same pattern is observed when the data are instead split based on whether utilized FDI is below or above the national mean (see Figure 5).

As there is considerable inter-provincial variation regarding the relationship between utilized FDI flows and contracted FDI flows from different periods, six other measures of the *UC* ratio, labeled UC^2-UC^7, were also constructed. These ratios use different lags of utilized and contracted FDI flows, and are all highly correlated (Table 2 Panel B). All results reported herein are robust to the use of these alternative measures.

4.2 Empirical model

The determinants of the *UC* ratio are analyzed using measures that are commonly used in the FDI location selection literature (e.g., Coughlin et al., 1991). This allows identification of the impact of agglomeration tendencies, and local economic, policy and operating conditions. The model that is estimated is therefore:

$$UC_{p,t} = \beta_0 + \beta_1 \sum_{t=0}^{t-1} UFDI_{p,t} + \beta_2 X_{p,t} + \beta_3 policy_{p,t} + \beta_4 opcond_{p,t} + t + \varepsilon_{pt}. \quad [2]$$

The *UC* ratio is used as the dependent variable in our examination of how investor behavior is affected by the existing stock of utilized FDI into the province (*UFDI*), current economic conditions (*X*), the FDI policy environment (*policy*), and business operating conditions (*opcond*). The stock of utilized FDI is measured in the previous period and all other independent variables are measured contemporaneously with the dependent variable. If variations in the *UC* ratio are purely due to idiosyncratic, firm-specific investment decisions, then all the independent variables should be statistically insignificant; independent variables are statistically significant if they have different effects on utilized and contracted FDI flows. Year fixed effects are also included in this regression, and the error term is assumed to be i.i.d. normal.[14]

The existing stock of utilized FDI is included in the model as agglomeration economies have been shown to heavily influence FDI location selection decisions (e.g., Wheeler and Mody, 1992, and Head *et al.*, 1995).[15] The vector *X* contains observable

[14] Province fixed effects are not included due to high collinearity with the operating conditions variables. In addition, data are not available on the industry composition of FDI or export orientation of foreign invested projects by province.

[15] If the base level of FDI is endogenous, then it would be appropriate to instead use instrumental variables two-stage least squares to estimate [2]. In robustness tests not reported herein a measure of the local non-tradables sector was used as an instrument in order to capture potential local demand for the foreign invested enterprises' output. This was motivated by the assumption that people employed by foreign-invested enterprises may earn higher salaries and thus boost local domestic demand, and by Branstetter and Foley (2010)'s finding that most U.S. FDI in China is targeted at the domestic market. Two measures were used separately – total retail sales of consumer goods and gross fixed capital formation, both lagged one

provincial characteristics that could affect the realization of contracted FDI flows: local economic conditions, labor market characteristics, and infrastructure. Local GDP growth captures market growth. The proportion of total output attributable to state-owned enterprises proxies for market openness.

China's household registration system ('*hukou'*) makes it difficult for citizens to relocate domestically. Nonetheless there has been a large floating population of citizens who have migrated to the coastal provinces where jobs are both relatively plentiful and well-paid. This has left the hinterlands with a relative dearth of working age adults who have desirable skills and disposable income, further perpetuating foreign investors' relative preference for investing in coastal regions. Average annual wages or higher education are included in order to pick up labor costs and quality.

Finally, highway density is used to control for the local infrastructure.[16] The overburdened transportation and power infrastructure has exacerbated persistent differences between coastal and inland economic activity. Infrastructural inadequacies have been a particular problem in provinces where economic growth has outpaced infrastructure investments (e.g., Wei, 2003; Xinhua, 2004).

Since 1978 China has pursued a gradual policy of opening up the domestic economy through the adoption and implementation of new policies.[17] These policies were initially implemented only in some of the coastal provinces and municipalities. Some locales have been designated as SEZs or economic and technological development zones (ETDZs) where local authorities are given various types of preferential policies

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period – and thus the model was exactly identified. The results were qualitatively similar to those shown herein for the OLS estimation of [2].

[16] The log of electricity output is also used in robustness tests not reported herein.

[17] A comprehensive review of the history and development of all of these policies can be found in Branstetter and Lardy (2006) and also in Démurger *et al.* (2002).

(e.g., tax treatment) and the ability to adopt flexible policies towards FDI. While some provinces and lower level-authorities have also set up zones where FDI is treated differently, no public source has compiled data on these local zones.

In some zones where these preferential policies are in place, firms are allowed duty-free imports of intermediate outputs for export production and firms have more leeway to manage their own affairs outside of the strict confines of state regulation. While both foreign and domestic firms in these zones also benefit from greatly reduced tax rates, domestic firms are usually stripped of whatever state subsidies they would receive were they located outside such a zone.[18] The zones are populated by foreign firms and some of the more successful domestic firms. Wang and Hu (1999) showed that a "policy model" is better than an "economic model" for explaining FDI location decisions in China as foreign-invested enterprises predominate in locales with more favorable policy treatment versus those with the highest growth potential. This motivates the inclusion of controls for the two types of national-level economic policy zones, dummies for SEZs and ETDZs, and the marketization indexes derived by NERI.

A dummy variable for provinces with low GDP per capita is included to examine if the poorer provinces have systematically different patterns in the *UC* ratio. This variable is defined relative to the national average; in robustness tests not reported herein, it is instead defined relative to the median.

The marketization index is designed to capture the degree to which a province has adopted business-friendly practices.[19] Four of the nearly 30 sub-indexes of this

[18] The state invested heavily in the initial infrastructure for these zones but the state has not since made steady transfers to support the zones.

[19] Values are strictly bounded by 0 and 10 for the base year (with 10 representing the "best" value); values can be outside this range in subsequent years. The reports advise that values should be compared relative

marketization index that are available for most of the years of the NERI surveys (1997-2004) are used to capture concepts that may be particularly relevant to foreign investors, consistent with Du *et al.* (2008).[20] First, business executives were surveyed on the amount of time they "have to allocate to deal with the government in order to keep your business going". This is used as a measure of government intervention. Second, the number of law and accounting firms is used as an indicator of the development and efficiency of market intermediaries. Third, survey data on business executives was used to construct an index of whether producers' legal rights are protected, and this sheds light on the extent to which firms can expect their rights to be upheld and violators to be prosecuted. Finally, an index of intellectual property rights protection is used. This index is based on the ratios of the number of patent applications to GDP and of the number of patent approvals to GDP. This reveals the extent to which firms feel it is safe to conduct innovation, and the extent to which they believe their intellectual property rights will be protected.

4.3 Analysis of sources of variation in the *UC* ratio

The first round of analysis uses pooled data from all provinces. The *UC* ratio is insignificantly affected by the stock of utilized FDI and this provides strong support for the agglomeration theory of FDI (Table 4). To the extent that foreigners want to co-locate with other foreign firms, agglomeration has parallel effects on both utilized and contracted FDI, and thus the stock is insignificant in these regressions. Alternatively, the

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to one another and not versus a fixed number. Fan, Wang and Zhang (2001) suggest the index value be interpreted as "the relative position in the progress towards market economy compared to other provinces". The index can take values outside the range of 0-10 in subsequent years, whereby a value greater than 10 (less than 0) could indicate improvement (deterioration) relative to the previous year.

[20] The exact number and classification of the sub-indexes varies in each year.

lack of statistical significance for the stock of utilized FDI may indicate that utilized and contracted FDI flows are converging to a steady state.

