The Determinants of Foreign Direct Investment (FDI):
the Case of the Chinese Provinces during the Economic Transition

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ABSTRACT

Foreign Direct Investment (FDI) is considered a relevant factor of Chinese economic growth particularly for the coastal region. The aim of this paper is to understand what determined the location of FDI in China during the economic transition from the early 1980's up to the Asian crisis. In order to examine which factors affected the amount of FDI received by the provinces an empirical analysis based is carried out. The estimates are obtained through a panel analysis utilising a panel data set at provincial level. The empirical findings emphasise that in addition to factors usually considered in the literature - such as market access, market profitability, strategic location, production costs, factor endowments, agglomeration effect, policy promotion, political stability, etc. - a higher FDI inflow is determined also by the level of institutional changes towards marketisation.

Keywords: Foreign direct investment, China, Economics of transition

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1. Introduction

Foreign Direct Investment (FDI)[1] is playing an increasing relevant role in the world economy. Policy makers of developing countries consider FDI as a possible strategy to attract capital, technology, marketing and management capabilities. In the last 15 years FDI increased much more than standard trade. For Multinational Corporations (MNCs) intra-firm trade replaces and complements international trade (Dunning, 1993). International competitiveness -considering the ongoing liberalisation- "imposes" to cut costs and "induces" large and medium size enterprises to use FDI and to become transnational companies. This mechanism is going to rule the "globalisation game" and in developing countries to influence where business will be a success and where poverty a persistence. This implies an effort of these countries to arrange the right 'conditions' to attract FDI, often forgetting that the advantages -in terms of socio-economic development- cannot be obtained automatically. Low income developing countries which have not the capability to attract FDI and especially to capture the benefits seem to be condemned from globalisation to look from the "window" the success of the other countries.

In other words, FDI "should be taken, but seriously". China did so from 1979. Now the People Republic of China (PRC) is among largest recipient of FDI in the world often second only to USA. In particular, China had the capability to capture the benefits that FDI can generate. In the last two decades, economic growth of Chinese coastal region benefited from FDI. In China foreign capital takes the forms of loans and FDI which is the main component (around 90% since 1992, 95% in 1999). In 2000 around 48% of Chinese exports are from FDI.

The aim is to understand throughout an empirical analysis which factors affected the amount of FDI received by the Chinese provinces during the economic transition. In addition to other studies, we examine if a different level of institutional changes -reached by the province economic systems- determine a higher FDI inflow. Understanding Chinese experience in an opportunity to interpret the determinants on the location of FDI in general and for transition economies in particular.

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[1] International capital flows in which a firm in one country creates or expands a subsidiary in another (Krugman and Obstfeld, 2000).

FDI's impact differs from other types of capital investment as it depends on various types of externalities and spillovers which are combined with and depend on specific factor endowments of the host country (for a survey see De Mello 1997). Although very challenging, the positive and negative role of FDI in China economic development is an argument *per se* and will not be examined in this paper.

The paper is structured into six sections. In the next section, the second, the "transition march" from a close socialist economy to the open socialist market economy is briefly depicted. In the third section, the main theoretical approaches and empirical studies are briefly examined in order to formulate an interpretative approach. At the end of this section the model utilised for the empirical analysis is specified. In the fourth section, the panel data set utilised (11 years from 1986 to 1996) and the method used for the econometric estimation are presented. In order to capture better the determinants of FDI, the estimations of the coefficients are obtained considering all the Chinese provinces together and also the coastal provinces separately. In the fifth section the empirical results on the factors which determined the different FDI distribution among Chinese provinces are examined. In the last section some conclusions are presented.

2. Transition and FDI: the Chinese road

The PRC was one of the first socialist planned economies to start the transition and to "open the door" to foreign investment. Among ex-socialist countries the PRC China received 67% of all the FDI from 1992 to 1999. In China the FDI net inflow passed from 0.5% of GDP in 1985 to 3.9% of GDP in 1999. In the same period the share of FDI on capital formation passed from 1.4 to 10.5% (World Bank, WDI, 2001). Then, if FDI is dominant in the energy sector in Russia and NIS in China -as in Central and Eastern European countries and Vietnam- is much more associated with the globalisation of production. The FDI takes forms of equity joint ventures, co-operative operations, wholly foreign-owned enterprises co-operative, co-operative development. The joint venture is the most popular form of FDI (especially before 1992) followed by wholly foreign-owned enterprises.

Chinese FDI inflow is characterised by large spatial differences with huge concentration into some provinces (see, table 1). From 1979 to 1999 more than 30% of FDI where in Guangdong province and, in the same period, the 12 Coastal provinces (including

Guangdong) attracted around 90% of the total FDI (Di Tommaso and Bellandi, 2006). In table 1 the provinces are classified into three macro-region East, Middle and West.

The different inflow of foreign investment among provinces can be emphasised by considering the FDI per capita between 1989 and 1999. For instance, if PRC on average received around 240 US dollars per capita Shanghai, Tianjin and Guangdong received respectively more than 1600, 1200 and 1100 while Qinghai only 3. In the same period the best European transition economies recipient Hungary and Czechoslovakia received more than 1800 and 1600 US dollars per capita. In 1999 around 46% of Chinese exports are from FDI, ranging from the 70% of Tianjin to the 1% of Qinghai.

Differently from other countries in transition such as the East European countries, CIS and NIS, China did not use FDI to privatise its economy. For transition economies the foreign investment are not only a source of capital but also a driving force for restructuring towards the market system. Although, foreign investment is certainly not a solution for achieving overall privatisation, it was used in many East European countries, CIS and NIS. Also for this reason the inflow of foreign direct investment was high among 1994 and 1999 but not constant during time recording peaks in coincidence with the privatisation boom. China and Vietnam received in those years a more constant inflow of FDI since they where de-linked with privatisation and connected to the globalisation of production. Considering East European countries, CIS and NIS, on one hand the 'new' governments hoped to attract foreign investors and the legislation was accordingly made much more favourable than it was before. On the other hand, the authorities had to take care of nationalistic feelings and dispel the idea that foreigners would select the best choices so as to make big profits Lavigne (1999). Under the communist regime, a legal framework for foreign investment had been created in all countries. In the 1960s in Yugoslavia, in the 1970s in Hungary, Romania, Poland and China, in the 1980s in Bulgaria, Russia and Czechoslovakia (Lavigne, 1999). Once transition begun ambiguous attitudes developed about FDI.

