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Role of human capital on regional distribution of FDI in China: New evidence

Nimesh Salike[1]*

ABSTRACT

The distribution of foreign direct investment (FDI) inflow in China has been uneven with positive bias towards coastal regions. However, due to the rising cost, especially that of labor, there is a tendency in recent time for alternative destinations from both host and home perspectives. The rising labor cost is related with the quality of the human capital which is one of the important determinants for successful FDI attraction. This paper tries to look into the regional distribution of FDI in China with focus on human capital from completely different and unique measurement. The novelty is the use of a set of six human capital indices: endowment, utilization, demography, productivity, support and health. It uses panel data estimation for 31 regions of China for 2002-2010 with the consideration of usual determinant variables in FDI study. The results suggest that among six human capital indices, foreign investors value the demography of human capital, measured as growth rate of working population and the new university entrants, the most in making their investment decisions. In this sense, the investors are looking more into the future potential of the human capital. Other human capital indices did not appear to be significant but majority of them are with positive sign as expected. Furthermore, local market size, the purchasing power of consumer and location (being in coastal region) are found to be significant.

JEL Classification: F21, F23, J24, R12

Key words: FDI, China, human capital

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[1] I am thankful to Ximeng Yang, graduate student, University of York for his able research assistance

1. INTRODUCTION

Human capital as one of the determinants of foreign direct investment (FDI) has been an area of interest for international economists. There are several country studies to reflect this importance and concluded that human capital of the host economies does exert significant influence on determining foreign capital inflow in the country. In this paper, the role of human capital has been specifically looked into from Chinese perspective. We would like to delve into why human capital could be important for different regions in China.

China has experienced very high level of economic growth during last four decades or so. One of the areas where China has been so successful is in opening up in international economic front, both in trade and investment. This was supported both by the accelerating growth of domestic demand and foreign investment, especially long term greenfield investment. China became the world's second largest host of FDI, after United States, since 1994. In 2010, the annual inward FDI in China reached US$ 105 billion and the corresponding number rose to US$116 billion in 2011, experiencing an increase of nearly 10 percent (National Bureau of Statistics of China, 2011).

Sun et al. (2002) analyzed the FDI phenomenon in China in three stages of development. The rapid growth of foreign investment in China is strongly associated with government policies and laws. The first stage began in 1979 with the enactment of the "Law of the People's Republic of China (PRC) on Joint Ventures Using Chinese and Foreign Investment", which permitted the partnership between foreign and Chinese enterprises. It was also the same year that China opened its economy to the outside world. Special economic zones (SEZs) were set up in the early 1980s and coastal cities and districts were made open to foreign investors. Foreign investment increased in the following years along with the improved investment environment and supporting policies. The second stage started in 1986 when foreign investors were entitled to set up wholly owned foreign enterprises according to the 'PRC Law on Foreign Enterprises'. Wholly owned foreign firms expanded rapidly and accounted for 40 percent of total FDI in the year of 1996. Restrictions for foreign investors were also relaxed after the amendment of joint venture laws. In 1991, the environment for foreign capital was further improved with a series of policies such as the passing of the 'Income Tax Law for Enterprises with Foreign Capital and Foreign Enterprises' granting more freedom for foreign enterprises and further relaxing of restrictions on tax for foreign investment, which was the beginning of the third stage. The inward FDI more than doubled, from US$ 4 billion in 1991 to US$ 11 billion in 1992 and further to US$ 27 billion in 1993.

There are also several characteristics regarding China's inward FDI distribution. In terms of the categories, secondary industries like manufacturing are the emphasis of foreign investors. In 2010, the FDI value for manufacturing was US$ 49 billion, which was nearly 46% of the total value. Considering the source of investment, foreign cash flow to China is mainly from Asia, which takes up more than 80%. Naughton (1996) highlights that Hong Kong and Taiwan has played a crucial role on the FDI in China, especially in Guangdong and Fujian regions due to geographic and cultural links. Before 1991, the share of total amount of inward FDI in GDP never exceeded 1%, while the corresponding proportion is about 40% and 10% in Guangdong and Fujian respectively in regional GDP. With respect to the direction of the FDI flow, it is unevenly distributed across regions with the eastern region (the coastal regions) holding most of the foreign invested capital.

However, in recent time, there has been pressure for China in maintaining its advantage as a favorite FDI destination. The main reason for this being the rising labor cost across the country. There has been multinationals who are either taking their investments out of China or not choosing China to be their next investment destination. Most of these investments now seem to be moving to other

cheap labor countries, especially Vietnam, Laos, Cambodia and Bangladesh. Another possible trend is looking toward inward regions of China. This trend has already seemed to have begun although questions remain on what advantages these inland regions pose. This presents an interesting challenge for China on how to remain competitive in FDI market. One of the areas that China could focus is on upgrading the quality of FDI. Rather than relying on the labor intensive industries, China could focus on technologically advanced investments. If so, then the role of human capital would become even more important. Given the vast population in China and relative high literacy rate, China could upgrade its human capital to attract multinationals in higher end industries.

Keeping in mind the significant difference in FDI performance of different regions and the challenges that China faces now, this paper would try to look into the determinants of regional level FDI in China with special focus on the role of human capital in the region. The rest of the paper is organized as follows. Section 2 will provide brief background of FDI in China and also the literature review of the topics in interest. In section 3, we will make further analysis of regional distribution of FDI in China from the perspective of "Inward FDI Performance Index". In section 4, discussion will be made on data and methodology. Section 5 will be dedicated to results and interpretation. Section 6 concludes.

2. BACKGROUND AND LITERATURE REVIEW

2.1 Background

FDI is defined by OECD as the acquisition of at least ten percent of the ordinary shares or voting power in a public or private enterprise by nonresident investors (OECD, 1996). Direct investment involves a lasting interest in the management of an enterprise and includes reinvestment of profits. FDI has been an important source of capital for developing countries as it connects different markets, allocates capital and resources in better approaches. The recipient economy benefits through in flow of much needed capital as well as the technology. FDI is also believed to have spillover effect on improvement of the quality of human capital resources.

The regional distribution of FDI in China is reflected in the difference between the FDI clustering in coastal (eastern) regions and rest of China[2]. Figure 2.1 compares the regional distribution of FDI in China in 2002 and 2010, a space distinguishing between the coastal (first 11 regions) and rest of the regions. In both the figures, it is evident that seven regions in particular; Jiangsu, Shandong, Shanghai, Fujian, Liaoning, Zhejiang and Tianjin absorbed the largest amount of FDI. However, there has been big increase of FDI in particular Guangdong over the years, from US$ 1 million in 2002 to approximately US$ 21 billion in 2010 out of which US$ 10 billion were form Hong Kong (Guangdong statistical yearbook, 2010). Jiangsu has been the strongest region to attract FDI with more than US$ 25 billion in 2010, followed by Guangdong and Liaoning. Meanwhile, some of the coastal regions (Shanghai, Zhejiang, Fujian, Shandong and in particular Tianjin) also attracted extraordinary amount of foreign capital in later years, which was about US$ 10 billion. There is little investment into inland regions. Ningxia, for instance, had only US$ 81 million of inward FDI in 2010. Nevertheless, FDI has been increasing in some specific inland regions over the years, for example in Sichuan, Beijing, Chongqing and Henan.

Figure 2.1(a): Regional distribution of FDI in China- US$ million (2002)

[2] The eleven coastal regions are Tianjin, Hebei, Liaoning, Shanghai, Jiangsu, Zhejiang, Fujian, Shandong, Guangdong, Guangxi and Hainan. Hong Kong, Marco and Taiwan are not included in this study.

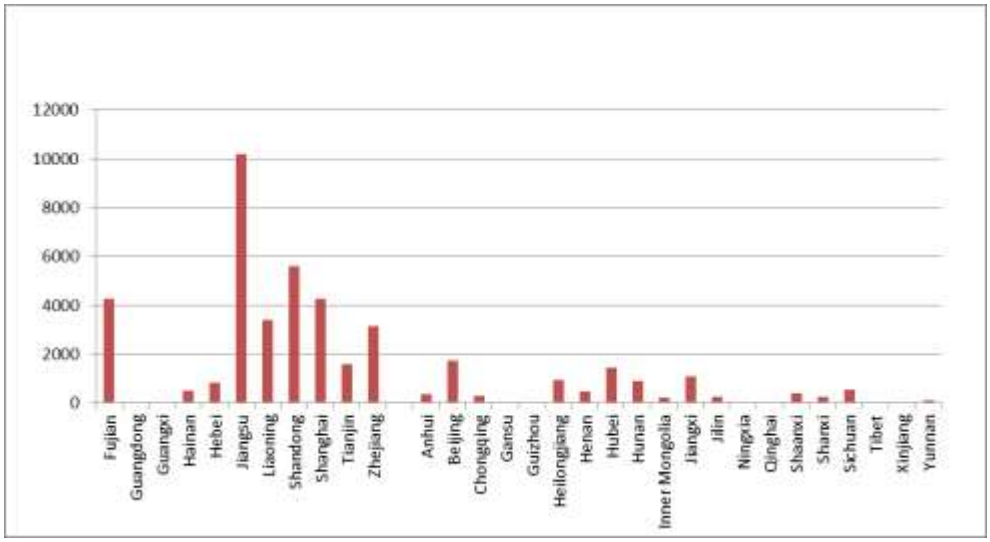


Figure 2.1(b): Regional distribution of FDI in China- US$ million (2010)

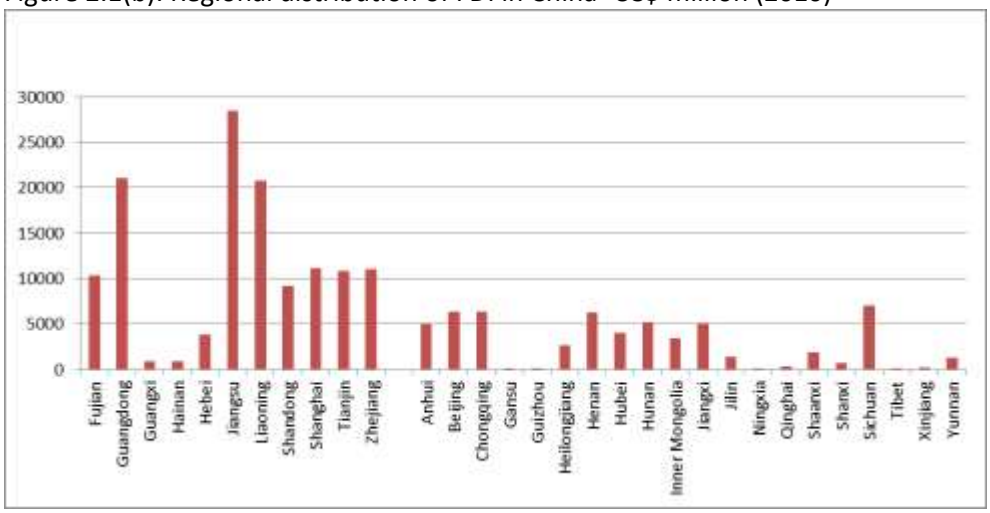
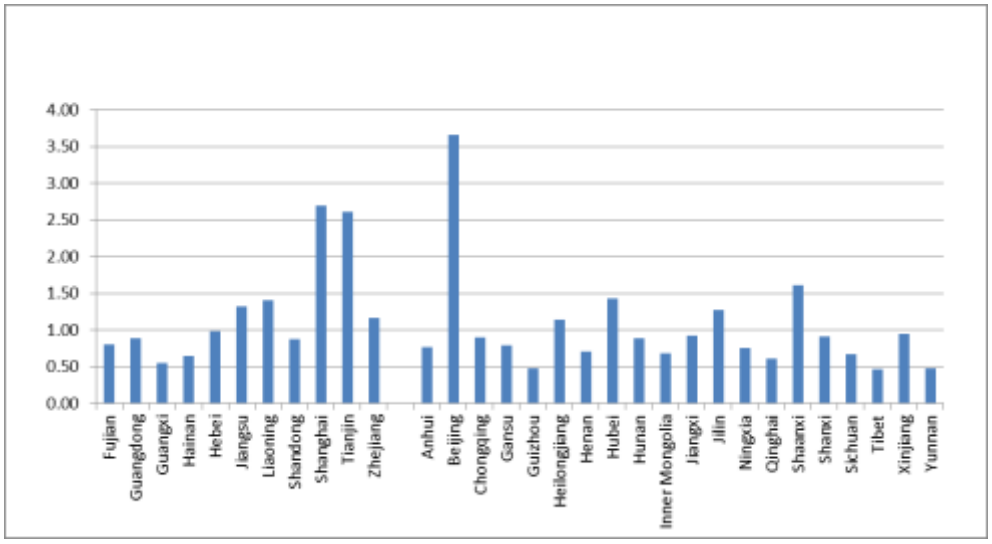


Figure 2.2 shows the quality of human capital in the region with the use of simple measure of average enrollment in higher education per working population who enter to undergraduate or specialized education. It could be seen that Beijing has the highest level of educated population which is not surprising being the capital of the country and most of the prestigious universities located in the region. The number means that out of 100 working people, 3.7 went to the university or specialized school. Shanghai comes second followed by Tianjin. Moreover, one of the interesting features in this figure is that almost all the regions in China are fairly similar except the three peaks, regardless of being in coastal region or not. Those regions where in at least 1 person in working population with higher education are Jiangsu, Liaoning, Zhejiang, Heilongjiang, Hubei, Jilin and Shaanxi. Looking at these figures, it gives us some inference that there necessarily is not any direct relation between human capital and FDI attractiveness.