[INSERT TABLE 4 HERE]

The *UC* ratio is insignificantly affected by the actual year-on-year growth rate in GDP. This suggests that the implementation of foreign investment plans is not contingent upon short-term economic activity. The *UC* ratio is strongly significantly higher in provinces with stronger free-market economies, which is measured inversely as the state-owned enterprise (SOE) sector share of total output. Investor follow-through on commitments is highest in those provinces where the state is extracting itself from the marketplace. The recent reduction in the size of the state sector may have reduced broader market distortions such as input monopolies, licensing restrictions and costs, and state subsidies.

The *UC* ratio is significantly higher when a province has special policy zones (i.e., SEZs or ETDZs). This is consistent with a matching process whereby firms with the greatest ability to make investments and the highest likelihood to honor commitments implement investment projects in the locations that are able to offer the most favorable operating environment. To the extent that contracted FDI predates utilized FDI and zones can be announced and/or opened in the period in between project announcement and implementation, this result shows that investors appreciate these zones and are most likely to actually invest in locales with them. The special policy zones were first opened in the coastal provinces that attract a disproportionate share of FDI in general and East Asian, predominantly export-oriented, FDI in particular. Thus, our finding that the *UC* ratio is significantly higher when a province has a policy zone could be capturing another

dimension of the type of FDI that certain provinces attract. Alternatively, this may capture the speed of project implementation whereby investors are faster to follow through on investment commitments in provinces with zones.

The coefficient for provinces with low GDP per capita was positive and strongly statistically significant in all years. Together with the consistent finding of statistically significant coefficients for the policy zones this reveals a clear story; contracted FDI pledges are more likely to be fulfilled when the host province has taken action to demonstrate that the foreign investor will be more valued. This comes through directly via the coefficients on policy zones, and indirectly via the coefficient on low GDP. This result suggests it would be appropriate to conduct a further round of analysis in order to ascertain whether policy shifts (e.g., the westward movement) or national events (e.g., ascension to the World Trade Organization (WTO)) caused systematic effects on the flows of utilized and contracted FDI.

If a key variable cost is labor, then the *UC* ratio should be lower in provinces with higher local wages and higher growth rates of wages. The results confirm this intuition, suggesting that investors are very concerned about possible wage inflation. However, if a control for whether a province has low GDP per capita is included, this effect completely disappears. Consistent with Cheng and Kwan (2000) and Fung *et al.* (2002), investors may expect relative inter-provincial wage variation to remain relatively constant, and make and implement investment plans accordingly. Thus, the speed of project implementation is affected by wage levels and this effect is concentrated in the provinces that have the highest wage levels and tightest labor markets.

The *UC* ratio is strongly higher in locales with better infrastructure as measured by highway density. These results suggest utilized FDI may be more sensitive than contracted FDI to current actual, versus expected future, operating conditions (e.g., infrastructure), which is also consistent with the results in Branstetter and Foley (2010).

Finally, there is considerable inter-provincial heterogeneity in the business operating environment due to the uneven passage and implementation of laws that protect business rights, and the uneven development of supporting institutions (e.g., law firms). Specific characteristics of the environment that affect daily business operations appear to have a strong impact on the *UC* ratio, and this effect largely disappears when a control is included for provinces with low GDP per capita. Contrary to expectations, the *UC* ratio is significantly lowered by improvements in the aggregate environment, which suggests either that foreign firms are attracted to these provinces in hope of greater local market opportunities but implement them more slowly because of other concerns, or that the firms have specific concerns about the operating environment that are not captured by the aggregate marketization index. Accordingly, four sub-indexes of the marketization index are used in separate regression analyses.

First, the UC ratio is significantly higher in provinces with less government intervention in the economy. However, there is no significant relationship in the fully expanded model where a control for low GDP per capita is also included. This result is consistent with the earlier observation regarding the state-owned enterprise sector; foreign firms prefer to locate in regions with less extensive government involvement in business as relevant input and output markets are more likely to be competitive and free

of price distortions. However, the extent of government intervention is not of additional importance to foreign investors in the poorer provinces.

Second, market intermediaries appear to be important in all provinces, and are not of greater importance in provinces with smaller market economies. Third, the *UC* ratio is significantly lowered when producers' rights are enforced more rigorously, and yet this effect is not affected by low GDP. This suggests that foreign investors prefer locales with both stronger laws and policies on the books and this is always important to them. Finally, foreign investment pledges are not more likely to be honored in provinces that have a stronger intellectual property rights (IPR) environment, and this is not contingent upon the state of the local provincial economy. These four sets of results suggest that foreign firms are more likely to fulfill their commitments when they believe local legal institutions are effective and that local bureaucrats are less likely to interfere. Moreover, the fact that the interactive terms of low GDP and these institutional characteristics are all statistically insignificant or only weakly significant suggests strongly that investor sensitivity to institutional characteristics does not vary much by locale.

4.4 The Westward Movement

In 1999 the government adopted a platform that took effect in 2000 to promote growth in the western provinces. This platform was designed to level the uneven playing field across provinces in terms of the operating environment for businesses, and to attract new investment, both domestic and foreign, to the western provinces. Equation [2] is therefore re-estimated separately for the two periods, 1994-1999 and 2000-2005. These results, reported in Table 5, show that there are interesting differences between the two periods, and that there was a clear effect from the policy change. First, the dummy

variable for whether a province has low GDP per capita is positive and statistically significant in the entire period, 1995-2005, and in the first period, 1995-1999, but not in the period 2000-2005. This is despite the fact that the raw data reveal that the *UC* ratio is consistently higher in provinces with low GDP, especially in the second period (see Figures 4 and 5).

[INSERT TABLE 5 HERE]

This result is very puzzling at first glance; it suggests that the westward movement had the opposite effect from what was intended. However, the raw data show that levels of utilized and contracted FDI rose after the westward movement (Figure 3) and that the *UC* ratio rose in all provinces (Figure 4) with the increase highest in the poorer provinces (Figure 5). It therefore suggests that the information set available to investors at time of formulating contracted and then utilized FDI plans has grown more complex over time. If this holds, then there should be significant differences in the importance of other variables between the two periods.

Second, although the proportion of provinces hosting SEZs and/or ETDZs did not change significantly across the periods, the impact of these zones on utilization of pledged FDI did change. As was shown in Table 4, the *UC* ratio was significantly higher for provinces with these zones in the entire period, and this is still true for the period from 2000 onwards. However, these zones appear to have a statistically insignificant effect in the earlier years.

There are several complementary explanations for the two sets of results just discussed. The role of the zones may have changed, making them more important to investors in the second period. In the first period the zones were located almost

exclusively in the wealthier, coastal provinces that attract the most FDI. However, in the second period the zones were located in most provinces, including some non-coastal and poorer provinces. This is consistent with a policy shift to encourage investment in a wider range of locales. Thus, taken together these two results, low GDP and policy zones, suggest that in the first period investors were more likely to fulfill their FDI pledges in poorer provinces irrespective of whether there were local policy zones, and in the second period that investors preferred those locations that have special policy zones.

Third, the stock of utilized FDI is a significant determinant of the *UC* ratio in the first period but not in the second period. This suggests that in the earlier years foreign investors were more eager to co-locate near other foreign enterprises.