Table 1. Chinese Foreign Direct Investment (FDI) by region   1000000 US$

	MacroRegion	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	1985/1999	1985/1999
NATIONAL		1956	2244	2647	3740	3773	3705	4667	11292	27771	33946	37806	42135	52387	45463	40319	313849	%
Beijing	East	89	150	106	503	320	279	245	350	667	1372	1080	1553	1593	2168	1975	12449	4.1
Tianjin	East	56	51	133	61	31	37	133	108	614	1015	1521	2153	2511	2114	1764	12302	4.1
Hebei	East	8	11	10	19	44	44	57	113	397	523	547	830	1103	1429	1042	6177	2.0
Shanxi	Middle	1	0	5	7	10	3	4	54	86	32	64	138	269	245	391	1308	0.4
Inner Mongolia	Middle	3	7	5	6	4	11	2	5	85	40	58	72	73	91	65	527	0.2
Liaonjng	East	25	48	91	131	126	257	362	516	1279	1440	1425	1738	2366	2190	1062	13057	4.3
Jilin	Middle	5	24	7	10	10	18	32	75	275	242	408	452	402	409	301	2670	0.9
Heilongjiang	Middle	4	25	14	69	57	28	21	72	232	348	517	567	735	526	318	3534	1.2
Shanghai	East	108	149	214	233	422	174	145	494	3160	2473	2893	3941	4225	3602	2837	25069	8.3
Jiangsu	East	33	34	86	126	127	134	219	1463	2844	3763	5191	5210	5435	6632	6078	37375	12.4
Zhejiang	East	27	25	36	44	54	49	92	240	1032	1150	1258	1521	1503	1318	1233	9581	3.2
Anhui	Middle	3	35	3	28	9	14	11	55	258	370	483	507	434	277	261	2746	0.9
Fujian	East	119	63	55	145	348	320	471	1424	2874	3713	4044	4085	4197	4212	4024	30094	10.0
Jiangxi	Middle	10	9	5	9	9	8	19	100	208	262	289	301	481	465	321	2497	0.8
Shandong	East	36	66	65	90	163	186	216	1003	1874	2552	2689	2634	2776	2203	2259	18811	6.2
Henan	Middle	8	11	14	64	46	11	38	53	305	387	479	524	692	617	521	3769	1.2
Hubei	Middle	8	12	26	22	29	32	47	203	541	602	625	681	849	973	915	5564	1.8
Hunan	Middle	27	10	3	13	23	14	25	133	437	331	508	745	917	818	654	4659	1.5
Guangdong	East	605	802	685	1251	1323	1582	1943	3701	7556	9463	10260	11754	12635	12020	11658	87238	28.9
Guangxi	East	31	49	45	21	53	36	32	182	885	836	673	663	886	886	635	5912	2.0
Hainan	East	46	61	52	117	95	103	177	453	707	918	1062	789	706	717	484	6487	2.2
Sichuan	West	29	32	24	40	13	24	81	112	571	922	542	441	666	804	580	4881	1.6
Guizhou	West	10	12	0	10	13	11	14	20	43	64	57	31	50	45	41	420	0.1
Yunnan	West	2	4	0	8	8	7	4	29	97	65	98	65	166	146	154	851	0.3
Tibet	West	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	6	0.0
Shaanxi	West	16	37	73	112	97	47	32	46	234	239	324	326	628	300	242	2753	0.9
Gansu	West	1	1	0	2	1	1	5	0	12	88	64	90	41	39	41	387	0.1
Qinghai	West	0	0	0	3	0	0	0	1	3	2	2	1	2	0	5	19	0.0
Ningxia	West	0	0	0	0	0	0	0	0	12	7	4	6	7	19	51	107	0.0
Xinjiang	West	11	14	18	5	1	5	0	0	53	48	55	64	25	22	24	345	0.1

Note: In the period 1979-1984 China received 4103.85 US$ (1000000 US$)
* Among which Chongqing 431 in 1998 and 239 in 1999

Source: SSB (2000) and previous years.   4

The historic meeting of the Third Plenary Session of the 11th Central Committee (CC) of the Chinese Communist Party (CCP) held in December 1978, signs the beginning of the new era of reforms led by Deng Xiaoping. After two decades of almost total international economic isolation China started to open to the world to take advantage of international opportunities. The political isolation was interrupted in 1973 with the visit of the President of the USA Nixon. The 'open door policy' started after the process of "Reforms and Opening Up" with the establishment of the firstly four Special Economic Zones (SEZs) in 1979 (similar but larger than Southeast Asia export processing zones) and later with the establishment the Special open areas and Coastal open cities. The aim of the "windows and bridges" policy was to concentrate foreign investment to control and to test its effects. The foreign capital through direct investment was an opportunity on one side for the modernisation increasing technological capabilities, efficiency and competitiveness. On the other, it introduced the first international markets' signals and delineated the level of international market competition.

The institutional reforms started with the first Law on Chinese-Foreign Joint Ventures enacted in July 1979. It was the landmark legislation on inward FDI, while the final permission and protection for foreign investors abide Chinese laws in 1982. Coastal development strategy passed in 1984 to further attract the investment from Macao, Hong Kong and Taiwan. The coastal area policy gave a further push to inequality since East provinces had already an advantage in terms of the strategic location, human capital and physical infrastructure. Pro-coastal specific policies brought to an increasing disparity not only among East and inland provinces but also among areas of the same provinces influencing the migration flows within China and Chinese provinces.

Later, from 1986 onward, specific encouragement (incentives) were given for export enterprises and technologically advanced enterprises. Economic and technological development zones were approved by the State Council and initially directed only for the open cities. Gain access to modern technology, both embodied and disembodied, packaged with capital, management skills and international networking had to be captured mainly through co-operative joint ventures involving long-term investment co-operation and possibly by Chinese satellite Small and Medium Enterprises (SMEs) mainly Township and Village Enterprises (TVEs) throughout sub-contracting. The high technology exports as share of total exports passed from 6.5% in 1992 to 17.2% in 1999 (World Bank, WDI, 2001). Chinese enterprises were thus involved directly and indirectly with foreign

MNCs. For instance, at the end of 1996 the about 29,000 foreign funded Town and Township Enterprises TTE[2] had 4 million of employees (FASC NACO, 1999).