Figure 2.2: Enrollment per working population: Higher Education (Avg. 2002-10)



2.2 Literature Review

2.2.1 Literature related to determinants of FDI

Several empirical studies on classical variables of FDI inflow have found that traditional determinants, like market size and labor cost, play a significant role in affecting FDI. Some other elements like economy agglomeration and infrastructure are also tested to be significant. Evidence showed that market size, GDP growth rate and openness have a significant positive influence on FDI, while trade deficit as well as tax rate exert a negative impact on foreign investment[3]. However, Chakrabarti (2001) noted that there is a lack of consensus in these studies. He tested the robustness of coefficients of explanatory variables on FDI determinants using Extreme Bound Analysis (EBA). He analyzed the EBA with 135 countries in the year of 1994. In particular, he tested market size, wage, openness as well as inflation and domestic investment. From the test results, he found strong support for the significance of market size; he also drew the inference that the relations between FDI and other variables have a high sensitivity in terms of small alterations in the conditioning information set. He then showed a more significant correlation between FDI and openness than other explanatory variables mentioned in existing empirical literature. He also clarified that determinants for attracting FDI vary and we should look carefully in explanatory variables we will examine in the test. He did not however use human capital as the explanatory variables.

Urata and Kawai (2000) and Wheeler and Mody (1992) found that the agglomeration of industries and economy as well as a high-quality infrastructure exert higher importance. Urata and Kawai (2000) basically examined the determinants of FDI by Japanese medium-sized enterprises (SMEs). After introducing the pattern of FDI by Japanese SMEs, they researched in some promoting factors of Japanese FDI in Asia, the most common of which is the utilization of low-wage local labor; while local sales and exports are considered pretty important as well. Then they pointed out SMEs operating in a more difficult situation than large firms due to the lack of skilled labor, insufficient infrastructure and inflation. When testing the determinants, they constructed a conditional logit model. Through the results, they pointed that both supply- side factors (low-labor cost, good infrastructure and governance) and demand-side factors (large market size) are significant determinants. They also

[3] See for example, Root and Ahmed (1979); Lipsey (1982); Schneider and Frey (1985); Wheeler and Mody (1992); Lucas (1993); Chakrabarti (2001); Kamaly (2003); Mercereau (2005); Eichengreen and Tong (2005).

found industrial agglomeration to have influence on distribution of Japanese FDI by SMEs. The authors pointed that foreign investment brings capital, technology as well as managerial know-how to developing countries and thus promoting their economic growth.

Salike (2010) applied dynamic panel model, primarily to investigate the crowding out of Japanese FDI by China from other Asian economies during 1990- 2004. In doing so, he found that domestic market and openness of the host economy plays a significant role in attracting Japanese FDI in Asia. Singh and Jun (1995) noted that except for business operation conditions, political risk can also influence investment to developing countries.

2.2.2 Literature related to regional FDI in China

Several studies had been carried out focusing on regional FDI in China looking into various aspects of the economy. Wei et al. (1999) looked into the determinants of the regional distribution of both pledged and realized FDI within China. They used panel unit root for the sample that were gathered from various volumes of Chinese statistical and economic yearbooks at both central and regional level. Their results indicated the existence of long run relationship between the spatial distribution of FDI and number of regional characteristics. Regions with the following characteristics tended to attract relatively more FDI: higher level of international trade, lower wage rates, more R&D manpower, higher GDP growth rates, quicker improvement in infrastructure, more rapid advances in agglomeration and more preferential policies. The authors argue that because of their long commercial and industrial tradition, the coastal areas have attracted more FDI compared to inland areas. They predict that the difference between these two areas is going to diminish as the government is providing the national treatment for foreign investors. Furthermore, they also find that those regions which have closer economic links with overseas Chinese also attract higher FDI like links with Hong Kong, Macao and Taiwan.

Fleisher et al. (2010) showed that regional growth patterns in China depend on regional differences in physical, human and infrastructure capital and also on differences in FDI flows. They use provincial aggregate production function with inputs being physical capital and labor (less educated workers and educated workers) to calculate the Total Factor Productivity (TFP). They concluded that FDI inflows had much larger effect on TFP growth before 1994 however becomes negligible afterwards. They attribute this to the acceleration of market reforms that led to diffusion of channels of technology dissemination. They also found that infrastructure investment generates higher return in the eastern region than in inner regions where in investment in human capital generates slightly or comparable returns. Ran et al. (2007) investigated the spillover effect in China and the difference among industries and regions affecting FDI in China with a panel data of 19 industries and 30 regions. Results of their tests showed a „relatively small magnitudes of FDI coefficients and negative influence contrast to the reported legendary benefits. They argued that FDI necessarily did not result in more output growth. Using provincial data from 1995- 2000, Cheung and Lin (2004) looked into the spillover effect of FDI on innovation in China. They found positive effects of FDI on several domestic patent applications.

Some papers looked into the regional determinants of FDI in China. Using the data from 1985- 1995, Cheng and Kwan (2000) estimated the effects of the determinants of FDI in 29 regions. They employed GMM estimation for the dynamic panel regression and found that bigger domestic market proxied by regional income, good infrastructure proxied by density of roads and preferential policy played significant role in attracting FDI whereas labor cost turned out to be negative. Also, they did not find any significance for education variables. In a similar study, Boermans et al. (2011) investigated the uneven distribution of FDI across the regions of China. Using the data from 1995-2006, they firstly employed factor analysis to derive determinant variables and then GMM on their

dynamic panel model. They also found that provinces with large market size and good institutions are crucial for FDI inflow. Moreover, they also found low labor cost to be statistically significant. On a slightly different paper, Lin and Kwan (2011) looked into sectoral allocation of FDI in China's manufacturing industry. With the base of 29 manufacturing sectors over the years 2000- 2007, they found that profit seeking nature of multinationals and their ownership advantages are key on investing decisions. Further, they also found that FDI tend to be lower in the sectors where in state owned enterprises are active. Their model was also dynamic panel in nature and GMM estimation technique was employed.

In some studies specifically investigating regional level FDI in China, there has been some support for the assumption of importance of human capital. Cassidy et al.(2004) and Sun et al.(2002) tested a panel data of 30 regions from 1986 to 1998 and showed that labor quality (tertiary education) is one of the most essential determinants of FDI in China. Another interesting finding of them is the cumulative FDI in terms of past domestic investment has a negative influence on the present FDI. Xu et al. (2008) found that factors like economy agglomeration and infrastructure also tend to be significant. Panel data sets of regions of China from 1998 to 2007 were used to test the key determinants of regional level FDI in China. They made the hypothesis that market size, labor quality and infrastructure will have a positive effect on FDI; areas near central domestic markets will attract more FDI; while labor cost will have a negative effect for FDI. Their tests results well supported their assumptions.

2.2.3 Literature related to human capital

Theoretically, it has been shown by several authors that human capital could be an important determinant in attracting FDI in host economy. However, on empirical front, it is not always true. There has been contrasting literature on the role of human capital on attractiveness of FDI[4].

Noorbakhsh et al. (2001) tested the effect of human capital level in host countries that can result in geographical distribution of FDI. The data covered the period of 1980 to 1994 with 36 developing countries from Africa, Asia and Latin America. They employ the panel model on three year averages in order to avoid the problem of random fluctuations in the data. The proxy for the human capital used in the paper is the secondary school enrollment ratio; number of accumulated years of secondary education present in the working age population; number of accumulated years of secondary and tertiary education. The accumulated secondary education is considered to measure the stock of human capital rather than flow. The inclusion of the tertiary education is made to capture the human capital of high level technical and managerial skills. Other explanatory variables used are: labor cost; growth rate of the labor force; proxy for open economy; proxy for financial liberalization; proxy for macroeconomic stability; energy availability and so on. They found human capital as an important determinant of FDI inflows and its importance has been increasing over time. Furthermore, the growth of domestic markets, a stable macroeconomic environment, liberalization policies, the availability of energy and generally supportive business environment are significant determinants. However, the authors cast a caution on the use of the proxy for human capital used in the paper, especially the quality of labor. This indicates that there is further room on the work on human capital with more relevant proxies.

Kim et al. (2013) looked at the effect of social capability into impact of trade and FDI on domestic investment. One of their social capability variables is human capital measured as years of schooling in the initial year. The study consists of 85 countries over the period of 1975- 2010 and employs instrumental variable (IV) threshold regression. The authors concluded that trade adversely affects

[4] Noorbakhsh et al. (2001) has detailed these studies in their paper. Refer Appendix 1 for the extract of these studies.

investment in low human capital whereas FDI has a positive effect on investment with low human capital. Reiter and Steensma (2010) looked into the influence of FDI policy and corruption on links between FDI, economic development and human development. They found that FDI inflows and human development are strongly positively related.

On the studies focused on China, Todo et al. (2009) examined knowledge spillovers from MNEs to domestic firms focusing on the role of MNEs employment of educated workers. They used firm level panel data from high- tech cluster in China and employed GMM estimation to avoid the possible biases due to endogeneity and firm specific effects. They concluded that spillovers take place in the firms with highly educated workers with graduate- level or overseas education, citing the importance of human capital in high- tech industries. This type of spillovers is more rampant in US MNEs than in Japanese MNEs. It is possibly due to the fact that Japanese MNEs employ comparatively less educated labor. On a similar paper, Fu and Li (2009) looked into absorptive capacity of human capital for FDI technology spillovers employing threshold regression. They found that as the threshold of human capital increases, the spillover effect of FDI increases. Teixeira and Heyuan (2012) investigated the impact of human capital on innovative FDI into China. In this micro level study, they base their study on the survey of 77 innovative firms located in China and employs logistic estimation techniques. The human capital proxy they used is the ratio of workers with 12 and more years of schooling to total workers. They conclude that human capital thus measured is not a direct factor in attracting FDI however human capital constitutes a positive indirect factor through firms' R&D efforts. Moreover, they argue that connections with universities have a positive impact on FDI attractiveness.

On a different study, Goldberg et al. (2005) argues that human dimension could improve investment in two ways- reduction in information asymmetry between foreign and domestic investments and reduction in moral hazard. The authors employ equilibrium model to examine the relationship between FDI and three proxies for human interaction: distance, language and travel. They found all of these proxies to be significantly important for FDI inflow.