Fourth, the *UC* ratio is significantly lowered by higher average wages in both periods, with this effect slightly larger in magnitude in the earlier years. This suggests that foreign investors may adjust their labor intensity in response to wage pressures. Higher wages could result in lower levels of capital implementation (i.e., *UC* ratios), if investors choose to walk away from planned investments in the face of higher than anticipated wages. Moreover, the fact that the coefficients on wages are lower in the second period is consistent with the wider geographic dispersion of FDI in this time.

Finally, the impact on the *UC* ratio of the provincial operating environment appears to be largely time-variant, with the aggregate index more important in the later years and some of the sub-indexes having an effect in the later period. A negative relationship between the *UC* ratio and the aggregate marketization index exists only from 2000 onwards. Two sub-indexes of the marketization index appear to have changed in importance between the two periods. First, the *UC* ratio is significantly higher after 2000

in provinces with less government intervention. Second, the beneficial impact of strong market intermediaries in provinces with low GDP per capita is present only in the second period. These results suggest that the degree to which investors' plans are affected by local institutions differed across these time periods.

It is thus evident that the westward movement did have a clear impact on foreign investment flows. There are big differences between the two periods. The raw data indicate that in the later years the western provinces generally achieved higher levels of investments, contracted and utilized, and that a higher proportion of the promised investments actually materialized (see Figures 3-5). The empirical analysis of this data suggest that much of the policy impact occurred via the expansion of the special policy zones as the coefficients on the SEZs and ETDZs were larger in magnitude and highly statistically significant in the later years.

4.5 Heckman Selection Model

In robustness tests a Heckman selection model is used to examine the relationship between the *UC* ratio and provincial characteristics conditional upon the province's track record of utilizing FDI. Observations are censored based on whether their stock of utilized FDI is below the national mean (Table 6). The results obtained from the full sample remain.

[INSERT TABLE 6 HERE]

5. Conclusion

The *UC* ratio varies markedly across provinces, with no province consistently recording a ratio of 1.0 or higher. Considerable variation is identified with regard to the

determinants of the *UC* ratio, which highlights the importance of considering the effects on FDI flows of geographic and institutional variation. Foreign investment pledges are more likely to be fulfilled in provinces where there are greater market opportunities and the local institutions are more market-friendly. These results are consistent with the broad literature on determinants of FDI.

The results suggest that foreign investors are acutely aware of the substantial inter-provincial variation in local operating conditions, and are learning from their experiences that this variation matters. The *UC* ratio is significantly affected by the degree of government intervention with local businesses, the presence of market intermediaries, and local IPR protection, particularly in the period after the westward movement took effect. Provinces that want to increase their utilized FDI yield may therefore find it optimal to make strategic changes to the local operating environment. For example, to increase business perceptions of government transparency, the government may want to make it easier for accountants and lawyers to operate, and for innovators to file more patents locally.

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Appendix

Since contracted FDI precedes utilized FDI flows, both types of flows could be affected by a similar set of location characteristics. Accordingly, three-stage least squares is used to estimate a series of simultaneous equations of the form:

$$C_{p.t} = \alpha_0 + \alpha_1 C_{p.t-1} + \alpha_2 U_{p.t} + \alpha_3 X_{p,t} + \delta P + t + \varepsilon_{p,t}$$
$$U_{p.t} = \beta_0 + \beta_1 U_{p.t-1} + \beta_2 C_{p.t} + \beta_3 X_{p,t} + \gamma P + t + \varepsilon_{p,t} \qquad [3]$$

where each type of FDI flows is modeled as a function of prior period flows of that type of FDI and current period flows of the other type of FDI. The vector *X* contains provincial characteristics that could affect the volume and mix of FDI inflows into a province: GDP per capita to capture local economic conditions, enrollment in institutions

of higher education to pick up labor market characteristics, average wages to capture operating costs, and either highway density or electricity output to measure the local infrastructure. Province and year fixed effects are also included to account for unobserved provincial characteristics and the national trend of higher FDI inflows over time. The error terms are assumed to be i.i.d. normal.

The results from estimation of [3] are reported in Table A.1 below. These results are consistent; current flows are strongly influenced by contemporary and past flows, irrespective of whether they are the same type of flow. The baseline models (Models 1 and 2) show that current period flows are strongly positively influenced by contemporary flows of the other type and that is largely offset by prior period flows of that other type. In the most fully specified and interactive models (Models 3 and 4), current flows of the other type of FDI and lagged flows of the same type of FDI both affect current flows. An asymmetry emerges here; contracted FDI flows are strongly positively influenced by both lagged contracted flows and contemporaneous utilized flows, with the coefficients roughly equal. Current utilized FDI flows are also strongly positively influenced by both lagged utilized flows and contemporaneous contracted flows but the coefficients differ tremendously in magnitude.

[INSERT TABLE A.1 HERE]

Table A.1 Simultaneous Equations Modeling of Contracted and Utilized FDI

This table reports estimation results from three stage least squares estimation of a system of simultaneous equations. The dependent variable is contracted or utilized FDI and the independent variables are the current and/or preceding period values of utilized and/or contracted FDI, and a vector of provincial characteristics. Year and province fixed effects, and a constant term are included but not reported for all regressions. Coefficients that are significant at the 10% level are denoted with a * ; 5% level, **; and 1% level, ***; standard errors are in parentheses.

	Model 1		Model 2		Model 3		Model 4	
Dependent Variable	Contracted	Utilized	Contracted	Utilized	Contracted	Utilized	Contracted	Utilized
Contracted FDI								
- Current		1.656**		1.707**		0.090***		0.093***
- Lagged		-1.327**		-1.345**	0.802***		0.788***	
Utilized FDI								
- Current	11.146***		10.794***		0.604**		0.586**	
- Lagged	-6.672***		-6.445***			0.599***		0.597***
GDP per capita	-0.292	-0.086	-0.264	-0.066	0.052	0.026**	0.039	0.024
Higher education	-0.132	-0.124*	-0.122	-0.133*	0.075***	0.012**	0.078***	0.011**
Employment ratio	-22.156	16.690			-10.081*	1.988		
Average wages			-6.819	1.390			-0.814	0.632
Highway density	-4.751	-0.118	-1.760	-2.717	0.072	0.426	1.592	0.163
# of observations	246		246		246		246	
Log-likelihood ratio	-1304.07		-1305.26		-586.93		-588.53	
R^2	0.283	0.378	0.326	0.329	0.949	0.975	0.948	0.974