FDI inflow stagnated in China only in 1989. Due to 'Tiananmen' event the foreign countries announced a reduction in commercial relationship with PRC. Although a reduction was recorded (but only in the trend of FDI) the event increased the risk perception of foreign investors.

Therefore, further regulations were introduced in the following years to reduce the foreign investors risk perception. In 1990 the use of the land by foreign investors was liberalised and foreign funded enterprises could have a foreign chairperson.

Tax concessions in the form of reduced tax rates, tax holidays, and preferential deductions given to MNCs. Competition amongst provincial governments and municipalities bought to local investment in infrastructure, incentives in land use, preferential local taxes and special institutional arrangements.

Further steps were thus taken under the WTO re-admittance incentive. In April 1991 the tax laws relating to foreign investors were harmonised. The Law fixed the tax rate at 33%, at 24% for the 14 open cities and the open areas while at 15% for the SEZs. In 1992 a law to protect property right was introduced.

In 1992 the Deng Xiaoping travel to South China gave an important sign of political stability and a direction to Chinese reforms thus pushing the process of overture implementing foreign investors trust. This paved the road to new reforms in the direction of further overture and in the view of the WTO re-admittance obtained in November 2001. China's 'opening to the world' is now entering into the final phase.

The Chinese economy was able to capture large part of the benefits thanks to its capabilities in terms of human capital, political stability and in definitive to the government capacity to control and reform the economic system. For instance, the transition from a socialist planned economy to a market socialist economy created many opportunities for collective and private enterprises to fill the gap among the demand and the supply that the planned system was not able to meet.

Many East European countries, CIS and NIS adopting the 'shock therapy' did not give the time to national economic agents to adapt, to institution to evolve, to local entrepreneurs to emerge and to national firms to fill the demand-supply gap. The gradual and selective overture of the internal market to the international competition led space for the boom of the Chinese TVEs.

Furthermore, the general success of the reforms triggered the inflow of FDI. The main attractions to foreign MNCs to invest in China were and still are the low labour cost (compared to the level of

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[2] A subset of TVEs characterised by having equal or over 8 employees and in being non-agricultural enterprises.

education) and especially the existence of a large domestic market. The increase in real income switch over a billion of "poor" into almost a billion of potential consumers.

3. The theoretical and empirical arguments on the determinants of FDI

The determinants of FDI location have been examined in the literature both form a theoretical and empirical point of view. This section is not intended to be review of this literature, but rather an elucidation of relevant issues for the empirical analysis regarding the Chinese case.

From the literature emerges that the main theoretical approaches on the determinants of FDI location are three. The International Trade Approach which is based on the Hecksher-Ohlin-Samuelson (HOS) model and which provide some explanations on the reasons for FDI if some central hypothesis are relaxed within the same framework (Helleiner, 1989). For instance, the Arbitrage theory introduced the capital mobility, and recently high skilled workers mobility hypothesis is introduced as well. The second approach is related to the Industrial Organisation Framework which is based on the Schumpeter's theory of the role of the entrepreneur and thus explaining the FDI location in the process of innovating for profits. Within this approach other important theories emerged based on transaction costs and Social capital theory. The third approach is the Dunning's Eclectic Approach named the OLI (Ownership, Location, Internalisation) framework which underlines that FDI takes place when internalising the market is preferable to other trading mechanism. This approach, which can be situated theoretically among the previous two, is based on the presence of three advantages of FDI (Ownership, location, Internalisation) which outweigh the costs of producing in a foreign country. The Ownership advantages occur when a firm has an advantage over rivals and want to maintain it -such as market access (brand name, reputation for quality), infrastructure, lower transaction or production costs, access to inputs, knowledge and so on-. The Location advantages result when a firm locate its production abroad instead of exporting because is more profitable. The benefits are based on comparative or transaction cost advantage such as greater access to the markets, lower input prices, lower production/transaction costs, lower transport costs, incentives due to policy promotion, lower tariffs. The Internalisation advantages reduce risk of market transaction through direct information and monitoring.

A review of the empirical analyses on the determinants of FDI location are reported for instance in De Mello (1997) while a review on the Chinese case is reported in Cheng and Kwan (2000). Cheng

and Kwan themselves carried out an analysis on FDI location among Chinese provinces between 1986 and 1995.

From the OLI framework theoretical approach and the empirical analysis available in the literature it is possible to formulate an interpretative approach for different determinants of FDI location with a special focus on the Chinese case.

The agglomeration effect is considered in the literature and empirical studies as a key determinant to explain ongoing inflow of FDI. This accounts for the self-perpetuating growth of FDI over time (Cheng and Kwan, 2000) In other words, the investment flow depends on the previous stock which indicates that the cost of entrance (barrier cost) is reduced.

Foreign investors are interested to the attractiveness of the markets. The access to markets, for instance, is an important form of attraction of FDI. In general, it is the domestic market size that attracts MNCs investment. In the empirical literature, the market size is usually measured with the income per capita. However, this factor is considered more important in respect to other countries then among Chinese provinces. Furthermore, the MNCs usually looks for economic environment with a high market profitability. An interesting factor from this point of view is the profitability of the local enterprises.

Another important factor of attraction -as gravity models underline- is the distance and the strategic location especially if FDI substitutes for trade.

The production side attractiveness, connected to production costs, is found to be an important element in many studies. From a theoretical point of view, the labour costs is the most relevant among these factors. The empirical evidence is mixed in the case of this factor.

Investment attractiveness for production is implemented by also by policy promotions. These are usually applied by developing countries governments to attract foreign capital. Therefore, the analysis of special policies is fundamental to explain the location of FDI since they tends to magnetise geographically the location FDI. Governments promotion of FDI inflows -such as preferential policies for special economic areas- have a positive effect since increase the incentives to invest.

As argued extensively in the literature good factors endowments attract FDI. Human resources such as the level of education of the labour force are often considered before investing in a country by MNCs. Among factor endowments a relevant role is played by transportation infrastructure and in the case of developing countries and many transition economies by natural resources (for instance Russia and most of NIS cases more than 50% of FDI are directed to the energy sector).