One of the key concerns on the human capital literature is that various studies have used various proxies to represent the human capital. For instance: years of schooling, literacy, school enrollment, availability of technical and professional workers, secondary education, job trainings, etc. There has not been agreed variable which could truly represent the correct human capital level of host economies. This could be one of the reasons that results of the empirical studies have been mixed. The present study specifically tries to address this issue.

3. ANALYSIS OF UNCTAD 'INWARD FDI PERFORMANCE INDEX'

In this section, we would analyze the performance of regions in China using "Inward FDI Performance Index". The index, initially used for country-level analysis, was introduced by UNCTAD to evaluate how successful countries when considering the size of their economy, in attracting FDI.[5] It is the ratio of a country's share in global FDI inflows to its share in global GDP. In its original form, The Inward FDI Performance Index captures a country's relative success in attracting global FDI. If a country's share of global inward FDI matches its relative share in global GDP, the country's Inward FDI Performance Index is equal to one. A value greater than one indicates a larger share of FDI relative to GDP; a value less than one indicates a smaller share of FDI relative to GDP. A negative value means foreign investors disinvested in that period.

Following the definition of the index above, we tried to analyze how different regions in China are performing in attracting FDI. Therefore, the index is "Inward FDI Performance Index for regions in

[5] Refer UNCTAD (2002) for detailed methodology on the index.

China. It is calculated as the ratio of a region's share in FDI inflows in China to region's share in Chinese GDP. This would provide us the framework on the region's relative success in attracting FDI. The equation is specified as follows:

$$IND_i = \frac{FDI_i / FDI_c}{GRP_i / GDP_C}$$

where IND_i = The inward FDI Performance Index of the i^{th} region of China.

FDI_i = FDI flow in the i^{th} region of China

FDI_C = FDI flows in China

GRP_i = Gross Regional Product of i^{th} region of China

GDP_C = GDP of China

The FDI, GRP and GDP data are for 30 regions of China from 2002 to 2010. As in the original form, the index is calculated using three-year averages to offset annual fluctuations in the data for two periods.

Figure 3.1 shows the Inward Performance Index for 30 regions of China being segregated into regional groups.[6] Clearly, all over the years eastern regions are more attractive for foreign investors, except for Hebei and Shandong. For these two regions the index is below 1. For rest of eastern regions, the index is well above 1, especially Tianjin, Jiangsu, Fujian, Shanghai and Hainan. These figures show that these regions are receiving much higher FDI than respective relative GRP. Western region is the lowest performer as per this index measure, except Chongqing, although Sichuan and Inner Mongolia also went past 1. Among Northeastern regions, Liaoning performed very well as it lies in the coastal area. In the central region, Jiangxi, Anhui and Hunan are relatively well. One observation is clear from this figure that as we move on to inland areas of China from East to West, the FDI performance becomes weaker and weaker. Historically, the performance of Guizhou, Gansu, Tibet and Xinjiang has been low.

However, regardless of being in coastal or inland areas, the indices have improved over the years, especially the growth rate of FDI performance has increased in inland areas over the years as could be seen in figure 3.2. It shows that FDI performance in China is growing over the years indicating its capacity of absorbing foreign investment[7]. In fact, the northeastern region crossed the index number 1 during 2005-07 period where as central region crossed the mark during 2008-10 period[8].

Figure 3.1: Inward Performance Index for China

[6] These regional groups were adopted from Li and Xu (2008) which in turn came from Eleventh Five-Year Plan for National Economic and Social Development of China.

[7] Please refer Appendix 4 for detailed figures of all the regions in regional groups.

[8] In recent time, especially from mid-2012, there has been drop of FDI in China. Although there have been arguments of increase in labor cost in China which could be possible factor; the main reason for this is due to supply side problems. There has been decrease in FDI from Europe owing mainly to its financial owes.

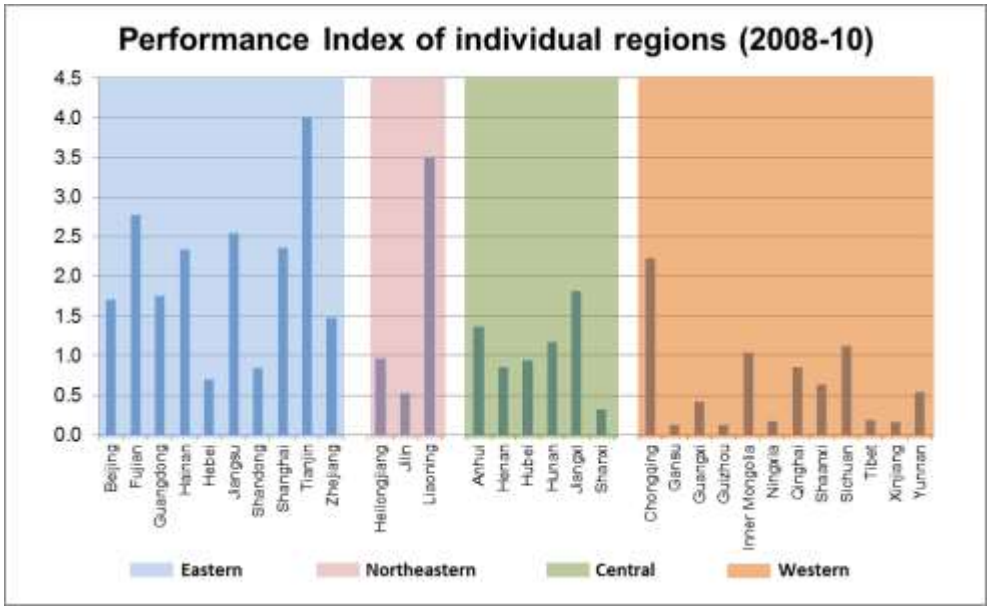
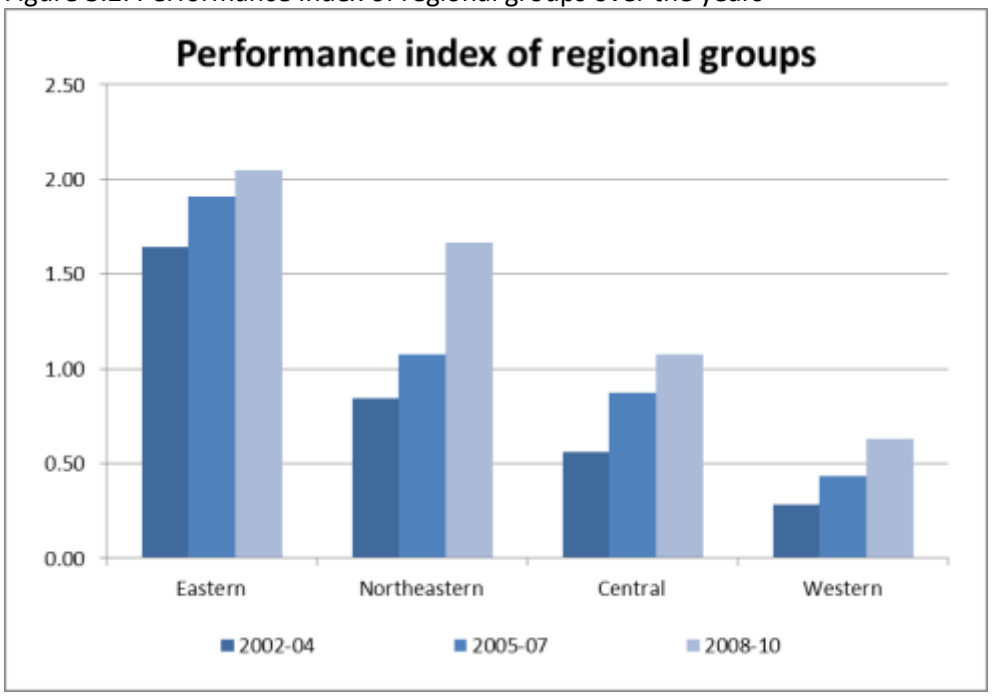


Figure 3.2: Performance Index of regional groups over the years



4. DATA AND METHODOLOGY

4.1 Data source and description

In this paper, panel data is being adopted to analyze regional level FDI determinants in China. The sample include data of 31 regions of China[9] over 9 years, from 2002-2010. Inward FDI data of regions in China, as the dependent variable, is collected from statistical yearbook at regional level (31

[9] Hong Kong, Macau and Taiwan are not included.

yearbooks in total). Other variables considered were: gross regional product[10] (GRP); average wage; trade openness; inflation; innovation; infrastructure and agglomeration. FDI, GRP, average wage are scaled with natural log. Inflation is measured as annual growth rate in consumer price index of individual regions. Openness is measured as the total trade (export and import) divided by respective GRP. Infrastructure index measures the physical infrastructure situation of each region. A dummy of region being in coastal region is also included.

Further, a set of human capital indices were constructed using the regional level data. They are endowment index, utilization index, demography index, productivity index, support index and health index. Data were collected from various sources, China statistical yearbook, CEIC database system, Asian Development Bank- Key indicators.[11]

4.2 Research model

Several possible determinants variables were chosen as explanatory variables based on the literature review on FDI determinants. A general regression model is specified as

$$lnfdi_{it} = \beta_0 + \beta_1 lngrp_{it} + \beta_2 lnawg_{it} + \beta_3 op_{it} + \beta_4 inf_{it} + \beta_5 inv_{it} + \beta_6 infr_{it} + \beta_7 agg_{it} + \beta_8 coa_i + \beta_9 hci_{it} + \varepsilon_{it}$$

where,
lnfdi= natural log of foreign direct investment
lngrp= natural log of gross regional product
lnawg= natural log of average wage employed persons in urban units
op= openness measured as sum of export and import divided by GRP
inf= inflation measured as consumer price index annual change of region
inv= innovation index based on R&D expenditure
infr= infrastructure index measured as composite index of number of fixed telephone
agg= agglomeration calculated as no. of industrial enterprises per GRP
coa= dummy variable where in region in coastal area taking value 1, 0 otherwise
subscribers, number of internet subscribers and length of paved road.

hci stands for human capital indices for following set of variables:

hce= human capital endowment index
hcu= human capital utilization index
hcd= human capital demography index
hcp= human capital productivity index
hcs= human capital support index
hch= human capital health index

The panel data of 31 regions and 9 periods would theoretically provide us 279 observations. However, there were 3 missing values in the case of Tibet, therefore the total number of observations is 276. As

[10] Gross regional product (GRP), conceptually equivalent to gross domestic product (GDP), measures newly created value through production by regional production units (or regional residents in short) in the regional economy, be it a state, region or a district. (Viet V., 2010)
[11] Other variables like, consumption spending, disposable income were also considered but later on dropped either because of multicollinearity or insignificance.

the data is panel in model, the appropriate estimation technique was employed with the choice between random effects model and fixed effects model.

4.3 Description of explanatory variables and hypothesis[12]

4.3.1 Human capital index variables

Our main variable of interest is human capital. Human capital is critical in modern economic activities. It is involved in a various components of business issues such as management, innovation, efficiency as well as cost associated with it. The originality of this research is how the human capital is being measured. Until now, papers that focused on the human capital only used some specific variables as proxy to represent human capital, mostly school enrollment. The construction of human capital indices in this paper is a novel approach that has not been practiced in any of other papers. More importantly, the depth of the measurement, with six different indices, captures the essence of measuring the influence of human capital.

The key to the construction of human capital index variables are two papers: Ederer (2006) and HDR (2011). Ederer (2006) identified the most scientific approach to measure human capital introducing four human capital factors.[13] They are human capital endowment, human capital utilization, human capital productivity and demography. This paper further includes two more factors from the perspective of Chinese context, human capital support and health.