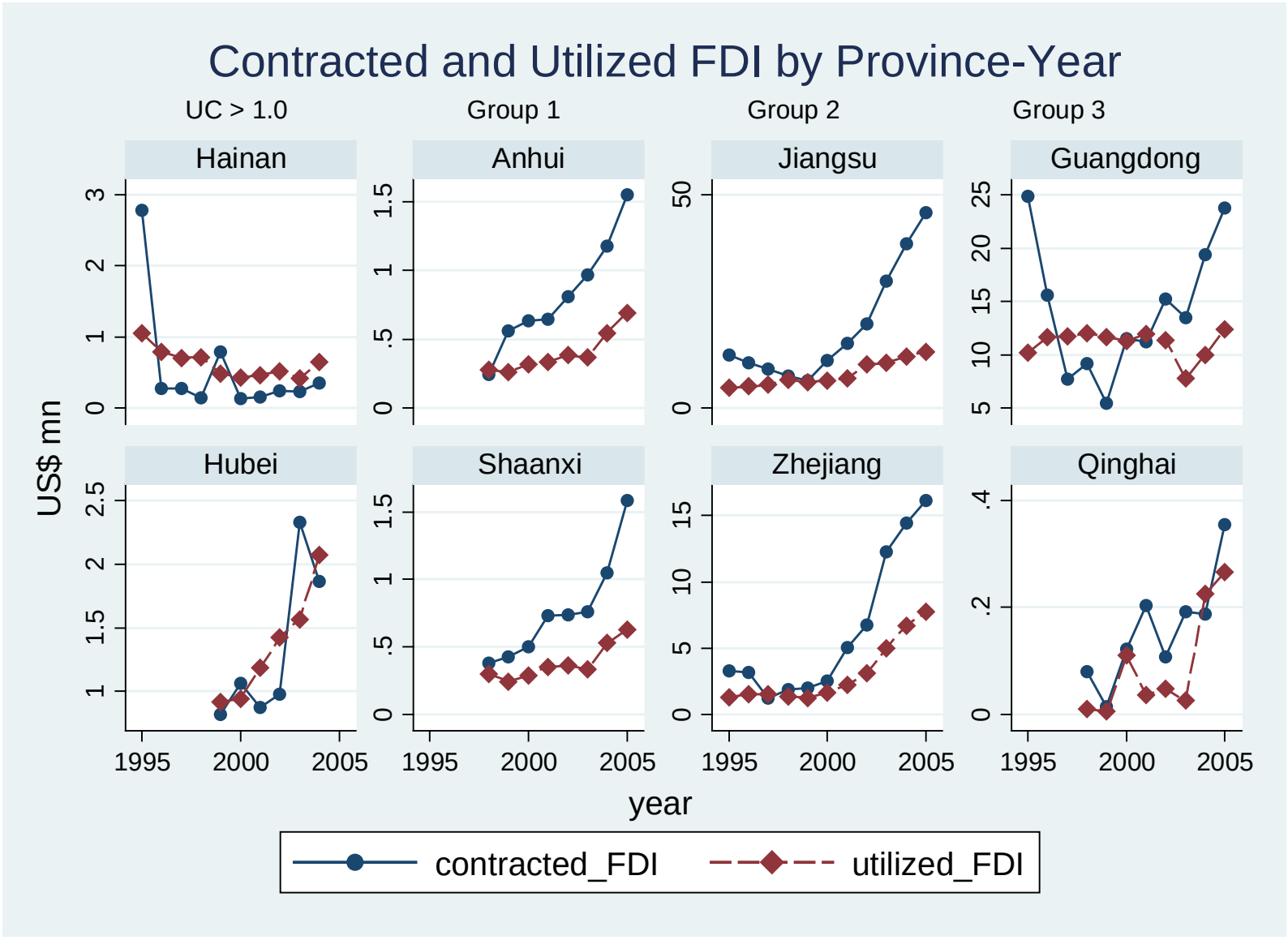
Contracted and Utilized FDI by Province-Year
UC > 1.0
Group 1
Group 2
Group 3
Hainan
Anhui
Jiangsu
Guangdong
Hubei
Shaanxi
Zhejiang
Qinghai
US$ mn
year
1995
2000
2005
contracted_FDI
utilized_FDI

Figure 1 -

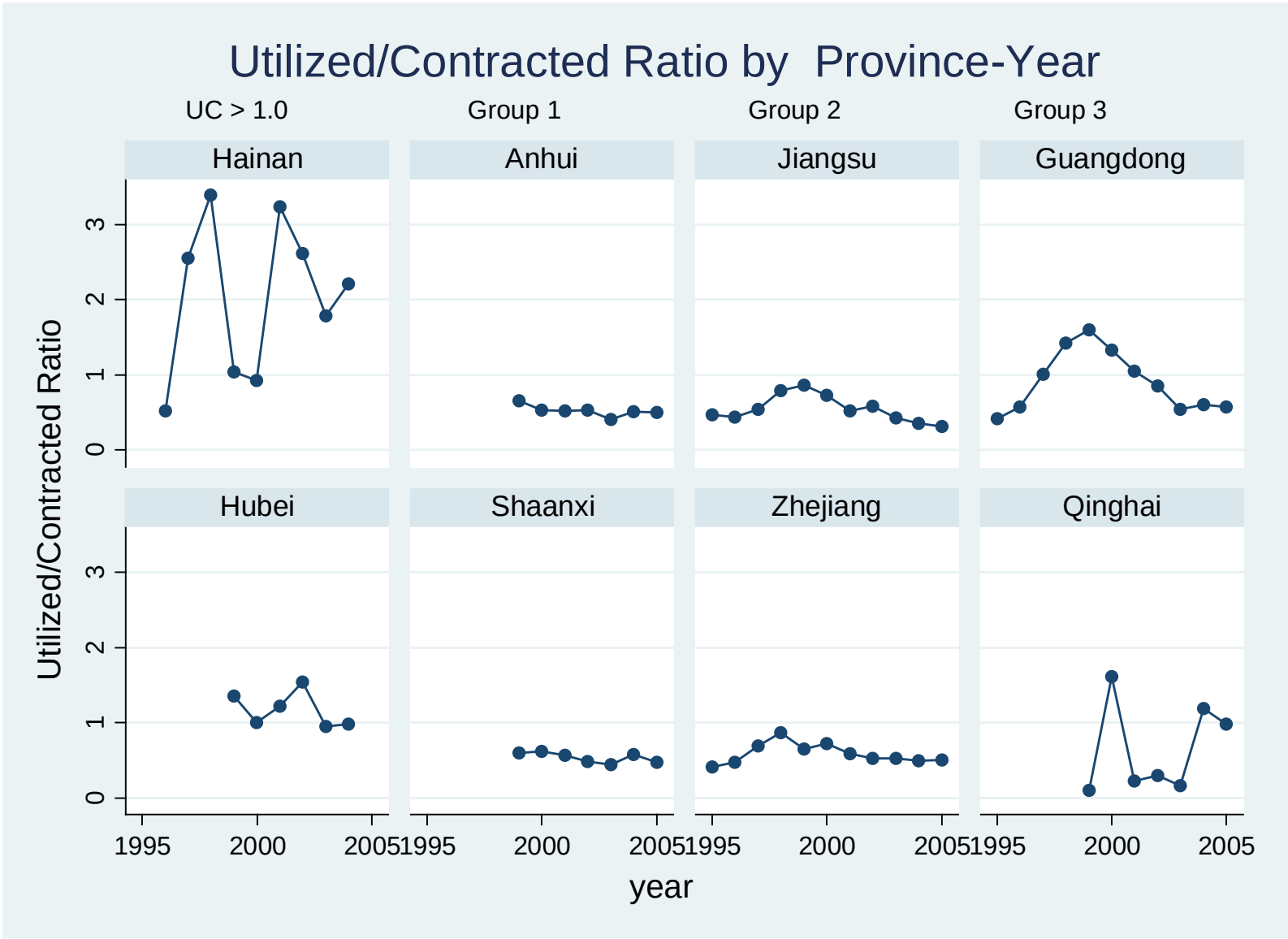
Utilized/Contracted Ratio by Province-Year
UC > 1.0
Group 1
Group 2
Group 3
Hainan
Anhui
Jiangsu
Guangdong
Hubei
Shaanxi
Zhejiang
Qinghai
Utilized/Contracted Ratio
0
1
2
3
1995
2000
2005
year