Social networks are considered a relevant factor in cross country analysis (languages/culture, colonial history). Chinese networks and the social capital reciprocity are well known. Indeed,

Chinese from Hong Kong, Macao and Taiwan and overseas Chinese are among the major investors to mainland China and among the cultural heritage they are familiar with Guanxi system. However, they assume an important role for FDI to China respect to other countries more then among Chinese provinces.

Finally, political environment and in particular the political stability and thus the perceived risk is for MNCs a fundamental factor to decide where and when to invest.

Along with these theoretical considerations based on the market and cost determinants and policy-economic environment further determinants need to be considered for the transition economies and thus for the Chinese case. The institutional features of the recipient economy are important determinants for FDI, including the degree of political stability and government intervention in the economy (De Mello, 1997, Lavigne, 1999).

The institutional reforms implemented and in particular the level of institutional changes should be included among the determinants of FDI. Indeed, these should increase the contracts enforcement and reduce the risk of investing in an ex-communist regime by reducing risk and transaction costs.

Usually early investors in Communist-controlled country complained many operational problems such as high transaction costs and bureaucratic procedures, but also low legal rights of foreign firms, limitation on foreign ownership, property and profits tax system. Indeed, the foreign investors encountered difficulties if the economic system is still connected to the past planning system especially if State Owned Enterprises' (SOEs) dominated often related to political adversity. Reforms in this direction tend to reinforce future FDI flows. Market formation and in particular the level of institutional changes incidence in the economic system are the factors to be considered at aggregate level.

3.1. An interpretative model

In order to examine the determinants of Chinese provincial FDI from 1986 to 1996 and to produce consistent estimates -taking into account the differences among the Chinese provinces-, panel analysis is applied. Panel analysis is particularly suitable for the Chinese case as it explicitly takes into account the provincial specific effects.

The analysis starts theoretically from following relationship,

$$FDI_{it} = f\ (AF_{it-1}, MA_{it}, LP_i, LA_i, I_{it}, H_{it}, PC_{it}, MT_{it}, PE) \tag{1}$$

where FDI the dependent variable is the stock of FDI received by i which is an individual Chinese province (i = 1, ... , N) and t is the time period (t = 1, ... , T).

The independent variables are: AF the FDI stock of the previous year which measure the agglomeration effect. MA is the market access or market attractiveness. LP represents the FDI policy promotion and LA the location advantages. Factor endowments are captured by I infrastructure and H human capital. PC are the production costs. While MT is the level of transition to the market or the incidence of institutional change in the provincial economic system. The PE i.e. the political and socio-economic environment that influenced the perception of risk to foreign investors on political stability and on the direction of the reforms and here, as we will explain, proxied with year dummies.

Natural logarithms are used to transform and to linearise the functional relationship (1). The transformation reduce the overall variability of the data and thus the etheroschedasticity at the cross section level. The basic model becomes,

$$\ln (FDI_{it}) = C + \beta_1 \ln (AF_{it-1}) + \beta_2 \ln (MA_{it}) + \beta_3 LP_i + \beta_4 LA_i + \beta_5 \ln (I_{it}) + \beta_6 \ln (H_{it}) + \beta_7 \ln (PC_{it}) + \beta_8 \ln (MT_{it}) + PE_i + u_{it}$$

$$(2)$$

Where $u_{it} = \alpha_i + \varepsilon_{it}$ is disturbance. The term α_i is the province-specific residual, it differs between provinces but, for any particular province, its value is constant. These provincial specific effects – possibly unobservable- are correlated with other included variable in the specification of the above economic relationship. The term ε_{it} is the stochastic disturbance (white noise).

4. The data and the method for estimation procedure

4.1. The data

The data set used for the empirical analysis is constituted by annual data from 1986 to 1996 (11 years). The data set previous 1997 eliminate the distortion effects due to the Asian economic crisis. for the 29 Chinese provinces, including the three municipalities of Beijing, Tianjing and Shanghai and four autonomous regions (excluding Tibet). All data (319 observations for each variable and 132 if only the 12 coastal provinces are considered) are from the Chinese State Statistical Bureau (SSB, now National statistical Bureau -NSB) source. In particular, most of the data are compiled from the issues of the China Statistical Yearbook (CSY) of the SSB, and only some data series

before 1989 are compiled from Hsueh et al. (1993). For a summary of the original variables and aggregates used see table 2, while full definitions can be found in the explanatory notes of the CSY (SSB 1986, 1997) and of Hsueh et al. (1993)[3].

The SSB reports the FDI flow for each province in USD since 1985[4]. The approach utilised in this research to estimated the each province Chinese FDI stocks for the period 1986 to 1996 at year end is based on the FDI flow data and by the following formula:

$$FDI_t = FDI_{t-1} + I_t - W_t \tag{3}$$

$$\text{with} \quad W_t = \sum_{i=1}^{h} w_i * I_{t-i}$$

where FDI_t and FDI_{t-1} are respectively the FDI stock of the year t and of the year t-1; I_t and I_{t-i} are the FDI flows at year t and t-i respectively; W_t is the amount of FDI capital withdrawn from the productive process at year t; w_i is the amount of the retired given a mortality function (the assumption given the technology involved is 10% per year).

Therefore, considering that by SSB definition the net increase of FDI stock is equal to the total year FDI accumulation from equation (3) derives that:

$$FDI_t = FDI_{t-1} + A_t \qquad \text{(given } A_t = I_t - W_t = \Delta FDI = FDI_t - FDI_{t-1}) \tag{4}$$

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[3] Corrections have been made to the data set when obvious mistakes, arising out of compilation or editing problems, were discovered during an examination of the distribution of the variables data series for specific provinces and for the national total. Moreover, until 1987 Hainan and Guangdong provinces data were jointly reported; therefore, in order to maintain these provinces in the analysis the data for years 1986 and 1987 were compiled from Hsueh et al. (1993) or calculated by the assumption that the respective weights are the same as in 1988, while the stock of human capital is assumed to have the same composition for the two provinces.

[4] Direct Investment by Foreign Entrepreneurs refers to the investments inside China by foreign enterprises and economic organizations or individuals (including overseas Chinese, compatriots from Hong Kong and Macao, and Chinese enterprises registered abroad), following the relevant policies and laws of China, for the establishment of ventures exclusively with foreign own investment, Sino-foreign joint ventures and cooperative enterprises or for co-operative exploration of resources with enterprises or economic organizations in China. It includes the re investment of the foreign entrepreneurs with the profits gained from the investment and the funds that enterprises borrow from abroad in the total investment of projects which are approved by the relevant department of the government.