The construction of index for these six factors is adopted from HDR (2011) where in human development index (HDI) was constructed using certain steps. HDI is a composite index that starts by identifying the dimension of the factor, followed by identifying indicators (life expectancy, education and income). Then the dimension index is constructed using the following formula for each indicator.

$$Dimension\ index = \frac{actual\ value - minimum\ value}{maximum\ value - minimum\ value}$$

Finally, the HDI index is the geometric mean of these dimensions.

$$(I_{Life}{}^{1/3}.I_{Education}{}^{1/3}.I_{Income}{}^{1/3})$$

In the construction of human capital indices for this paper, the above mechanism of HDI was employed using following parameters.

Table 4.1 Human capital index variables

[12] Refer Appendix 3 for list of variables, their expected signs and data source.
[13] Refer Appendix 5 on brief on development of these four factors.

	Indicators	Dimension index	Human capital index
Human Capital Endowment	No. of graduates in higher education	Graduate index	Geometric mean of graduate, enrollment and school indices
	No. of enrollment in higher education	Enrollment index	
	No of schools in higher education	School index	
Human Capital Utilization	No. of scientific and technical personnel per working population	Personnel index	Personnel index
Human Capital Demography	Growth rate of working population	Working population index	Geometric mean of working population and entrant indices
	New university entrants	Entrant index	
Human Capital Productivity	Gross industrial output per working population	Output index	Output index
Human Capital Support	Per capita annual education expenditure	Education expenditure index	Geometric mean of education expenditure and education fund indices
	Educational fund spent	Education fund index	
Human Capital Health	No. of medical insured people	Insurance index	Geometric mean of insurance and medical expenditure indices
	Per capita annual health care and medical services expenditure	Medical expenditure index	

Note: Higher education refers to university undergraduate and specialized courses
Working population refers to age 15-64

Human capital endowment index measures how much human capital is available in the regions of China. It is a geometric mean of composite indices: no of higher education graduate, no. of higher education enrollment and no. of higher education schools. Our assumption is that multinationals seem to prefer those regions with the higher number of available facilities with higher education.

The second index, human capital utilization index is composite index of no. of scientific and technical personnel in working population, which measures how much of working population is being used in relatively high level work. However, given the nature of FDI that China enjoys, i.e. labor intensive, we are not yet sure how this variable could turn up. Nevertheless, we presume that there has been some shift of labor intensive manufacturing from China to other low labor cost countries, leaving space for higher end products inside China. If that is the case then multinational companies would be interested in having higher level work force.

Human capital demography index is measured as geometric mean of the composite indices of working population growth rate and no. of new entrants in universities. This index captures the availability of human capital in near future i.e. in medium run. We predict that FDI is concentrated in the region with higher possibility of future growth.

Human capital productivity index is the composite index of gross industrial output per working population. Keeping other things constant, multinational companies would be interested in investing in the region with higher per capita industrial output, therefore FDI is positively associated with higher productivity.

Another index, human capital support index, measures how the making of human capital is being supported by government and personal level. It is geometric mean of composite indices of per capita

education expenditure and educational fund. The higher the support for the human capital, there is a positive and significant link to higher FDI.

The last index, human capital health index, is related to the health related factors of individuals. Apart from education, health is another important aspect for labor force to be productive. It is measured as geometric mean of composite indices of people with insurance facility and per capita expenditure in health care and medical services[14]. Therefore, regions with better health population are believed to attract higher FDI.

4.3.2 Other independent variables

Market size: Market size is considered to be the most crucial determinant in most papers of FDI determinants. A large market is thought to attract more foreign investment due to the high expected return in investments. In cross-country studies, the influence of market size will be bilateral. In this paper, we introduce regional level Gross Regional Product (GRP) as the proxy of market size for respective regions. Besides, in order to deduce the variance, we introduce lnGRP which is the natural logarithm of GRP in the regression. We hypothesize that market size will have positive significance with FDI.

Average wage: Labor cost is also deemed to be important element in FDI determinants. The availability of larger workforce and relatively cheaper wage is considered to attract more investment, while a higher cost of labor may distract the investors. Average wage cost is also an indication of the purchasing power of the market. This would in turn attract the investors to capture the potential of the local market. This means that as long as the influence of local market is larger than the rising cost, investors would continue to invest in the region. Therefore, the effect of labor cost could be ambiguous. In this paper, average wage across the regions in China is used to measure the cost of workforce.

Openness: As found evidences in previous papers, the degree of openness has considerable effect on attracting FDI. However, this measure is especially true for cross- sectional studies where in more open country tend to attract higher FDI. It would be interesting to see if the same is true in this intra region case for one single country. We try to use openness to measure the economic connection between regions in China and foreign countries. The proxy we use is the sum of import and export divided by GRP. We also take natural logarithm for this variable. We hypothesize that openness is significant with a positive coefficient.

Inflation: Inflation would measure the macroeconomic situation of the region. We hypothesize that multinationals would be attracted to the region with better economic conditions. As in the case of openness, inflation caters to national measure and we are not sure of the significance of this in single country framework. Inflation is measured as annual growth rate of consumer price index of respective regions.

Innovation: Innovation is measured based on the R&D expenditure in the region. As China is trying to upgrade its manufacturing industries, it is important to note that multinational companies eyeing in China would also be looking for higher capacity of creativity. Therefore, regions with higher potential of

[14] The inclusion of health care expenditure could be tricky. On the one hand, it could be indication that the higher health care expenditure is associated with the ability of people to spend higher on these services thereby helping in their health to be higher. On the other hand, it could also be true that because the people were less healthy in that region, they tend to spend more on these services. In this paper, the former case is being assumed.

innovation tend to receive higher FDI.

Infrastructure: The level of infrastructure also determines the choice of destination for FDI. For multinationals, it would be cost effective to choose such destination where they don't need invest further in terms of communication, information technology and transport. Regions with higher level of infrastructural bases tend to have higher FDI, especially given the importance of information and communication in today's world. The infrastructure index is constructed as a composite index of three factors: no. of fixed telephone subscription, no. of internet subscription and length of paved road.

Agglomeration: Multinational companies prefer to be located in and around the area where the clustering of industry activities is taking place. They tend to move into the locations with higher number of industries where they find it convenient to do business there by giving rise to agglomeration effect. Therefore, higher concentration of industries gives rise to higher FDI. We measure agglomeration of industries as no. of industrial enterprises in the region per corresponding GRP.

Coastal region: Traditionally, coastal areas attract a remarkable amount of foreign investment because of the proximity of shipping. In China, the practice seems to be more noticeable. In the regression, coastal is designed as a dummy variable where in it takes value 1 if the region lies in coastal area, zero otherwise. We hypothesize that coastal is significant with a positive coefficient.
Further, in order to take a deeper look into the regional disparity of FDI distribution, we classified the whole country into four economic regions based on eleventh five- year plan, as described in Li and Xu (2008). This classification is as follows:
Eastern: Beijing, Fujian, Guangdong, Hainan, Hebei, Jiangsu, Shandong Shanghai, Tianjin, Zhejiang
Northeastern: Heilongjiang, Jilin, Liaoning
Central: Anhui, Henan, Hubei, Hunan, Jiangxi, Shanxi
Western: Chongqing, Gansu, Guangxi, Guizhou, Inner Mongolia, Ningxia, Qinghai, Shaanxi, Sichuan, Tibet, Xinjiang, Yunnan

5. EMPIRICAL RESULTS AND ANALYSIS

5.1 Results and analysis

Tables 5.1- 5.3 presents the estimations results for 3 different models where in different variables are being considered in different models. Further, for each model, the six human capital indices have been tested separately along with other independent variables, resulting in 6 specifications for each model.

In table 5.1, all the explanatory variables are being considered in the estimation. Heteroskedasticity robust standard errors have been used to calculate the t- statistics. Each column (from 1 to 6) is used to represent separate human capital index. Clearly, log of gross regional product (lngrp) and dummy for region being in coastal region (coa) have been significant in almost all the specifications. Sign of both of these variables are in line of our expectation. However, the infrastructure index (infr) appeared with opposite sign and is significant in five out of six specifications. Other variables are significant in some specific specifications only.
Our main variable of interest- human capital index, is significant in 3 instances. Whereas endowment (hce), demography (hcd) and health (hch) are found to be statistically significant, utilization (hcu), productivity (hcp) and support (hcs) are not.

In table 5.2, we present the results after dropping several variables. Innovation (inv) and infrastructure (infr) indices were suspected to exert multi- collinearity, as they had high correlation coefficient with several other variables[15]. Also, we dropped inflation (inf) and agglomeration (agg) which were found to be not statistically significant after trying several regressions. The new results are not much different to earlier ones in terms of significance. The significance of openness (op) has improved, now significant in 4 specifications. lngrp and coa are both still highly significant. Both the magnitude and significance are not in much discrepancy for human capital variables, except that hch is not significant any more.

In table 5.3, we changed the regional dummy of coa to include more dummies. Since being in specific region (coastal) has strong influence on FDI, we thought it would be reasonable to deep in further into regional aspect. Therefore, the whole region has been divided into four separate regions and regressed with eastern region (rgn1) as the base. The negative coefficients of these variables clearly suggest that other regions are receiving less FDI compared to eastern region especially, central (rgn2) and western (rgn4). Majority of these coefficients are highly significant at 1% level. There are changes in some other explanatory variables- average wage (lnawg) is mostly significant now with agglomeration (agg) also being significant in some specifications[16]. Moreover, our main variable of interest- human capital index also saw some changes. Whereas hcd continued to be significant (although with lower magnitude), all other variables were not. hcu is significant but with wrong sign.

Adjusted R-square in all the specifications is in satisfactory level.

Table 5.1: Regression with robust option (all variables)

[15] Refer Appendix 2 for correlation matrix.
[16] As we carried out these estimation with regional dummies, openness (op) was found not to be significant rather agglomeration (agg) being significant in several instances. Therefore we dropped op and included agg.

	(1)	(2)	(3)	(4)	(5)	(6)
	lnfdi	lnfdi	lnfdi	lnfdi	lnfdi	lnfdi
lngrp	0.90***	1.26***	0.50**	1.24***	1.37***	1.12***
	(6.67)	(13.99)	(2.49)	(11.91)	(11.66)	(8.35)
lnawg	0.24	0.24	0.59**	0.08	0.33	-0.03
	(1.06)	(1.04)	(2.22)	(0.40)	(1.23)	(-0.14)
op	0.01**	0.00	0.01*	0.00	0.00	0.00
	(2.21)	(0.84)	(1.70)	(0.58)	(0.97)	(1.01)
inf	0.01	0.01	0.01	0.01	0.01	0.02
	(0.81)	(0.61)	(0.66)	(0.67)	(0.72)	(0.97)
inv	0.27	1.93	1.32	1.23	2.72**	0.89
	(0.20)	(1.39)	(1.03)	(0.96)	(2.09)	(0.67)
infr	-3.32***	-1.94**	-3.03***	-1.38	-1.71*	-1.93**
	(-3.61)	(-2.09)	(-3.29)	(-1.46)	(-1.84)	(-2.19)
agg	0.02	0.02	0.02	0.02	0.03	0.03*
	(1.62)	(1.28)	(1.47)	(1.24)	(1.65)	(1.74)
coa	0.75***	0.65**	0.84***	0.57*	0.59*	0.67**
	(2.80)	(2.37)	(3.18)	(1.80)	(1.91)	(2.49)
hce	3.44***					
	(5.00)					
hcu		-0.36				
		(-0.72)				
hcd			4.92***			
			(5.16)			
hcp				0.82		
				(0.96)		
hcs					-1.71	
					(-1.49)	
hch						2.63**
						(2.06)
_cons	-7.10*	-15.87***	-1.26	-13.91***	-19.61***	-10.04**
	(-1.96)	(-4.73)	(-0.30)	(-3.65)	(-4.10)	(-2.39)
N	276	276	276	276	276	276
adj. R-sq	0.676	0.659	0.684	0.660	0.660	0.663

t statistics in parentheses
="* p<0.10 ** p<0.05 *** p<0.01"

Table 5.2: Regression with robust option (after dropping collinear and non- significant variables)