Figure 2 -

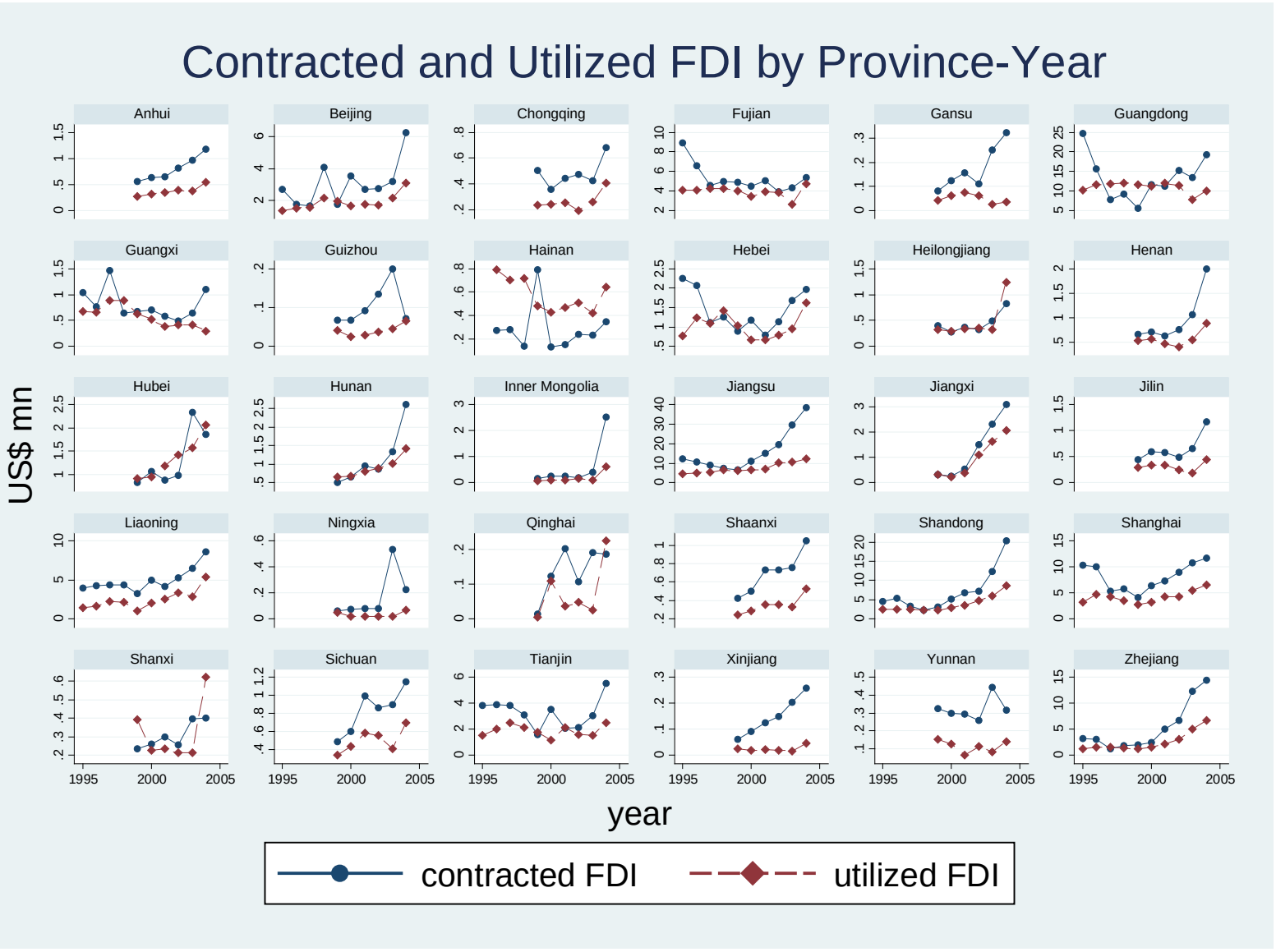
Contracted and Utilized FDI by Province-Year
Anhui
Beijing
Chongqing
Fujian
Gansu
Guangdong
Guangxi
Guizhou
Hainan
Hebei
Heilongjiang
Henan
Hubei
Hunan
Inner Mongolia
Jiangsu
Jiangxi
Jilin
Liaoning
Ningxia
Qinghai
Shaanxi
Shandong
Shanghai
Shanxi
Sichuan
Tianjin
Xinjiang
Yunnan
Zhejiang
US$ mn
1995
2000
2005
year
contracted FDI
utilized FDI

Figure 3 –

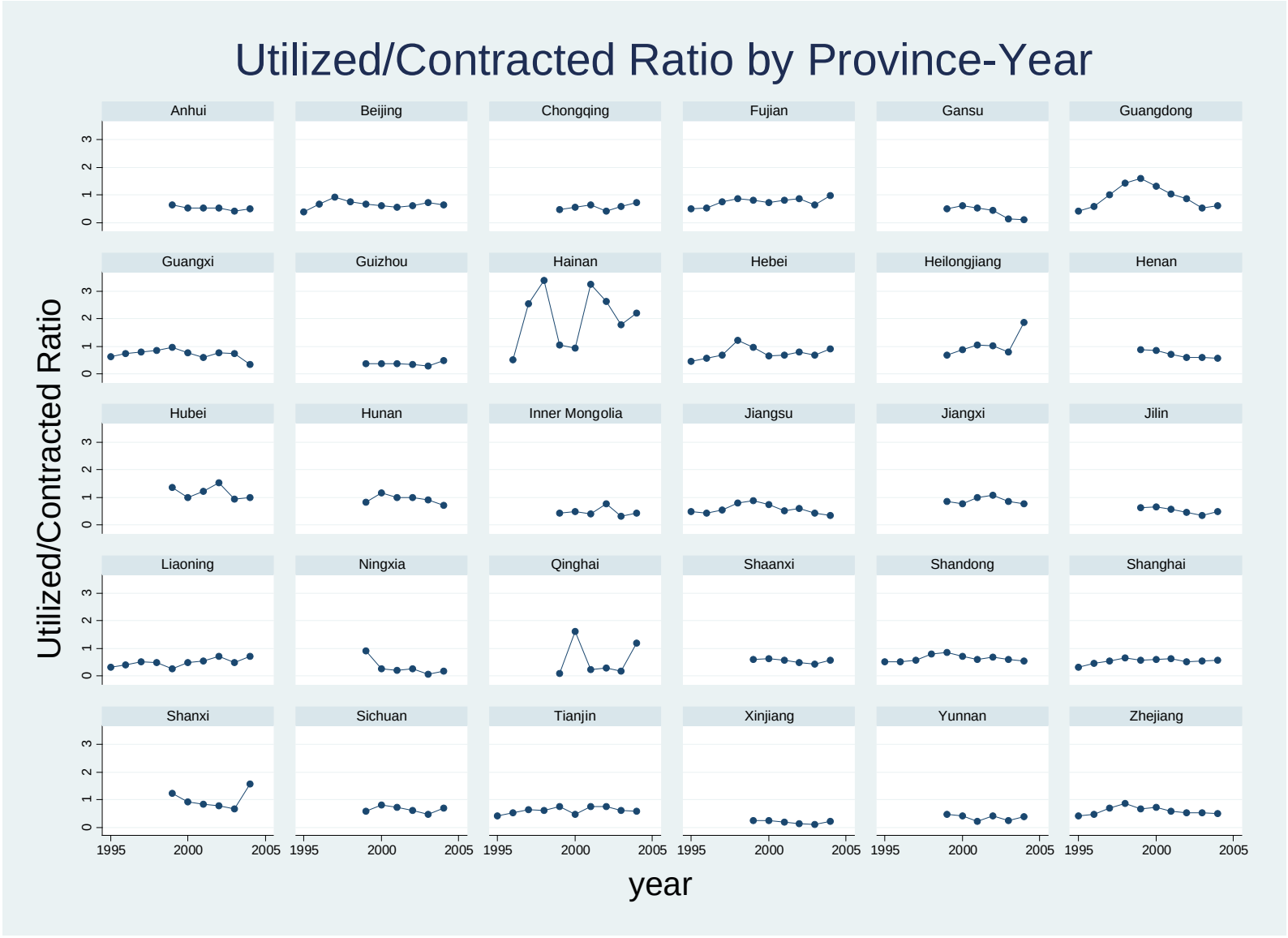
Utilized/Contracted Ratio by Province-Year
Utilized/Contracted Ratio
year
Anhui
Beijing
Chongqing
Fujian
Gansu
Guangdong
Guangxi
Guizhou
Hainan
Hebei
Heilongjiang
Henan
Hubei
Hunan
Inner Mongolia
Jiangsu
Jiangxi
Jilin
Liaoning
Ningxia
Qinghai
Shaanxi
Shandong
Shanghai
Shanxi
Sichuan
Tianjin
Xinjiang
Yunnan
Zhejiang
0
1
2
3
1995
2000
2005