Data come from the Ministry of Foreign Trade and Economic Cooperation and are tabulated in accordance with the Table FCS-5 and Table FCS-6 in the "Statistical Scheme on the Utilization of Foreign Capital" designed by the Ministry of Foreign Trade and Economic Cooperation and the National Bureau of Statistics in November of 1996, which are data of complete enumeration. The statistical coverage includes all the units and departments which have utilized foreign capital and all the Sino-foreign joint ventures, Sino-foreign cooperative enterprises, ventures exclusively with foreign investment, foreign-funded stock companies, Sino-foreign cooperative development projects and other corporate enterprises (including the enterprises funded by the entrepreneurs from Hong Kong, Macao and Taiwan) with independent accounting system which have been approved by the Chinese government to set up in the boundary of the Peoples Republic of China.

Since the SSB reports the provincial data of the flow of FDI from 1985 the data of FDI are added over time to form FDI stock[5]. They are firstly changed into yuan utilising the official foreign exchange rate. The FDI is deflated for each province using the overall provincial retail price indices -base 1990- (the overall retail price index is preferred because it varies across the provinces); the summed accumulations (A_t or FDI flows) are deflated as suggested by the Chow (1993) approach. For instance, following the formula (4) the FDI stock at the end of 1986 is:

$$FDI_{86 \text{ year end}} = FDI_{85 \text{ year end}} + A_{86} \tag{5}$$

which is equal by definition to the capital stock at the beginning of the following year 1986.

Considering the independent variables used, the agglomeration effect (AF) is measured by the stock of FDI in the previous year.

The market access (MA) is proxied by the Gross domestic product (GDP) (at end-year) per capita which should captures the attractiveness of the Chinese provincial markets. The GDP and the other monetary variables -expressed in current price (yuan)- have been deflated using the same index of FDI. The market attractiveness or profitability from the productive side is proxied by profits per employee in collective TVEs given their competitiveness and mixed properties.

Policy promotion (LP) and location advantages (LA) in the Chinese case coincide geographically. They are proxied by two dummies one (EAST) for the East or Coastal provinces which identify the strategic location in terms of trade opportunity costs and of the overall policy promotion since 1984 towards the coastal provinces. The other dummy SEZ is to capture the effect of the provinces with a Special Economic Zone individuating thus the coastal provinces with the highest policy promotion for FDI inflow. In order to take into account the policy promotion and the provincial location we also decided to divide the provincial data set into two parts to carry out the estimates separately for the overall Chinese provinces and for the coastal provinces only.

Among the factor endowments, the human capital (H) is approximated by the ratio of the stock of university qualified people (UNI) over the stock of illiterate and semi-illiterate (ILL) and by the ratio among the educated people -ED, with at least primary education (PR)- and ILL[6].

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[5] Assumption made is that FDI -from 1979 to 1984- as null before 1985; 99% of FDI was directed to East or Coastal China.

[6] The provincial data on human capital stock are from the last two National Population's Census of 1982 (Third Census) and 1990 (Fourth Census). The data of each province for each year are calculated considering the annual rates of growth for each province of the human capital stocks between 1982 and 1990. The only discrepancy, although not relevant from a point of view of the analysis is that in 1990 the number of illiterate and semi-illiterate per thousand is referred to people aged over 6 while for 1982 is refereed to people aged over 12.

Considering aggregate physical infrastructures (I), here they are proxied by a "space-serving" infrastructure density index as the access to an area by waterway, highway or railway is indispensable before other economic activities can unfold there (see   )[7]. Another proxy used for investment is the amount of provincial capital stock (see   ).

Production costs advantage (PC) are captured by the wage per employee in the collective TVE sector.

In order to measure approximately the "phase" of the transition from the "planned socialist economy" to the "market socialist economy" and to understand if different effective institutional changes affected the FDI, an *ad hoc* index is used. The market transition (MT) index utilised is given by the share on the total industrial (TI) Gross output value (GOV) of the SOEs. Non-SOEs or other industries (OI) are: rural industries -private and collective TVEs-, urban enterprises and foreign enterprises. Therefore, the index SO/TI should "measure" the non-marketisation of the provincial economic systems which should influence negatively the willing of foreign to invest.

The unfavourable political and socio-economic environment, which increases the perception risk by foreign investors, is proxied by three year dummies 1989, 1990 and 1991 since it embrace all the provinces. The instability was due to the Tiananmen event and internal political repression with the consequent increase in perceived risk by foreign investors for the fear of a return to previous policies. These are also the years following the austerity policies launched in December 1988.

A positive relation is expected for 1993 which, as we wrote, is the year following important changes and the Deng Xiaoping tour to South China. Other legislative measures were introduced in 1992 to reduce the risk of investing in China such as property right protection.

4.2. The method for estimation procedure

The matrix version of the model (1) is as follows,

$$\ln (y_{it}) = \beta_0 + \ln (\mathbf{x'}_{it}) \boldsymbol{\beta} + \ln (\mathbf{z'}_i) \boldsymbol{\gamma} + \mathbf{d'}_t \boldsymbol{\delta} + u_{it} \tag{6}$$

where i and t represent respectively provinces (i = 1, ... , N) and time periods (t = 1, ..., T); y_{it} is the dependent variable for individual i at time t; β_0 is the general constant; $\mathbf{x}_{it}$ is the kx1 vector (of the explicative variables for individual i at time t (time variant); $\mathbf{z}_i$ is the vector of hx1 independent

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[7] Although the human capital stock indices focus only on formal education received, and that the infrastructure indices represent only the "space-serving" infrastructure these indices can be considered a good approximation of both human capital and physical infrastructures.

variables unit i time constant (time invariant); $\mathbf{d}_t$ is 3x1 time dummy vector; β is the kx1 vector of coefficients of the $\mathbf{x}_{it}$; γ is the vector of hx1 of the parameters (coefficients) of $\mathbf{z}_i$; δ is coefficient of the $\mathbf{d}_t$; $u_{it} = \alpha_i + \varepsilon_{it}$ is disturbance term[8], where the term α_i represents the specific individual effect and ε_{it} is the stochastic disturbance defined as: $E(\varepsilon) = 0$, $E(\varepsilon^2) = s^2$ and $E(\varepsilon_{it}, \varepsilon_{js}) = 0$ for $t \neq s$ or $i \neq j$. Panel analysis is applied to produce consistent estimates.