	(1)	(2)	(3)	(4)	(5)	(6)
	lnfdi	lnfdi	lnfdi	lnfdi	lnfdi	lnfdi
lngrp	0.88***	1.20***	0.46**	1.17***	1.24***	1.06***
	(6.24)	(15.49)	(2.18)	(14.62)	(10.11)	(7.86)
lnawg	0.19	0.27	0.50**	-0.03	0.26	0.00
	(0.95)	(1.32)	(2.03)	(-0.18)	(1.28)	(0.00)
op	0.01***	0.01*	0.01***	0.00	0.00	0.00*
	(2.66)	(1.93)	(2.65)	(0.85)	(1.54)	(1.87)
coa	0.65***	0.62***	0.74***	0.52**	0.64***	0.66***
	(3.11)	(2.95)	(3.58)	(2.15)	(2.91)	(3.14)
hce	1.84***					
	(2.92)					
hcu		-0.41				
		(-0.98)				
hcd			3.97***			
			(3.91)			
hcp				1.32		
				(1.57)		
hcs					-0.12	
					(-0.15)	
hch						1.87
						(1.49)
_cons	-5.83	-14.38***	0.88	-10.84***	-15.54***	-8.68*
	(-1.64)	(-4.74)	(0.22)	(-3.46)	(-3.89)	(-1.94)
N	276	276	276	276	276	276
adj. R-sq	0.667	0.658	0.678	0.662	0.658	0.660

t statistics in parentheses
="* p<0.10 ** p<0.05 *** p<0.01"

Table 5.3: Regression with robust option (replacing coe dummy with regional dummies)

	(1)	(2)	(3)	(4)	(5)	(6)
	lnfdi	lnfdi	lnfdi	lnfdi	lnfdi	lnfdi
lngrp	0.85***	0.94***	0.51**	0.97***	1.05***	0.95***
	(5.12)	(11.68)	(2.03)	(12.66)	(11.15)	(6.56)
lnawg	0.55***	0.61***	0.73***	0.41*	0.65***	0.50**
	(3.08)	(3.26)	(3.15)	(1.67)	(2.93)	(2.49)
agg	0.02*	0.01	0.02*	0.01	0.02**	0.02*
	(1.88)	(1.48)	(1.94)	(1.19)	(2.16)	(1.85)
rgn2	-0.33***	-0.32***	-0.40***	-0.25**	-0.30***	-0.29***
	(-4.25)	(-3.79)	(-5.42)	(-2.36)	(-3.51)	(-3.38)
rgn3	-0.09	-0.08	-0.09	-0.07	-0.09	-0.10
	(-1.37)	(-1.27)	(-1.35)	(-1.10)	(-1.38)	(-1.63)
rgn4	-0.39***	-0.40***	-0.39***	-0.37***	-0.39***	-0.39***
	(-8.37)	(-8.89)	(-8.39)	(-6.33)	(-8.25)	(-8.32)
hce	0.87					
	(1.23)					
hcu		-0.74**				
		(-2.07)				
hcd			2.75**			
			(2.41)			
hcp				0.56		
				(0.94)		
hcs					-0.65	
					(-1.04)	
hch						0.48
						(0.38)
_cons	-7.18*	-9.82***	-0.86	-9.12***	-13.42***	-9.49**
	(-1.91)	(-4.87)	(-0.19)	(-2.95)	(-3.94)	(-2.02)
N	276	276	276	276	276	276
adj. R-sq	0.712	0.713	0.719	0.711	0.711	0.710

t statistics in parentheses
="* p<0.10 ** p<0.05 *** p<0.01"

One of the major concerns of the above estimations is that the data in the study is panel in nature and simple OLS technique could be inappropriate in such circumstances as it does not take into account the changes across entity and over time. Therefore, we decided to adopt more appropriate estimator for panel data estimations. These results are shown in following two tables- table 5.4 presents the fixed effects regression results and table 5.5 presents random effect

regression results. Meanwhile, Hausman tests were conducted on all specifications to look into the appropriateness of fixed effect models. It is found that random effect model is preferred over fixed in all the specifications[17]. Therefore, we would base our arguments based on table 5.5.

Table 5.4: Fixed Effect Regression results

	(1)	(2)	(3)	(4)	(5)	(6)
	lnfdi	lnfdi	lnfdi	lnfdi	lnfdi	lnfdi
lngrp	1.97**	2.02**	1.23	2.59***	2.21***	2.01**
	(2.45)	(2.59)	(1.56)	(3.14)	(2.66)	(2.51)
lnawg	-0.55	-0.44	-0.50	-0.76	-0.60	-0.56
	(-0.59)	(-0.47)	(-0.56)	(-0.82)	(-0.64)	(-0.60)
agg	0.03	0.03	0.02	0.03	0.03	0.03
	(0.90)	(1.19)	(0.65)	(1.27)	(1.17)	(0.94)
rgn2	0.00	0.00	0.00	0.00	0.00	0.00
	(.)	(.)	(.)	(.)	(.)	(.)
rgn3	0.00	0.00	0.00	0.00	0.00	0.00
	(.)	(.)	(.)	(.)	(.)	(.)
rgn4	0.00	0.00	0.00	0.00	0.00	0.00
	(.)	(.)	(.)	(.)	(.)	(.)
hce	0.31					
	(0.36)					
hcu		1.10				
		(1.44)				
hcd			5.52***			
			(3.73)			
hcp				-1.50**		
				(-2.00)		
hcs					-0.73	
					(-0.61)	
hch						0.22
						(0.19)
_cons	-27.34**	-29.92**	-10.35	-41.58***	-33.12**	-28.20**
	(-2.04)	(-2.44)	(-0.80)	(-3.04)	(-2.39)	(-2.09)
N	276	276	276	276	276	276
adj. R-sq	0.340	0.345	0.376	0.351	0.341	0.340

t statistics in parentheses
="* p<0.10 ** p<0.05 *** p<0.01"

Table 5.5 Random Effect Regression results

[17] The respective p-values for 6 specifications were: 0.76; 0.39; 0.37; 0.14; 0.71 and 0.76. Therefore we could not reject the null of using random effect estimation method.

	(1)	(2)	(3)	(4)	(5)	(6)
	lnfdi	lnfdi	lnfdi	lnfdi	lnfdi	lnfdi
lngrp	0.98***	1.10***	0.31	1.11***	1.11***	1.03***
	(4.73)	(6.43)	(1.12)	(6.57)	(5.64)	(5.46)
lnawg	0.53**	0.56**	0.74***	0.73**	0.61**	0.50
	(2.05)	(2.25)	(2.95)	(2.52)	(2.28)	(1.62)
agg	0.02	0.02	0.02	0.02	0.02	0.02
	(0.82)	(1.05)	(0.73)	(1.11)	(1.04)	(0.85)
rgn2	-0.31	-0.25	-0.48**	-0.33	-0.29	-0.28
	(-1.37)	(-1.12)	(-2.11)	(-1.49)	(-1.29)	(-1.27)
rgn3	-0.08	-0.07	-0.09	-0.09	-0.08	-0.09
	(-0.43)	(-0.40)	(-0.50)	(-0.50)	(-0.41)	(-0.45)
rgn4	-0.37***	-0.35***	-0.38***	-0.39***	-0.37***	-0.37***
	(-3.53)	(-3.35)	(-3.63)	(-3.70)	(-3.50)	(-3.50)
hce	0.50					
	(0.66)					
hcu		0.52				
		(0.80)				
hcd			4.43***			
			(3.49)			
hcp				-0.71		
				(-1.07)		
hcs					-0.47	
					(-0.44)	
hch						0.41
						(0.38)
_cons	-10.59**	-14.15***	3.58	-15.57***	-14.65***	-11.58**
	(-2.14)	(-4.15)	(0.63)	(-3.99)	(-3.09)	(-2.26)
N	276	276	276	276	276	276
adj. R-sq						

t statistics in parentheses

="* p<0.10 ** p<0.05 *** p<0.01"

5.3 Discussion

The results of random effects model are bit different from what we obtained from OLS (5.3). As expected, regional market size (lngrp) showed to have significant role in almost all the specifications. Depending upon the specifications, 1% increase in local gross regional product would increase the foreign investment also by 1%. The coefficient of average wage (lnawg) is turned out to be significantly positive. As discussed in previous section, the higher labor cost would indicate the rising purchasing power of the market. Therefore, higher consumer power would lead to higher investment. Agglomeration (agg) seemed to have lost its significance. With regard to regional impact, the eastern coastal belt seemed to have received much of foreign investment at the cost of western region (rgn4). Out of our 6 human capital variables, only human capital demography (hcd) turned out to be significant which shows that the most important aspect that the foreign investors look into from human capital perspective is the potential of working population and university entrants. This is in line with our expectation. Most of the human capital variables showed up with expected positive sign but with no significance.

In this research, we try to examine the degree that human capital affects in attracting FDI in Chinese regions. The assumption is that human capital is one of the most important determinants in FDI allocation as a high labor quality brings up efficiency and thus boosts the return for a firm. In another case, human capital is strongly linked with economic situation of regions and market demand. Relatively developed regions tend to provide higher quality of education and better services there by resulting in more professional development. However, high labor quality always accompanies high labor cost, thus reducing the attractiveness for foreign capital. In China, number of regular institutions of higher education has reached to 2358 in 2010 from the corresponding number of 1041 in 2000 (National Bureau of Statistics of China, 2011). With the increase in education opportunities, the quality of qualified labor will also experience an enhancement in their performance. The results obtained from this research shows that human capital demography in terms of growth of working population and new university entrants play a significant role in attracting foreign investment in China.

6. CONCLUSION

In the past four decades, China attracted enormous amount of foreign investment but the distribution of FDI has not been even across the regions. The inland region of China has been unparalleled with the coastal (eastern) region. At the same time, with the growing labor cost, especially in the coastal region, multinationals have started looking for alternative destinations. One of the alternatives is to just look inward region of China where labor cost is still relatively low. However, it also seems that these investments are moving to new destinations in Asia where they can still enjoy the cheap labor. Moreover, another set of argument is that China could move from cheap labor FDI destination to relatively higher end industries destination. Given this situation, the human capital in China has been one of the most important factors in attracting FDI. In this paper, the role of human capital is being investigated in regional distribution of FDI in China with using the novel approach of introducing a set of six human capital indices. These indices were constructed using a scientific approach of Ederer (2006) and HDR (2011) but further inputs were also included. The six human capital indices are:
Human capital endowment index
Human capital utilization index
Human capital demography index
Human capital productivity index
Human capital support index
Human capital health index

All these indices were expected to have positive effect on inward FDI. Following conclusions were drawn based on the empirical tests:

Among the human capital indices which are our main variables of interest, human capital demography is found have the significant effect. The demography effect of human capital is measured in terms of growth rate of working population and new university entrants, which indicates the potential of human capital in near future. This shows that multinationals are not only looking into the present availability of the human resources but also the future prospect. This does make sense as most of the investments in China are in the form of green field investment that needs long term strategies. Other human capital variables were not found to be significant although majority of them appeared with positive sign, as expected.

With regard to the included explanatory variables, local market size (measured as gross regional product) and purchasing power of consumers (measured as average wage rate) were found to have significant effect on attracting FDI. This clearly shows that local market is the key driver in the investment decisions. The location also played an important role on investment decision. It is found that multinationals have clear preference to the coastal region compared to other regions. The least preferred region has been the western region.

Based on the finding, it could be recommended that Chinese government and people put more emphasis on improving its human capital skills. As true with the economic phenomena, China could not escape with the rising labor cost with the rise in economic growth. However, in order to remain competitive in the higher end industries, China needs to invest in its human capital. It is also a fundamental factor for innovation and creativity where China needs to head towards.

Limitation

One of the major limitations of this study is being static in nature, not dynamic. Specifically, the study deals mostly with the present graduates in the region. However, there have been several migrations taking place within China after the students get graduated. It is possible that a student get educated in one region but move to another for employment. This particular phenomenon is not being captured in this study. This is basically due to the data unavailability on this specific matter.