Figure 4 -

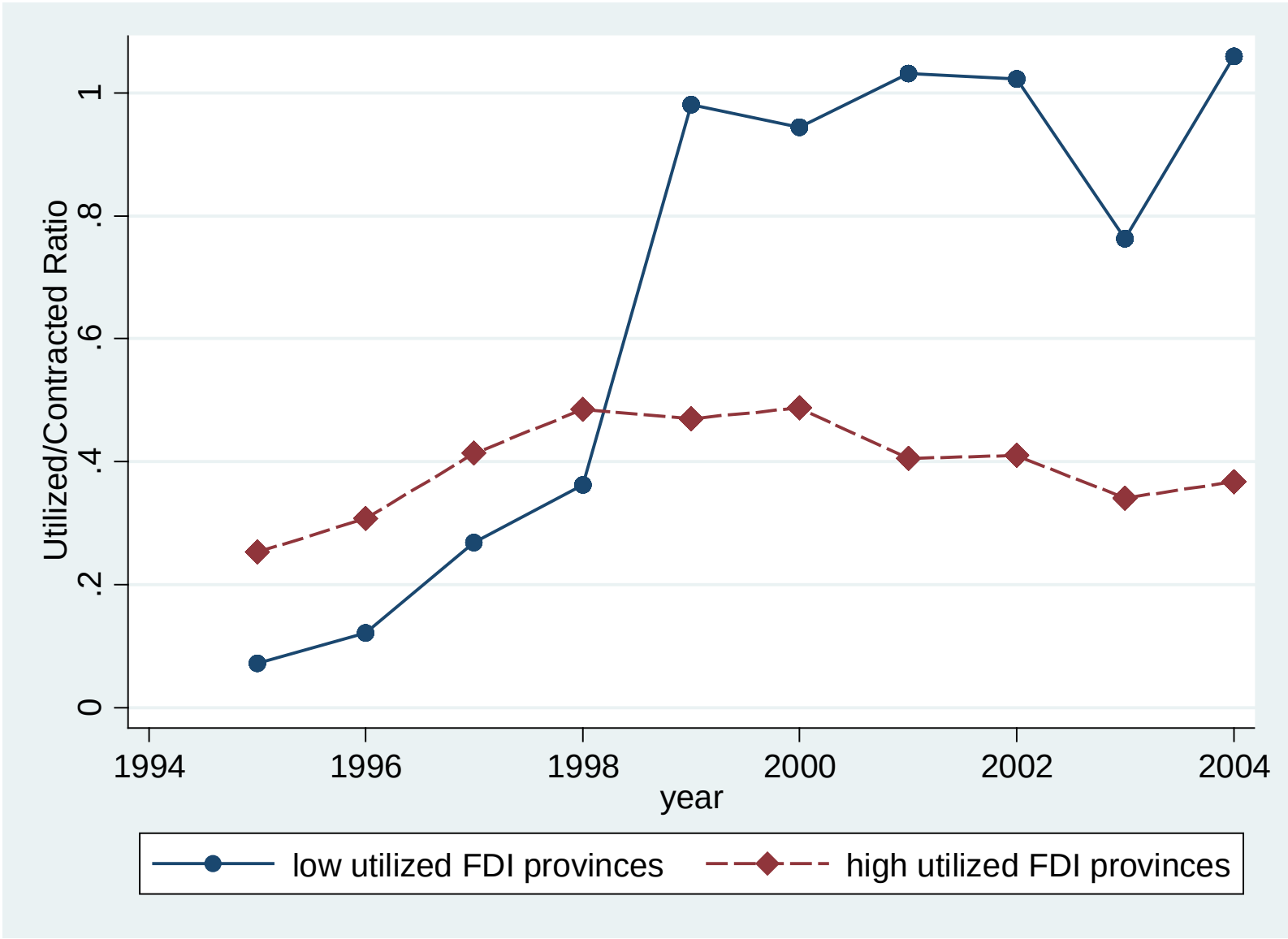
Utilized/Contracted Ratio
0
.2
.4
.6
.8
1
1994
1996
1998
2000
2002
2004
year
low utilized FDI provinces
high utilized FDI provinces

Figure 5 -

Table 1 Univariate Statistics for Variables

This table reports the definitions, mean, standard deviation, minimum and maximum of all variables.

Variable	Definition	Mean	S.D.	Min	Max	# obs
Measures of FDI						
Utilized FDI	Utilized FDI; measured in US$1bn	2.010	2.863	0.005	13.183	265
Contracted FDI	Contracted FDI; measured in US$1bn	3.584	6.004	0.014	45.722	265
UC ratio	Ratio of utilized FDI in year *t* to average of contracted FDI in years *t* and *t-1* as defined in [1]	0.684	0.427	0.057	3.389	246
Stock of utilized FDI	Stock of all utilized FDI; measured in US$1 bn	14.515	23.418	0.040	150.781	265
Scale of utilized FDI	Utilized FDI divided by number of foreign-invested enterprises to open in a given year; measured in US$1 mn	0.219	0.188	0.030	1.928	265
Local economic conditions						
GDP per capita	GDP per capita; measured in 1,000 RMB per person	10.446	7.892	2.301	51.542	265
GDP growth year-on-year	Year-on-year GDP growth rate	13.000	6.745	-9.255	49.693	265
SOE share	Ratio of state-owned enterprise (SOE) output to total output	0.336	0.221	0.042	0.900	260
lowGDP	Dummy for observations where the province's GDP per capita is below the mean value for all provinces in that year	0.619	0.487	0	1	265
Political conditions						
SEZ	Dummy variable that takes the value of 1 if a region has either special economic zone or open coastal city, and 0 otherwise	0.449	0.498	0	1	265
ETDZ	Dummy variable that takes the value of 1 if a region has a national economic and technological development zone, and 0 otherwise	0.853	0.355	0	1	265
Human capital & labor market						
Average wages	The logarithm of the average annual wage; measured in RMB per person	9.226	0.410	8.384	10.444	265
Higher education enrollment	The percentage of population enrolled at institutes of higher education	0.007	0.006	0.001	0.036	265
Infrastructure						
Highway density	The logarithm of highway density; measured in kilometer length of highway per square kilometer of land	-1.296	0.904	-3.959	0.267	265
Business conditions[21]						
Marketization score	Marketization index from NERI	5.714	1.709	1.91	10.41	241
Government intervention	NERI survey evidence regarding the extent of government intervention with business; used as an indicator of government control	5.094	2.813	0	10.13	221
Market intermediaries	NERI data on the development of market intermediaries, constructed using the ratios of lawyers and accountants to the local population	2.450	2.338	-0.71	11.39	222
Producers' rights	NERI survey data are used to create this index of the extent to which local producers' rights are protected	5.244	2.510	0	10	222
IPR	NERI survey data are used to create this index of how intellectual property rights are protected. This variable is created using the ratios of patent applications and patent approvals to local GDP.	2.503	3.317	-0.24	21.05	222

[21] All five measures of business conditions are based on survey evidence collected by NERI. As discussed in footnote 17, scores are strictly bounded by 0 and 10 in the base year and can be outside this range in subsequent years.