Considering that some of the variable of the model are time invariant, the scheme adopted for the estimation is as follows. First an F-test is carried out to test if the individual (i.e. provincial) intercepts are significantly different, if so this would require the use of panel estimators.

Consistent with our expectation of strong provincial differences, the F-test rejects the null hypothesis of intercepts equality. In order to estimate the coefficient of the time-invariant variable, a random effects approach can be used without loss of generality (see Fass, McFadden, Mundlak 1978). As expected, the Hausman test rejects the null hypothesis of orthogonality between individual effects and regressors, and therefore a Hausman-Taylor instrumental variables estimator is used to produce estimates of the whole coefficients set (Hausman and Taylor, 1981, Hsiao, 1986).

5. Empirical results and interpretations

The empirical results of the model (6) are reported in table 2. The estimates are obtained utilising the two data sets one of all Chinese provinces (columns [1] and [2]) and the other for the 12 coastal provinces (column [3]). Consistent with the expectation of strong provincial differences, the F-test rejects the null hypothesis of intercepts equality. In general, both the adjusted R^2 and the t-statistics are remarkably high. Considering that the results are quite stable, the estimates of the coefficients of each independent variable can be examined together.

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[8] Where: u_{it} represents individual and time variation effects. Typically α_i e ε_{it} are assumed to be independent. If the α_i are considered as constants, the econometric model is a *fixed effect model* (FE); if the α_i are considered as random variables, the model is a *random effect model* (RE). In both cases ε_{it} is a random variable (*white noise)*.

Table 2. Regression on FDI stock (1986-1996). Estimated coefficients of model (6) *(a).*

Dependent variable FDI stock		[1]	[2]	[3]
Regressors	Region	PRC	PRC	Coastal
FDI$_{t-1}$ (AF) Foreign Direct Investment stock time t-1		.855***	.851***	.726***
		(.019)	*(.020)*	*(.035)*
GDPR_POP (MA) Real GDP per capita		-.110	-.190	-.046
		(.086)	*(.103)*	*(.115)*
PROF_L (MA) Profits per employee				.259***
				(.054)
EAST (LP, LA) Location and policy promotion dummy		.158***	.362***	
		(.078)	*(.113)*	
SEZ (LP, LA) Location and policy promotion dummy				.498***
				(.145)
I (I) Space-serving infrastructural index		.187	.100	
		(.111)	*(.122)*	
K (I) Capital stock				.128*
				(.073)
ED/ILL (H) Educated people (at least primary school)/ ILL		.273***	.275***	.378***
		(.094)	*(.094)*	*(.194)*
WAGE_L (PC) Wage per employee			.107	
			(.164)	
SO/TI (MT) Industrial GOV of SOE sector/GOV of industrial sector		-.253***	-.218***	-.330***
		(.094)	*(.102)*	*(.104)*
Dummy **1989** (Unfavourable socio-economic environment dummy)		-.334***	-.351***	-.135**
		(.070)	*(.072)*	*(.065)*
Dummy **1990** (Unfavourable socio-economic environment dummy)		-.342***	-.352***	-.133**
		(.070)	*(.071)*	*(.066)*
Dummy **1991** (Unfavourable socio-economic environment dummy)		-.285***	-.289***	-.132**
		(.068)	*(.069)*	*(.067)*
Dummy **1993** (Favourable socio-economic environment dummy)		.419***	.424***	.319***
		(.067)	*(.068)*	*(.0617)*
C		-2.26***	1.80	-.641***
		(.756)	*(.1.192)*	*(.942)*
Balanced data N (provinces)		29	29	12
Number of observations (Nobs)		319	319	132
Degree of freedom		309	308	121
Adjusted R^2		.963	.962	.981
F test of A,B=Ai,B:		2.38	2.38	6.06
F(30, Nobs-N-k) P-value		[.000]	[.000]	[.000]
Hausman test CHISQ (k) of		39.97	39.80	38.16
H$_0$: FE vs. RE P-value		[.000]	[.000]	[.000]
Estimator used		**HT**	**HT**	**HT**

(a) Standard-error in parenthesis. significant at 1% level ***, at 5% level **, at 10% level *.

ILL Illiterate and semi-illiterate people. Tibet is excluded.

Consistent with the theoretical approach the agglomeration effect -proxied by the FDI stock of the previous year- is positive and significant. The investment flow is affected by the previous stock.

The attractiveness of the Chinese provincial markets –proxied by GDP per capita- is found non significant underlining that the foreign investors are interested in the Chinese market as a whole more than the provincial specific markets. Furthermore, it is important to remember that a large part of Chinese exports are from FDI.

From the productive side the market attractiveness or profitability, proxied by profits per employee in collective TVEs, is found positive and significant.

Policy promotion and location advantages dummies -which coincide geographically- underline the importance of location and policy promotion for the inflow of FDI. The East dummy for the overall Chinese province and the SEZ dummy for the Coastal provinces are found positive and significant.

Among factor endowments, the coefficient of human capital (H) is positive and significant underlining that foreign investors in China tend to chose the location -given the other conditions- with a higher human capital. Between 1992 and 1999 the high technology exports as share of total exports increased of more than 10%. The index for infrastructure (I) is found not significant. This is probably due to the fact that infrastructure to attract FDI are in specific locations of the provinces leaving untouched the rest of the province. Therefore, a better proxy could the capital stock which is found positive and significant.

The production costs (PC) are approximated by the wage per employee in the collective TVE sector. Although positive this factor is found non-significant. This seems coherent with the Chinese case. The difference up to nowadays (this could change in the next future) was not done by labour cost for two reasons. Once a MNCs invest is more interested in the presence of skilled workers. Then, wages for unskilled persons are maintained quite low by internal migration.

The variable that proxies the level of institutional changes and market transition (MT) is found -as expected- negative and significant. A province dominated by SOEs system is less attractive for foreign investors since influence their perception of investing in an ex-communist regime. This is probably connected to two aspects: on one side that the local government adversity or better retain to changes, on the other side is the capability to translate the institutional changes into practice.