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APPENDICES

Appendix 1: Human capital studies

(extracted from Noorbakhsh, Paloni and Youssef, 2001)

Study	Nature of study	Conclusion
Lucas (1990)	Theoretical	Lack of human capital discouraged foreign investment in less developed countries.
Zhang and Markusen (1999)	Theoretical	Availability of skilled labor in the host country is a direct requirement of TNCs and affects the volume of FDI flows.
Dunning (1988)	Theoretical	The skill and education level of labor can influence both the volume of FDI inflows and the activities tht TNCs undertake in country.
Dasgupta, Mody and Sinha (1996)	Empirical (country-basis) (China, India, Indonesia, Malaysia, Philippines, Thailand, Vietnam)	Some evidence of positive relative between human capital and FDI inflow.
Iyanda and Bello (1976)	Empirical (country-basis) (Nigeria)	Some evidence of positive relative between human capital and FDI inflow.
Kumar (1990)	Empirical (country-basis) (India)	Some evidence of positive relative between human capital and FDI inflow.
Nataranjan and Miang (1992)	Empirical (country-basis) (Southeast Asian nations)	Some evidence of positive relative between human capital and FDI inflow.
Sibunruang and Brimble (1988)	Empirical (country-basis) (Thailand)	Some evidence of positive relative between human capital and FDI inflow.
Yong (1988)	Empirical (country-basis) (Malaysia)	Some evidence of positive relative between human capital and FDI inflow.
Root and Ahmed (1979)	Empirical (cross country)	None of the variables used as proxies for human capital and skilled labor is a significant determinant of FDI inflows for 58 developing countries considered. However sample period is 1966-70, when the human capital may not have been such important locational determinant. Human capital variable: literacy, school enrollment, availability of technical and professional workers.
Schneider and Frey (1985)	Empirical (cross country)	Human capital variable though significant in some cases, is never significant in their chosen model as an explanation of FDI Flows. 54 developing countries for 1976, 1979, 1980. Human capital variable: secondary education
Narula (1996)	Empirical (cross country)	While the coefficient of the proxy for technological capability is highly significant but has the wrong (negative) sign, the coefficient of the proxy for human skills is positive but insignificant. Pooled regressions of 22 developing countries for 1975, 1979, 1984, 1988. Technological capability variable: number of patents granted in the host country as a ratio of the number of students at the tertiary level. Human skill variable: the ratio of total enrolment of students at the tertiary level to total population. One interesting conclusion: the presence of human capital plays an increasingly important role as countries move along their development path.
Hanson (1996)	Empirical (cross country)	Empirical support that the level of human capital in host countries may affect the geographical distribution of FDI. Sample of 105 developing countries. However political stability and the security of property rights may have been more important. Variable for human capital: adult literacy rate.

Appendix 2: Correlation matrix

	lnfdi	lngrp	lnawg	op	inf	inv	infr	agg
lnfdi	1.00							
lngrp	0.78	1.00						
lnawg	0.37	0.36	1.00					
op	0.48	0.40	0.45	1.00				
inf	0.03	0.01	-0.01	0.05	1.00			
inv	0.65	0.72	0.56	0.61	0.00	1.00		
infr	0.66	0.81	0.34	0.43	0.00	0.84	1.00	
agg	0.37	0.34	-0.09	0.38	-0.05	0.32	0.39	1.00

Appendix 3: List of variables

Variable	Explainatioin	Expected sign
lnfdi	Dependent variable: Natural logarithm of FDI inflow in the region	
lngrp	Natural logarithm of GRP in the region	Positive
lnawg	Natural logarithm of average wage employed persons in urban units	Ambiguos
op	Openness measured as sum of export and import divided by gross regional product	Positive
inf	inflation measured as consumer price index annual change of region	Negative
inv	Innovation index	Positive
infr	Infrastructure index	Positive
agg	Agglomeration of the industries	Positive
coa	Dummy variable where in region in coastal area taking value 1, 0 otherwise	Positive
hce	Human capital endowment index	Positive
hcu	Human capital utilization index	Positive
hcd	Human capital demography index	Positive
hcp	Human capital productivity index	Positive
hcs	Human capital support index	Positive
hch	Human capital health index	Positive

Note: Data source for all the data is China statistical yearbook and CEIC; excpet for fdi. FDI inflow data is rom Provincial level statistical yearbook of China

Appendix 4: Inward FDI Performance Index of 30 regions in China (2002- 2010)

		2002	2003	2004	2005	2006	2007	2008	2009	2010
Eastern	Beijing	0.91	1.11	1.11	1.31	1.72	1.72	1.59	1.83	1.71
	Fujian	2.17	2.54	2.43	2.42	2.82	2.80	2.69	2.98	2.66
	Guangdong	0.00	3.03	1.80	1.73	2.03	2.01	1.68	1.86	1.74
	Hainan	1.88	2.13	2.12	1.95	2.16	2.93	2.48	2.81	1.73
	Hebei	0.31	0.41	0.50	0.48	0.52	0.56	0.62	0.76	0.71
	Jiangsu	2.19	3.22	2.13	1.84	2.40	2.71	2.35	2.66	2.61
	Shandong	1.24	1.49	1.53	1.24	1.35	1.35	0.77	0.86	0.89
	Shanghai	1.70	2.07	2.06	1.87	2.04	2.06	2.08	2.54	2.46
	Tianjin	1.68	1.61	2.10	2.30	2.83	3.33	3.20	4.35	4.47
	Zhejiang	0.90	1.43	1.51	1.47	1.68	1.76	1.36	1.57	1.51
Northeastern	Heilongjiang	0.59	0.64	0.69	0.67	0.82	0.94	0.93	1.00	0.97
	Jilin	0.24	0.30	0.38	0.47	0.53	0.53	0.45	0.52	0.62
	Liaoning	1.43	1.19	2.14	1.17	1.93	2.63	2.55	3.68	4.27
Central	Anhui	0.24	0.25	0.30	0.33	0.68	1.30	1.14	1.40	1.54
	Henan	0.17	0.21	0.27	0.30	0.44	0.65	0.65	0.89	1.03
	Hubei	0.77	0.84	0.82	0.86	0.96	0.95	0.83	1.02	0.96
	Hunan	0.49	0.55	0.66	0.81	1.03	1.13	1.00	1.28	1.23
	Jiangxi	1.01	1.46	1.57	1.53	1.79	1.80	1.50	1.90	2.05
	Shanxi	0.24	0.20	0.07	0.17	0.30	0.75	0.41	0.24	0.29
Western	Chongqing	0.32	0.35	0.40	0.43	0.60	0.84	1.37	2.24	3.05
	Gansu	0.10	0.07	0.06	0.03	0.04	0.14	0.12	0.14	0.12
	Guangxi	0.00	0.38	0.23	0.24	0.47	0.37	0.40	0.48	0.36
	Guizhou	0.07	0.08	0.10	0.14	0.12	0.15	0.12	0.12	0.11
	Inner Mongolia	0.27	0.39	0.54	0.78	1.07	1.12	0.90	1.11	1.10
	Ningxia	0.13	0.10	0.33	0.28	0.16	0.18	0.15	0.19	0.18
	Qinghai	0.32	1.25	1.27	1.25	1.28	1.26	0.63	1.03	0.89
	Shaanxi	0.42	0.46	0.44	0.43	0.61	0.70	0.54	0.67	0.68
	Sichuan	0.27	0.20	0.41	0.38	0.51	0.61	0.77	1.06	1.55
	Tibet				0.12	0.16	0.23	0.17	0.20	0.18
	Xinjiang	0.03	0.02	0.05	0.05	0.10	0.11	0.13	0.18	0.17
	Yunnan	0.11	0.08	0.12	0.13	0.23	0.26	0.40	0.53	0.70

Appendix 5: Human capital category

I. Human capital endowment:
The average Human Capital Endowment per capita is measured by calculating the level of investment in five different kinds of investment in skills used in the economy:
1) Informal parental education: general skills and cultural adaptation that parents teach their children;
2) Formal school education: general skills which children learn mostly in primary and secondary school;
3) Formal university and higher education: specific skills that students learn in university and vocational training institutions;
4) Formal and informal adult education: skills which adults acquire outside of their daily work environment, which are nevertheless either directly or indirectly job-related such as management trainings;
5) Informal learning on the job: skills acquired incidentally as part of the daily job activity and continuous adaptation to new requirements on the job.

II. Human capital utilization:
Human Capital Utilisation measures how much of an economy's human capital is represented in the active workforce. The non-utilised portion of a country's human capital is comprised of children and university students, the unemployed, non-working housewives and retirees. It differs from traditional employment ratios in that this measure takes into account different Human Capital Endowments for different age groups. For example, the participation rates of workers older than 50 who typically represent high human capital investments have an over-proportional impact on Human Capital Utilisation.

III. Human Capital Productivity:
Economic theory typically looks at labour productivity as output per hour worked, which has been increasing at a long-term pace of around 2% per year across most of the industrialised world thanks to technological change and increasingly available financial capital.
By contrast, our measure of Human Capital Productivity looks at economic output for each euro of human capital invested. Its growth rate is lower than that of classical labour productivity because the rapid expansion of Human Capital Utilisation across the EU has depressed the marginal returns on human capital investment.

IV. Demography and Employment:
The Human Capital Endowment described above looks at the various types of education received by an average employed person in a particular country. But how many participants will there be in these countries and how old will they be?: Birth rates, life expectancy, immigration, disadvantageous age structures.

Source: Ederer (2006)
Innovation at Work: The European Human Capital Index
By Peer Ederer

The Chinese Version of *Take Me Out* TV Show and Buzz Marketing: A Business Anthropological Case Analysis[1]

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ABSTRACT

Business Anthropology is an emerging inter-disciplinary concept, which applies theories of Anthropology to Business Management and analyzes various issues concerning business. Firstly, this paper applies the principles and methodologies of Business Anthropology to the Chinese version of Take Me Out, an influential TV program about dating and marriage. Secondly, regarding buzz marketing, this article investigates the TV program's success factors using participatory observations, in-depth interviews and questionnaire surveys. Thirdly, a conclusion is drawn on buzz marketing's success as used in the TV program regarding: topic selection, guest selection, and TV host's topic guidance, while identifying some weaknesses of the show.

Key Words: Business Anthropology; Take Me Out; Buzz Marketing, Entertainment, Case Study

1 The authors are grateful to Xiaoguang Qi for stimulating conversation and correspondence.
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INTRODUCTION

Recently, the Chinese love and marriage issue has become more popular due to the increasing number of *Shengnan Shengnv* (Chinese term for men and women who have not been engaged. As more people begin to pay attention to the requirements of that group, a wide range of discussions have emerged（Yang, et al., 2013; Qian, 1995). With the rapid development of the Chinese TV industry, particularly the evolution in the types of TV programs, many TV stations import or copy the mode of foreign TV shows (Xie, 2006), among which dating and marriage TV shows such as *Take Me Out* from Jiangsu TV, *Let Us Date* from Hunan TV, *Turn Round and Run Into Love* from Zhejiang TV have become extremely hot (Fang, 2010).

Although a number of Chinese local TV stations have produced a lot of new entertainment shows, few of them are regarded as creative. Rather than importing foreign TV shows legally, most Chinese entertainment shows just copy the mode of foreign TV shows directly. As a result, they appear similar to foreign shows in terms of subject, content, stage setting, lighting, stage design and TV host (Luo, 2011). As a substantial number of TV programs about dating and marriage emerged, it became difficult for *Take Me Out* to stand out in such a competitive environment. However, Jiangsu TV did more than simply copying; it infused *Take Me Out* with the features of Chinese culture and audiences. In other words, *Take Me Out* was turned into a completely localized entertainment show using a varied number of marketing techniques on aspects such as TV, network and realistic society (Qiu and Cai, 2010).