Table 2 The Utilized/Contracted FDI ratio

The utilized/contracted FDI ratio (*UC*) is estimated as the ratio of current period utilized FDI to the average value of contracted FDI in the current and preceding periods, as is shown in equation [1]. Panel A reports the mean, standard deviation, minimum, maximum number of observations of *UC* nationally and by province, and province classification. Province classification, as defined in the introduction, is 1 if a province appears to have highly synchronized flows of utilized and contracted FDI, 2 if the utilized FDI appears stationary and the contracted FDI is not, and 3 if neither series appears to be stationary. Panel B presents the correlation of the *UC* ratio with alternative constructions of the ratio, as discussed in Section 5.1.

Panel A: Summary statistics for the *UC* ratio

	Mean	S.D.	Min	Max	# observations	Province classification
National	0.684	0.427	0.057	3.389	246	
Anhui	0.524	0.070	0.413	0.652	7	1
Beijing	0.652	0.133	0.386	0.918	11	3
Chongqing	0.590	0.109	0.428	0.732	7	3
Fujian	0.727	0.173	0.462	0.988	11	3
Gansu	0.346	0.223	0.087	0.606	7	3
Guangdong	0.908	0.404	0.419	1.594	11	3
Guangxi	0.714	0.169	0.339	0.965	10	3
Guizhou	0.366	0.068	0.271	0.481	6	2
Hainan	2.028	1.030	0.517	3.389	9	> 1.0
Hebei	0.769	0.205	0.460	1.202	11	3
Heilongjiang	0.923	0.505	0.198	1.872	7	1
Henan	0.677	0.134	0.566	0.886	7	3
Hubei	1.177	0.240	0.948	1.540	6	> 1.0
Hunan	0.888	0.188	0.605	1.162	7	1
Inner Mongolia	0.470	0.160	0.303	0.773	6	2
Jiangsu	0.550	0.178	0.313	0.865	11	2
Jiangxi	0.882	0.126	0.762	1.069	6	1
Jilin	0.537	0.116	0.331	0.644	7	3
Liaoning	0.487	0.143	0.277	0.726	11	1
Ningxia	0.313	0.297	0.057	0.898	6	2
Qinghai	0.654	0.601	0.099	1.615	7	3
Shaanxi	0.542	0.070	0.444	0.623	7	1
Shandong	0.617	0.141	0.365	0.850	11	2
Shanghai	0.544	0.086	0.332	0.645	11	3
Shanxi	0.989	0.336	0.655	1.556	6	3
Sichuan	0.641	0.119	0.470	0.796	6	3
Tianjin	0.600	0.121	0.414	0.759	11	3
Xinjiang	0.183	0.062	0.087	0.249	6	2
Yunnan	0.352	0.101	0.218	0.469	6	3
Zhejiang	0.587	0.133	0.410	0.866	11	2

Panel B: Correlations of alternative constructions of *UC*

	UC	UC^2	UC^3	UC^4	UC^5	UC^6	UC^7
$UC_{pt} = \frac{U_{p,t}}{(1/2)*(C_{p,t} + C_{p,t-1})}$	1.000						
$UC^2_{pt} = \frac{U_{p,t}}{C_{p,t-1}}$	0.735	1.000					
$UC^3_{pt} = \frac{U_{p,t}}{(1/2)*(C_{p,t-1} + C_{p,t-2})}$	0.694	0.756	1.000				
$UC^4_{pt} = \frac{U_{p,t}}{(1/3)*(C_{p,t} + C_{p,t-1} + C_{p,t-2})}$	0.877	0.686	0.882	1.000			
$UC^5_{pt} = \frac{(1/2)*(U_{p,t} + U_{p,t-1})}{(1/2)*(C_{p,t} + C_{p,t-1})}$	0.958	0.628	0.574	0.789	1.000		
$UC^6_{pt} = \frac{(1/2)*(U_{p,t} + U_{p,t-1})}{(1/2)*(C_{p,t-1} + C_{p,t-2})}$	0.701	0.681	0.936	0.864	0.671	1.000	
$UC^7_{pt} = \frac{(1/3)*(U_{p,t} + U_{p,t-1} + U_{p,t-2})}{(1/3)*(C_{p,t} + C_{p,t-1} + C_{p,t-2})}$	0.840	0.539	0.699	0.891	0.873	0.822	1.000

Table 3: Correlations of the Utilized/Contracted FDI Ratio (*UC*)

	all observations	low GDP = 1	low GDP = 0
1. utilized stock of FDI	0.051	0.450	0.262
2. GDP growth yoy	-0.242	-0.202	-0.392
3. SOE share	-0.088	-0.169	-0.114
4. low GDP	0.099		
5. SEZD	0.160	0.400	-0.070
6. ETDZD	0.102	0.153	.
7. average wages	-0.135	-0.217	0.038
8. highways	0.241	0.393	-0.015
9. marketization	0.096	0.295	-0.003
10. government intervention	0.274	0.369	0.227
11. market intermediaries	-0.027	0.116	-0.155
12. producers rights	0.019	0.086	-0.132
13. IPR	0.015	0.189	0.054

Table 4 OLS Regression Analysis of the Utilized/Contracted FDI Ratio (*UC*)

The dependent variable is the ratio of utilized FDI in the current period to the average value of contracted FDI in the current and preceding periods, the *UC* ratio. The independent variables measure the base level of FDI, current economic conditions, current economic policy for FDI in a province, average wages, infrastructure, business environment, and provincial incentives to mis-report contracted FDI data to the central government. Year fixed effects and a constant term are included but not reported for all regressions. Coefficients that are significant at the 10% level are denoted with a * ; 5% level, **; and 1% level, ***.