Finally, the unfavourable political and socio-economic environment captured by year dummies are found as expected negative and significant for 1989, 1990, 1991 and the favourable political and socio-economic environment in 1993 positive and significant.

6. Conclusions

The empirical findings are consistent with the theoretical approach -based on the OLI framework- and with previous empirical studies. Almost all variables follows the theoretical prediction. In particular, the agglomeration effect, policy promotion, location advantages, profitability, human capital, capital stock and a favourable political and socio-economic environment are found to affect positively FDI. An unfavourable political and socio-economic environment influences negatively the FDI inflow. Other factors such as market access GDP per capita and wage costs were found not significant. The infrastructural index is non significant denoting probably a wrong index for the context studied since FDI are located in precise areas.

In addition to previous studies we find support that for transition economies more factors needs to be considered among the determinants of FDI. The variable used to proxy the level of institutional changes is found to affect the FDI location. In particular, provinces which a SOEs' dominance influence negatively the FDI inflow.

In terms of socio-economic development for the recipient countries the Chinese case illuminate on the fact that long term benefits and advantages of foreign investment cannot captured automatically with the simple attraction of FDI. Policy accompanying this process are fundamental for their strategic success. The Chinese economy was able to capture large part of the benefits thanks to its capabilities in terms of human capital, political stability and in definitive to the government capacity to control and reform the economic system which reduced the "predatory practice" of MNCs by selecting the FDI on the base of Chinese future comparative advantages. The gradual policies towards opening the economic system -although the protection was gradually eroded- helped the economic agents to adjust to the institutional change and increase their competitiveness during time. Furthermore, the Chinese Government did not use FDI to privatise all the best SOEs as many countries in Eastern Europe and CIS did after 1992. Moreover, since the transition from a socialist planned economy to a market socialist economy creates many opportunities for private and semi-private enterprises to fill the gap among the demand and the supply that the planned system was not able to meet. Many East European countries, CIS and NIS adopting the 'shock therapy' did not give the time to national economic agents to adapt, to institution to evolve, to local entrepreneurs to emerge and to national firms to fill the supply-demand gap. The gradual and selective overture of the internal market to the international competition led space for the boom of

the Chinese TVEs. A dynamic Small and Medium Enterprises SMEs sector has the capability to capture the spillovers effects having an active role in Chinese economic development.

Nowadays trade policies are always less under the control of Chinese Government since the PRC re-joined WTO in 2001. The inequalities generated by the new reforms for WTO mainly towards inland farmers and SOEs employees are at the base for internal instability. This could produce a destabilisation effect considering that at the same time Chinese farmers and un-skilled workers are loosing the benefit from public basic social services and protection. West policies promoted by the government which include infrastructure, human development and FDI strategy are thought to dam this destabilisation.

References

Ash, R. F. and Kueh, Y. Y. (1996), *The Chinese Economy Under Deng Xiaoping*. Oxford, Clarendon Press.

Bevan A. A. and Estrin S. (2000), 'The determinants of Foreign direct investment in transition economies', *WDI WP* 342.

Biggeri M. (1999), 'Determinants of Chinese Provincial Economic Growth in the Last Decade: Empirical evidence for human capital, physical infrastructure and sectoral and institutional changes', *Studi e discussioni*, Dipartimento di Scienze Economiche, Università degli Studi di Firenze, n. 114.

Buckley P. and Casson M. (1992), *Multinational Enterprises in the World Economy: Essays in Honour of John Dunning, Aldershot*, Edward Elgar.

Buckley P. and Mucchielli J. (1997), *Multinational Firms and International Relocation*. Cheltenham, Edward Elgar.

Cao, Y., Qian, Y. and Weingast, B. R. (1999), 'From federalism, Chinese style to privatization, Chinese style', *Economics of Transition* 7, 103-131.

Chen C. (1996), 'Regional determinants of foreign direct investment in Mainland China', *Journal of Economic Studies*, 23, pp.18-30.

Chen, J. and Fleisher, B. M. (1996), 'Regional Income Inequality and Economic Growth in China', *Journal of Comparative Economics* 22, 141-164.

Chen, Y. 1996, 'Impact of Regional Factors on Productivity in China', *Journal of Regional Science* 36, 417-36.

Cheng L. K. and Kwan Y. K. (2000), 'What are the determinants of the location of FDI? The Chinese Experience', *Journal of International Economics*, n 51, pp. 379-400.

Chow, G. C. (1993), 'Capital Formation and Economic Growth in China', *Quarterly Journal of Economics* 108, 809-842.

Cornia G. A. (2001), 'Transforming the Socialist Economies: the Role of Structural and Institutional Factors', *Studi e discussioni*, Dipartimento di Scienze Economiche, Università degli Studi di Firenze, n. 124.

Cornia G. A. Vladimir Popov (2001), *Transition and Institutions*, OUP, Oxford.

Davies, H. (1999), 'The Marketization of Chinese Enterprise: Empirical Evidence from a Large-scale Survey', paper presented at the 10th Annual Conference of the Chinese Economic Association (UK), (29-30 March 1999), Middlesex University Business School, London.

De Mello, Jr. L. R. (1997), 'Foreign Direct Investment in Developing Countries and Growth: A selective Survey', The *Journal of Development Studies* 34, 1-34.

Di Tommaso M. R. and Bellandi M. (Eds) (2006), *Il Fiume delle Perle: Luoghi e industria in Cina e il confronto con l'Italia*, Rosenberg & Sellier, Torino.

Dunning J. (1981), *International Production and the Multinational Enterprise*, London, George Allen and Unwin.

Dunning J. (1993), *Multinational Enterprises and the Global Economy*, 2nd Edition, Reading, Addison-Wesley Publishing Company

EBRD (2000), *Transition Report*, European Bank for Reconstruction and Development, London, UK.

FASC NACO (1999), *Abstract of the First National Agricultural Census in China*, National Agricultural Census Office of China, Food and Agricultural Statistics Centre, China Statistics Press.

Fuss, J., McFadden, D. J. and Mundlach, Y. (1978), 'A Survey of Functional Forms in the Economic Analysis of Production'. In Fuss, J. and McFadden, D. J. (eds) *A Dual Approach to Theory and Application*. North Holland.

Fleisher, B. M. and Chen, J. (1997), 'The Coast-Noncoast Income Gap, Productivity, and Regional Economic Policy in China', *Journal of Comparative Economics* 25, 220-236.