Some Chinese audiences without extensive knowledge of foreign TV shows may mistake Jiangsu TV as originators of dating and marriage reality TV shows. Thinking out of the box remains a wise branding and marketing strategy that keeps *Take Me Out* popular. To become fond of the new and tired of the old is part of human nature. Once a new event such as an exploded fuse manages to draw the society's attention, it is able to engender fierce discussions, leaving a deep and lasting impression on consumers. Applying the novelty strategy can have a well-leveraged effect in brand promotion. To a large extent, the success of *Take Me Out* emanates from its ability to bring controversial and current topics to the public's attention (Cao, 2013).

The topics set by *Take Me Out* can always trigger public thoughts and debates about social issues, which elevate the program from simply being about either life service or entertainment. The spark between male and female guests on stage as well as the humorous and fierce comments of the TV host has exceeded the original plan of the program producer. After being 'recreated' by the public, those topics have become mirrors that reflect various phenomena in contemporary Chinese society (Cheng, 2010).

Buzz marketing mainly refers to the application of media power and consumers' word of mouth to generate discussions about a media production or service, which resultantly achieves a marketing effect. The general mechanism of topic emergence and marketing propagation analyses and applies topics' nature of good transmission and focus with regards to three aspects including publicity, controversy, and ductility, which has furthered the propagation of buzz marketing through multiple channels (Li, 2011).

Aside the general mechanism of topic emergence and propagation, successful buzz marketing must also possess good transmission, focus and the ability of being propagated through multiple channels (Deng, 2011). *Take Me Out*'s buzz marketing success is no accident. The program's setting reinforces the youth's value of love and marriage. Some socially essential issues such as housing, children and the relationship between mother-in-law and daughter-in-law are discussed with an expert panel giving advice in order to attract social attention. Consequently, the topics discussed on *Take Me Out* are built on socially essential issues and hide 'free market of opinions' (Wang, 2011).Apparently, the form of *Take Me Out* meets the conditions of general mechanism of topic emergence and propagation. Additionally the debated topics possess the nature of good transmission and focus.

Regarding the multi-channel spread of buzz marketing, the limitations of traditional print media hinders the topic accessibility of *Take Me Out*. All mainstream papers become the program producer's main channel of making announcements while they source information from audiences and social media. Information dissemination through social media has promoted the spread of topics. Different kinds of websites and social media re-post those debated topics, which magnetizes the topics to attract more attention. Moreover, *Take Me Out* made an exclusive cooperation with Youku.com, the video website in China and authorized Joy.cn to broadcast, which made audiences crazy about the show (Li, 2011).

Therefore, the outstanding success of *Take Me Out* is due to the following: Firstly, by being based on social reality, social culture is highlighted. The typical language truly expresses social culture and social consciousness, which arouses audiences' emotional resonance. Secondly, the design of differentiation in guest choice makes for a more varied set of stories and attractions. Guests from all walks of life – such twins, mother and daughter – were invited to be guests together. Mengfei, the host of *Take Me Out* who is famous for hosting news programs hosted the entertainment show with varying depths and angles. Thirdly, creative arrangements and dramatic performances constituted a parallel show structure with male guests to make the program more intense and easier for audiences to watch. Certain debated topics were proposed when the host was analyzing whether the guests' mental state had an impact on the female guests' choice. Furthermore, the proper application of live background music added atmosphere. All of the aforementioned elements made *Take Me Out* feel like a situation comedy (Wan, 2011).

The purpose of this research is to investigate the effectiveness and success factors of buzz marketing by means of studying the general mechanism of topic emergence and propagation, topics' nature of good transmission, focus and the ability to be propagated through multiple channels. Therefore, based on the understanding of existing literature, this article began from the perspective of Anthropology to analyze the production and propagation of topics, selection of people, setting, and audiences' reactions. In this study, three methodologies of Business Anthropology are employed: participatory observation, questionnaire survey and in-depth interview (Tian and Tian, 2014; Zhang, 2012). Taking the audiences of the variety show as research subjects, the aforementioned methodologies present the success factors of buzz marketing such as highlighting social culture, the design of differentiation, and the creative procedure. Finally, all collected data are analyzed using the methodology of Anthropology, and concludes that successful buzz marketing has had a huge influence on *Take Me Out*'s success.

RESEARCH DESIGN AND METHODOLOGY

To fulfill the requirements of the group of marriageable people, it is controversial and popular for *Take Me Out* to be shown as a variety entertainment program instead of a life service program. This article attempted to investigate the success factors of *Take Me Out*'s brand marketing by employing the methodology of Business Anthropology such the production and guidance of topics, the selection and setting of people, and the possible reactions of audiences. The adopted methodology of Business Anthropology in this paper mainly includes participatory observation, questionnaire survey and interview, taking students in Shantou University as research subjects. Primary data collected using the aforementioned methodologies includes qualitative and quantitative data.

Participatory Observation

Participatory observation refers to researchers observing the research subjects directly with their own sense of judgment and assistive tools based on certain research purposes without bothering the observed. It is a method of collecting data from an observatory perspective. This paper observed every detail of the setting of *Take Me Out*. When researchers watched *Take Me Out* with classmates, friends and parents, their actions were observed and their comments and gestures were noted

down. Additionally, the information on the website is very important. For example, a lot of people posted their comments on Baidu.com. After video recording, audiences had access to information concerning the private lives and reflections of matched male and female guests through Microblogs and announcements on the official website of *Take Me Out*.
After broadcasting the first episode, related information was collected and analyzed. Researchers took part in the discussions and asked for opinions from the Internet. All the aforementioned information sources formed part of the participatory observation data. During the process of collecting participatory observation data, researchers endeavored not to let the research subjects feel a sense of being observed, which could have had a negative influence on data reliability as a result of subjects acting differently from usual.

Interview
Interview is a key to the research, consequently the researchers had an in-depth interview with those classmates who watched *Take Me Out* quite often to find out why they loved it, whether they knew and talked about the related topics, whether they had special impressions of certain guests and whether they reflected on certain segments of the show. The opinions and suggestions of the interviewees were collected. Questions included in interviews were recorded in detail. The interviewees cooperated with the interviewers because they were their classmates. Since both interviewers and interviewees were students of Shantou University, all interviews were conducted in a relaxed atmosphere to ensure the quality and effectiveness of information.

Questionnaire Survey
Questionnaire survey refers to a method of taking samples from a wide range of valued research subjects. Comprehensive and structural questionnaires would be designed and handed out to the research subjects in order to acquire positive information. Questionnaire survey can systematically collect information and a significant amount of practical data from the research subjects with purpose and planning. The targeted questionnaires were designed based on those information acquired from preparation, reference and participatory observation, including opinions about the topics, the host and audiences, setting, feeling and reflection about some content of the program.
The research subjects of the questionnaire survey would be mainly the group of audiences of the variety show. As main audiences of *Take Me Out,* their views and reactions could sufficiently represent the effectiveness of the marketing techniques of *Take Me Out.* The questionnaire was handed out on the Internet, particularly through QQ. The majority of research objects are Shantou University students. Finally, 180 questionnaires were handed out and 156 copies were recollected, of which data was analyzed.

FINDINGS AND DISCUSSION

Findings from Observation

Based on the observation, this paper got three finds. Firstly, tutors and the host were responsible for guiding the topics onto debatable paths and importantly providing a chance of discovering another emotional world outside the values of love and marriage. The TV host and tutors were internal staff of the program, which means they were involved in a mutually-beneficial relationship. Since blind-date programs have been regulated, the TV host and tutors had a greater responsibility of making the show both compliant with mainstream values as well as being controversial. Secondly, although male and female guests did not have a lot in common, they both had their own stories. Some of the guests' experiences and comments catered to the popular issues. Therefore, the content of the show was abundant, which increased the discussion of the program and the attraction of the guests. Consequently more audience debates were generated after broadcasting. Many platforms like Baidu.com and micro-blog posted related comments. Thirdly, the live music of certain segments of

the show seemed to add atmosphere and sometimes eased the embarrassment. Nice background music seemed to have a positive effect on the promotion of the show, enhancing audiences' understanding and memory of the show. Finally, VCR played an important role in the show. Program producers could attain the filming results expected by editing VCR on purpose, enriching the contents of the program. Thus, the justification of such marketing techniques remains open to question. On other hand, exaggeration would have a negative impact on the performance of other segments of the show. Detailed analysis of observation was listed in the table below.

TABLE 1
OBSERVATION RECORDS

Observation Place: Dormitory of Shantou University
Time: March,2013---June, 2013
Method: Watch videos; Collect comments from Baidu.com, Xinlangmicroblog

Contents of Observation	Analysis
1, Some of the tutors have been replaced. Since tutor Le Jia was sick, he was first replaced by Yuzheng, a famous scriptwriter and then by ZengZihang, who is an expert in related industry with print publication.	Tutors played an important role in topic guidance and setting the pace in the show. The splendid dialogue of tutors is one of the features of the program, which ensures the qualification of tutors and their popularity.
2, More examples of successful marriage through *Take Me Out* were broadcasted on the show.	This segment can enhance the functionality and branding of the program, highlighting the sincerity of the show and the guests, and the functionality of service.
3, Female guests: Most of female guests are pretty, but some are plain. All of them come from all walks of life. For example, the female guests running a business of adult products in the episode 20130406 brought some of the products as gifts.	The beauty of female guests is an indispensable element of entertainment shows. The variety of guests' career caters to the social reality and the requirements of the audiences, because it can engender more topics, views and stories.
4, The male guest Mr. Xu said, "I am a Diaosi (a word to describe a person who is poor, ugly, short and fat). I speak for the Diaosi in the episode on 13 April, 2013.	'Diaosi' becomes the hot topic nowadays, which makes it apparent the program producers have given much thought to the selection of guests.
5, Apparently, the TV host gave a topic guidance concerning blind-date experience to the male guest No.1 in the episode on 9 March, 2013.	Blind date is also a more popular love and marriage issue for the young people in contemporary society, of which interesting things were posted on all kinds of social media.
6, Speaking of a male guest's hometown Xian, which was mocked as a great city with the worst air pollution, the rate of PM2.5 reached 1173, male guest No.3 from Beijing also talked about the issue of air pollution.	The TV host introduced some social topics, possessing emotional resonance with audiences.
7, The live music was timely to add atmosphere. For example, after male guest No.4 sang a Korean song, he matched successfully with the live background music in the episode on 13 April, 2013.	The music had good performances at different times. Nice music had a positive effect on the promotion of the show. Many questions about the interlude of *Take Me Out* were posted on Baidu.com.
8, The outstanding female guest can have a chance to be shown on the opening of the program in each episode, such as Liu Wuduo,	This kind of marketing technique seems like that in Taobao.com, highlighting the best-seller.

Zhuxiao and Wu Zien from HongKong.	
9, The episode 14 April, 2013 brought out the comic aspects on Baidu.com. Several episodes gave feedback to the Internet comments about *Take Me Out.* The program would take advantage of the opening time to answer latest questions that concerned audiences most such as the episode on 28 April.	Numerous people make comments on the Internet, including the TV host and tutors, which can promote the show through online marketing, give faster feedback to the audiences and promote the brand image of *Take Me Out*.
10, VCR is an important tool for others to know about the male guests, but it also produces some controversies at the same time. For example, the dispute of substitute happened in the episode on 29 April, 2013. The male guest No.4 became the target of public criticism because of VCR in the episode of 3 March, 2013. The male guest classified human beings into three categories in VCR in the episode on 28 April, 2013.	The lives of male guests shown in the VCR is quite doubtful, because the VCR needs to be edited after production. Since the VCR is the key piece to the development of the show, the program producers have the motivation to make the VCR controversial.
11, Foreign male and female guests and overseas Chinese guests take part in the show quite often. For example, two Americans living in China matched successfully in the episode on 13 April, 2013. Ethnic Chinese Cai Leipeng from Milan, Italy was in the episode on 10 April.	This setting is so important for *Take Me Out* to open up the overseas market. At the same time, it is necessary to introduce international values of love and marriage to enhance the variety of people's values and enlarge the social effect of the show.