	1		2		3		4		5	
Pre-existing stock of utilized FDI	0.002	0.002	-0.001	0.002	0.002	0.004**	0.001	0.003*	0.001	0.002
GDP growth	-0.010	-0.006	-0.007	-0.004	-0.009	-0.005	-0.010	-0.006	-0.008	-0.004
SOE share	-0.356*	-0.535***	-0.294	-0.479**	-0.138	-0.301	-0.263	-0.487**	-0.184	-0.449**
lowGDP		0.872**		0.364**		0.521***		0.593***		0.649***
SEZ	0.137	0.276***	0.043	0.176*	0.142	0.352***	0.105	0.269***	0.084	0.248***
ETDZ	0.150*	0.228***	0.120	0.189**	0.123	0.239***	0.102	0.194**	0.099	0.210**
Average wages	-0.457***	-0.084	-0.740***	-0.232	-0.950***	-0.429*	-0.507***	-0.051	-0.628***	-0.180
Highway density	0.189***	0.195***	0.116***	0.134***	0.119***	0.129***	0.164***	0.175***	0.152***	0.171***
Marketization index	-0.087**	-0.022								
lowGDP * marketization index		-0.049								
Government intervention			0.048***	0.012						
lowGDP * government intervention				0.033						
Market intermediaries					0.043*	0.041*				
lowGDP * market intermediaries						0.070				
Producers' rights							-0.036**	-0.033		
lowGDP * producers' rights								-0.0004		
IPR									0.002	0.005
lowGDP * IPR										-0.034
# obs	218	218	201	201	201	201	201	201	201	201
R^2	0.258	0.337	0.291	0.356	0.260	0.361	0.265	0.346	0.246	0.332

Table 5 OLS Regression Analysis of the Utilized/Contracted FDI Ratio (*UC*) Before and After the Westward Push Began

The dependent variable is the ratio of utilized FDI in the current period to the average value of contracted FDI in the current and preceding periods, the *UC* ratio. The independent variables measure the base level of FDI, current economic conditions, current economic policy for FDI in a province, average wages, infrastructure, business environment, and provincial incentives to mis-report contracted FDI data to the central government. Year fixed effects and a constant term are included but not reported for all regressions. Coefficients that are significant at the 10% level are denoted with a * ; 5% level, **; and 1% level, ***.

Panel A: Through 1999

	1		2		3		4		5	
Pre-existing stock of utilized FDI	0.012**	0.010*	0.007	0.010*	0.011*	0.013**	0.011*	0.011**	0.008	0.009*
GDP growth	-0.071**	-0.035	-0.066*	-0.038	-0.075**	-0.040	-0.060*	-0.035	-0.073**	-0.039
SOE share	-0.747	-0.935*	-0.420	-0.799	-0.404	-0.800	-0.201	-0.734	-0.355	-0.609
lowGDP		2.242**		0.768*		0.806***		1.015**		0.544
SEZ	-0.009	0.155	-0.079	0.065	0.019	0.196	-0.047	0.081	-0.045	0.071
ETDZ	0.158	0.260	0.093	0.208	0.154	0.291	-0.039	0.087	0.087	0.096
Average wages	-0.740**	-0.260	-0.701*	-0.085	-1.117*	-0.497	-0.624*	-0.093	-0.720*	-0.086
Highway density	0.297**	0.404***	0.188	0.220**	0.178	0.195*	0.274**	0.271***	0.219**	0.207**
Marketization index	-0.158	0.004								
lowGDP * marketization index		-0.236								
Government intervention			0.024	0.009						
lowGDP * government intervention				0.007						
Market intermediaries					0.048	0.049				
lowGDP * market intermediaries						0.039				
Producers' rights							-0.050	-0.012		
lowGDP * producers' rights								-0.040		
IPR									0.016	0.029
lowGDP * IPR										0.268
# obs	53	53	53	53	53	53	53	53	53	53
R^2	0.424	0.582	0.401	0.548	0.402	0.564	0.424	0.563	0.393	0.585

Panel B: 2000 onwards

	1		2		3		4		5	
Pre-existing stock of utilized FDI	0.001	0.001	-0.002	0.0002	0.001	0.002	-0.0003	0.001	-0.00003	0.001
GDP growth	-0.006	-0.003	-0.003	-0.001	-0.005	-0.003	-0.005	-0.002	-0.003	-0.001
SOE share	-0.278	-0.376*	-0.235	-0.347*	-0.006	-0.098	-0.224	-0.406*	-0.114	-0.321
lowGDP		0.392		0.267		0.351*		0.315		0.498***
SEZ	0.191**	0.301***	0.101	0.208*	0.218**	0.388***	0.174*	0.320***	0.155	0.284***
ETDZ	0.206**	0.240**	0.170*	0.210**	0.172*	0.251***	0.179*	0.242**	0.156	0.238**
Average wages	-0.366**	-0.084	-0.749***	-0.392	-1.015***	-0.600**	-0.478***	-0.062	-0.563***	-0.223
Highway density	0.167***	0.156***	0.099**	0.114***	0.085*	0.095**	0.135***	0.147***	0.128***	0.148***
Marketization index	-0.088*	-0.056								
lowGDP * marketization index		0.005								
Government intervention			0.051***	0.022						
lowGDP * government intervention				0.021						
Market intermediaries					0.059**	0.052*				
lowGDP * market intermediaries						0.075				
Producers' rights							-0.033	-0.059		
lowGDP * producers' rights								0.027		
IPR									-0.004	-0.005
lowGDP * IPR										-0.035
# obs	165	165	148	148	148	148	148	148	148	148
R^2	0.232	0.275	0.267	0.294	0.250	0.315	0.236	0.286	0.223	0.271

Table 6 OLS Regression Analysis of the *UC* Ratio Conditional on the Province Having a Low Stock of Utilized FDI

The dependent variable is the ratio of utilized FDI in the current period to the average value of contracted FDI in the current and preceding periods, the *UC* ratio. The independent variables measure the base level of FDI, current economic conditions, current economic policy for FDI in a province, average wages, infrastructure, business environment, and provincial incentives to mis-report contracted FDI data to the central government. The Heckman sample selection model is used. Year fixed effects and a constant term are included but not reported for all regressions. Coefficients that are significant at the 10% level are denoted with a * ; 5% level, **; and 1% level, ***.

		1		2		3		4		5
Pre-existing stock of utilized FDI	0.003	0.002	0.001	0.002	0.005	0.004**	0.003	0.003	0.003	0.003
GDP growth	-0.009	-0.006	-0.006	-0.004	-0.007	-0.005	-0.008	-0.006	-0.007	-0.004
SOE share	-0.414	-0.535***	-0.362	-0.478***	-0.240	-0.299*	-0.340	-0.488***	-0.287	-0.448**
lowGDP		0.864**		0.340*		0.481***		0.604***		0.621***
SEZ	0.194	0.276***	0.114	0.176**	0.233	0.352***	0.171	0.269***	0.161	0.248***
ETDZ	0.176	0.227***	0.152	0.189**	0.173	0.239***	0.141	0.194**	0.142	0.210**
Average wages	-0.260	-0.083	-0.528	-0.232	-0.760	-0.430*	-0.321	-0.048	-0.399	-0.180
Highway density	0.182	0.195***	0.124	0.133***	0.117	0.129***	0.164	0.176***	0.155	0.171***
Marketization index	-0.067	-0.022								
lowGDP * marketization index		-0.049								
Government intervention			0.041	0.012						
lowGDP * government intervention				0.033						
Market intermediaries					0.050	0.041*				
lowGDP * market intermediaries						0.071				
Producers' rights							-0.028	-0.034		
lowGDP * producers' rights								0.001		
IPR									0.002	0.005
lowGDP * IPR										-0.034
Lambda	1.496	0.045	1.343	0.131	1.706	0.215	1.478	-0.100	1.612	0.153
# obs	237	237	220	220	220	220	220	220	220	220
(# censored)	(19)	(19)	(19)	(19)	(19)	(19)	(19)	(19)	(19)	(19)
X^2	7.509	110.682	10.145	111.827	6.086	115.880	7.837	106.574	6.385	10.634