Fukasaku K., Wall D. and Wu Mingyuan (1994), *China's Long March to an Open Economy*, Development Centre Studies, OECD, Paris.

Gastanaga V., Nugent Jeffrey, and Bistra Pashamova (1998), 'Host Country Reforms and FDI inflows: How Much Difference do They Make?', *World Development*, 26 (7), pp. 1299-1314.

Gereffi Gary (1999), International trade and industrialisation upgrading in the apparel commodity chain', *Journal of International Economics*, 48, pp. 37-70.

Graham E. M. (1995), 'Foreign direct investment in the world economy', IMF WP, WP/95/59.

Hansheng, J., Mingtai, F., Shuzhuang, Y. and Chunping, Z. (1996), 'An Evaluation and Analysis of the Disequilibrium Development strategy of China's Regional Economy', in R. C. K. Chan, Tien-Tung Hsueh and Chiu-ming Luk, eds., *China's Regional Economic Development*, The Chinese University of Hong Kong press, Hong Kong.

Hausman, J. A. and Taylor, W. E. (1981), 'Panel Data and Unobservable Individual Effects', *Econometrica* 49, 1377-1398.

Helleiner G. K. (1989), 'Transnational Corporations and Direct Foreign Investment', in H. Chenery and T. N. Srinivasan, eds., *Handbook of Development Economics Vol. II*, Elsevier Science Publishers.

Hirsch G. (2001), 'Foreign Direct Investment in Southeast Asia: Role Impact and Policy Implication', Unpublished paper, SOAS and University of Florence.

Hsiao, C. (1986), Analysis of Panel Data, Cambridge.

Hsueh, Tien-Tung, Li,Qiang and Liu, Shucheng, eds. (1993), *China's Provincial Statistics 1949-1989*, Boulder, Westview press, Oxford.

Hu, Zuliu F. and Khan, Mohsin S. (1997), 'Why is China Growing So Fast?', *IMF Staff Papers* 44, 103-131.

Jimenez, E. (1995), 'Human and Physical Infrastructure: Public Investment and Pricing Policies in Developing Countries', in J. Behrman and T. N. Srinivasan, eds., *Handbook of Development Economics Vol. IIIB*, Elsevier Science Publishers.

Krkoska Libor (2001), 'Foreign direct investment financing of capital formation in central and eastern Europe', European Bank for Reconstruction and Development, *EBRD WP* 67.

Krugman P. R. and Obstfeld M. (2000), *International Economics, Theory and Policy*, Addison-Wesley Publishing Company.

Kwan, A. C. C., Wu, Yanru and Zhang, Junxi (1999), 'Fixed Investment and Economic Growth in China', *Economics of Planning* 32, 67-79.

Lavigne Marie (1999), *The Economics of Transition*, Palgrave, Oxford.

Liang, Zai and White, M. J. (1997), 'Market Transition, Government Policies, and Interprovincial Migration in China: 1983-1988', *Economic Development and Cultural Change* 45, 321-339.

Lin, Yifu J. and Nugent, J. B. (1995), 'Institutions and Economic Development', in J. Behrman and T. N. Srinivasan, eds., *Handbook of Development Economics Vol. IIIA*, Elsevier Science Publishers.

McKinnon, R. I. (1994), 'Gradual versus Rapid Liberalisation in Socialist Economies: The Problem of Macroeconomic Control', in World Bank, ed., *Proceedings of the World Bank annual Conference on Development Economics* 1993, 63-94.

Mody, Ashoka and Wang, Fang-Yi (1997), 'Explaining Industrial Growth in Coastal China: Economic Reforms ... and What Else?', *The World Bank Economic Review* 11, 293-325.

Naughton, B. (1994), 'Chinese Institutional Innovation and Privatization from Below', *The American economic Review: Papers and Proceedings* 84, 266-270.

Park, Jong H. and Prime, Penelope B. (1997), 'Export performance and economic growth in China: a cross-provincial analysis', *Applied Economics* 29, 1353-1363.

Pieraccini F. and Waddington C. (2001), 'What Determines the Location of Foreign Direct Investment by Multinational Corporations?, Unpublished paper, University of Sussex, Brighton.

Raiser, M. (1998), 'Subsidising Inequality: Economic Reforms, Fiscal Transfers and Convergence Across Chinese Provinces', *The Journal of Development Studies* 34, 1-26.

Sachs, J. and Woo, Wing T. (1997), 'Understanding China's Economic performance', *NBER Working Papers* No 5935.

Sklair L. (1990), 'Regional Consequences of Open Door Development Strategies: Export Zones in Mexico and China', in David Simon (ed.) *Third World Regional Development: a Reappraisal*, Athenaeum Press, Newcastle Upon Tyne.

SSB (2000), (and previous years), *China Statistical Yearbook* 2000 (CSY), State Statistical Bureau People's Republic of China, Beijing Agricultural University Press, Beijing.

Stiglitz J. E. (1994), '*Whither Socialism?*', The MIT Press, Cambridge, Massachusetts, London.

Tsai Pan-Long (1994), 'Determinants of FDI and Its Impact on Economic Growth', *Journal of Economic Development*, 19 (1), pp. 137-163.

Wade R. (1990), *Governing the market: Economic Theory and the Role of the Government in East Asian Industrialisation*, Princeton, Princeton University Press.

Weber M. (1996), *Vele verso la Cina*, Milano, Edizioni Olivares.

World Bank (1992), *China: Reform and the Role of the Plan in the 1990s*, World Bank Country Study, Washington DC (USA).

World Bank (1994), *World Development Report*, Oxford University Press.

World Bank (1997), *World Development Report*, Oxford University Press.

World Bank (1997a), *Sharing Rising Incomes, Disparities in China*, China 2020 series, The IBRD/The World Bank, Washington DC, USA,.

World Bank (2001), *World Development Indicators*.

Xiaojian Li and Yue-Man Yeung (1998), 'Transnational corporations and their impact on regional economic imbalance: evidence from China', *TWPR*, 20 (4), pp.. 351-373.

Yang, Dali L. (1997), *Beyond Beijing, Liberalization and the Regions in China*, Routledge, London, New York.

Zweig D. (1995), '"Development Communities" on China's Coast: The Impact of Trade, Investment, and Transnational Alliances', *Comparative Politics*, pp. 253-274.