*The source of 1-8 are from observation, 9-11 are from the social media.

The marketing techniques of *Take Me Out* are multi-channel and integral. It can be seen from the above analysis and conclusion that the image of *Take Me Out* is touching and controversial. The show pays attention to the reaction of the audiences, especially to those comments on the Internet. The show is good at following social issues, leaving quite a lot controversial topics and creating social effect.

Findings from In-depth Interview

The interview mainly focused on the questions below:

Question 1: How did you know about Take Me Out? How do you feel about the show? What do you think are the reasons for its success?

Question 2: What do you think of the selection of guests or the arrangement of the TV host in Take Me Out? Do you think those arrangements allow Take Me Out to succeed?

Detailed inquiry: Why do you think those reasons made the show successful? Dose it bring you different feelings or opinions? Will you be motivated to pay close attention to the show?

The detailed interview answers and analysis were listed in table 2 &3 below.

TABLE 2
INTERVIEWS ABOUT SUCCESSFUL ELEMENTS OF *TAKE ME OUT*

The interview question: opinions about the success of *Take Me Out* from the perspectives of transmission and audiences' reaction.

Interview Answers	Interview Analysis
1, *Take Me Out* was hot and popular. Many people discussed it and newspapers reported it quite a lot. I would not pay much attention to that news on purpose. I would read news about certain female guests at the beginning,	The reports on headline can attract people's attention to *Take Me Out*.

but I will not do it anymore. I will not search for the news about the show on purpose unless it is on the headline. I think reports about the show were designed to arouse people's interest to watch the show.	
2, I remember the first time I paid attention to the show was when I was in Senior Three. My classmate told me that the topic in the show was very fierce, for example, Ma Nuo said, "I would cry in BMW rather than laugh on the bike." I watched the show because my father watched it at home. Now I will not watch the program unless there are certain female guests I'm concerned about. The first choice when I am bored is still other variety shows. In a few words, I do not pay much attention to *Take Me Out* now. Controversial topics are the main reasons for its success. More people will know it if more people talk about it.	*Take Me Out* would be watched after being talked about by classmates, especially in leisure time.
3, I feel sick with this kind of program. I think it is dishonest. I did not know about it until other people were fed up with it. I think *Take Me Out* is hyped up successfully in entertainment shows.	The program is hyped and controversial. The show became more famous after audiences become fed up with it.
4, I watched *Take Me Out* because of my parents. They told me that it would be good for me to find my Mr. Right if I got to know the public's values of love and marriage. I was moved by some male guests' declaration of love. People should learn from their insistence of love.	The target group would watch the show under the persuasion of parents. They considered it meaningful.
5, I watched *Take Me Out* mainly on the Internet, but I had not watched for a long time. I was curious about some of its creative contents at the first, which could not last long. After being touched, I forgot about it.	The show was well known through Internet transmission. Novel contents might arouse people's attention, but will not last long.

TABLE 3
INTERVIEWS ABOUT SUCCESSFUL ELEMENTS OF *TAKE ME OUT*

The interview question: opinions about the success of *Take Me Out* from the perspective of people's setting.

Interview Answers	Extract of Key Words
1, Le Jia, one of the tutors, left the show, which weakened the show quite a lot. We wish he would return to the show quickly. His remarks were sensible. He interacted with Mengfei quite well. Mengfei could control the show well. The cooperation between them was fabulous. As for tutor Huanghan, her voice was gentle, which made people feel comfortable.	The speech and character of the host can create balance in the show, coordinating the live atmosphere.
2, After Le Jia left, the attraction of show was weakened. As a lot of female guests who made topics often left the show, the quality of the program declined.	The key people who guided and produced topics left, weakening the effect of the show.
3, I did not notice specifically the female guests at the	Promoting different female guests at different

beginning. As I watched the show more, I found out that outstanding female guests would get more spotlight and many male guests would choose them. So I think the program producers would focus on the outstanding female guests to attract audiences and male guests. Moreover, the show would promote different outstanding female guests at different times. For example, After Luo Qi left the show; Zhang Dandan became the outstanding female guest somehow and was selected by male guests many times.	times can make an impact.
4, I think those female guests are an important part of the show. Luo Qi was my favorite during the early half year of 2003. She was elegant and had a good family. Though she was not beautiful, yet she was very attractive to many male guests and was chosen as 'the dream girl' many times. Finally, Luo Qi was moved and left for the male guest Lin Hanqi, who came back to the show again for her.	Romantic love stories can move the audiences.
5, The selection of female guests should consider their self-cultivation. It is not a good feeling to see that female guests mocked the male guests in bad conditions. Showing the different sides of society is not bad, but vulgar people can be seen everywhere in our life. The program should control the number of these kinds of guests. We would like to see more excellent women who want to find their Mr. Right. *Take Me Out* is influential, which means it should take more reprehensibility to show social morality, improving the quality of the show.	The number of female guests without self-cultivation should be reduced.
6, Although there is a principle of fairness in *Take Me Out*, I think certain male and female guests should not be invited to the show because of their age or income level, which will lower the service quality of the show. Some female guests have a great difference before and after the make-up, which seems *Take Me Out* helps them fake.	Male and female guests in bad conditions should not be invited to *Take Me Out.* Female guests with great difference before and after make-up have been suspected of fraud.
7, Why can't female guests find their Mr. Right with high education and high income level? It can be seen that female guests with good career and life experience are more popular, which make people believe that only heroes can get married.	People do not understand why some female guests in good conditions cannot find a Mr. Right. After watching the show, people believe only wealthy handsome men can get married.
8, I do not pay attention to the male guests unless they are extremely handsome, because they do not appear in each episode like the female guests. I have some impression about Lin Hanqi who took Luo Qi away. He was young, good-looking and active. Some of the male guests were in good conditions, like those	Male guests will not leave impressions on the audiences because they do not appear in each episode. Only those excellent or awful male guests can leave impressions.

from Taiwan and abroad. Moreover, male guests from Taiwan, no matter how old were they; they were all good-looking and matched successfully. I also have some bad impression on awful male guests, like countryside leaders, unemployed young people and the boastful ones. I think the program producer wanted to make the program more attractive by such selection of male guests.

Question 3: Which controversial topics of the show make you interested? Do you think they are the success factors of Take Me Out?
Detailed inquiry: Why do you think those reasons made the show successful? Dose it bring you different feelings or opinions? Will you be motivated to pay close attention to the show?

TABLE 4
INTERVIEWS ABOUT SUCCESSFUL ELEMENTS OF *TAKE ME OUT*

The interview question: opinions about the success of *Take Me Out* from the perspective of program topics.

Interview answers	Extract of key words
1, *Take Me Out* delivers young people's value of choosing a partner. Issues such as money and love, age difference, long-distance relationship, divorce, and the insistence of old females touched me quite a lot. The choice process of *Take Me Out* resembles a fast food mode, having strengths and weaknesses.	Revealing the love and marriage value of young people. It is thoughtful of this quick mode of finding the partner.
2, I think the purposes of male and female guests in the show are to hype themselves more than to find true love. The show gave a feeling of dishonesty to the audiences, for the male and female guests did not know much about each other but they had to make quick decisions. Some comments by them had a deep influence on the young people, like "I would cry in BMW rather than laugh on the bike." Although each person enjoys the freedom of speech, yet speech should be guided properly. The frequency of changing female guests can be increased to avoid the suspicion of hype.	It seems that the purposes of guests are to hype themselves instead of finding true love. Bad comments can arouse people's attention and should be regulated.
3, It is insistent to find true love, even though being lost during the chasing. The show also had some elaborate arrangements, like the love declaration of male guests. There are also some female guests who want to find true love in the program. Their brave behavior told me that true love needs to be fought for.	The yearning for love will urge more people to watch *Take Me Out.* The show is about a quick but enthusiastic love story.
4, What moved me most was MengXue matched with an American Doctor. At last, MengXue chose a male guest who had the same voluntary teaching	The female guest who waited for a long time in the show matched successfully at last moving a lot of people, which reveals that marriage should

experience. The husband and wife should share the same values. Those people who insist on their love and marriage values, waiting for true love can move me deeply. Those female guests represented as crying in BMW rather than laugh on the bike would be representative of an unsuccessful marriage after years.	have a shared value.
5, Paying attention to social morality: *Take Me Out* is an influential program, which means it is necessary to take some social responsibility.	An influential show should take responsibility and pay attention to topics of social morality.
6, Since the appearance of male guests values a lot, the show should play the positive VCR of the male guest first. Then, the host introduces the job and personal information of the male guest.	Whether to pay attention to people's character or to one's appearance is controversial. The show can make a change to play the VCR first.

The aforementioned interview questions are open-ended. 19 of the typical interview records were analyzed as samples. Those questions involving aspects of propagation of media channel, people setting, and selection of people are deeply connected to the research subject, which have a direct access to the opinions of interviewees.

Findings from Questionnaire Survey

The survey showed that most interviewees had watched Take Me Out. Those who watched twice a week, once a week and once every two weeks belong to the fans of the show. Those who watched once a month belong to a transition range indicating that the show was a choice only in their spare time. Most interviewees indicated that they would not search for the information of the show unless it was on the headline of the news. More than 70% of the students believed that the TV host and tutors could guide topics properly, which could contribute to the success of the show.

TABLE 5
RESULTS OF QUESTIONNAIRES

Questions	Answers	Number of People	Percentage (%)
1, Whether watch *Take Me Out* in spare time?	A, Yes	124	79.5
	B, No	32	20.5
2, What's the frequency of watching *Take Me Out?*	A, Twice a week	9	5.8
	B, Once a week	4	2.6
	C, Once two weeks	13	8.3
	D, Once a month	63	40.4
	E, Once to twice half a year	67	42.9
3, Do you think the host or tutors guided topics properly on purpose?	A, Yes	123	78.8
	B, No	21	13.5
	C, No idea	12	7.7
4, Did you know about the information of *Take Me Out* on the Internet? Like Baidu.com, microblog?	A, Yes, often	4	2.6
	B, Yes, sometimes	49	31.4
	C, Yes, rare	33	21.1
	D, No	70	44.9
5, Do you think female guests in *Take Me Out* want	A, More to hype	67	43
	B, More to find true love	50	32

to hype themselves or to find true love sincerely?	C, No idea	39	25
6, Do you think male guests in *Take Me Out* want to hype themselves or find true love sincerely?	A, More to hype	33	21.1
	B, More to find true love	77	49.4
	C, No idea	46	29.5
7, What do you think of the segment of lighting all lamps and loving turning corner?(lamps represent the support of female guests)	A, Excellent	39	25
	B, Good	70	44.9
	C, Bad	12	7.7
	D, No feeling	35	22.4
8, Do you watch *Take Me Out* with parents?	A, Yes	81	51.9
	B, No	75	48.1
9, What were the reactions of parents when you watched *Take Me Out* with them?	A, Inquire your values of love and marriage	25	13.6
	B, Appreciate the show	3	1.6
	C, Be fed up with the female guests	64	34.8
	D, Be fed up with the male guests	51	27.7
	E, Others	41	22.3
10, Do you think the program provides some enlightenment for your future love and marriage?	A, Yes	69	44.2
	B, No	95	60.8
11, What method do you choose if you are still single at an odd age?	A, Take part in *Take Me Out*	0	0
	B, Go for blind daring	77	49.4
	C, Let it be	79	50.6

Forty-three percent interviewees believed that female guests were hyping themselves and the show was boastful and dishonest. 49.4% interviewees noticed that most male guests found true love on the show, which was opposite to the result of female guests. The sincerity of male guests in the show was adequate.

Over 50% of interviewees watched the show with parents. More than half of the parents were fed up with the male and female guests. 13% of the parents would seek to know their son or daughter's value of love and marriage. The rate of being fed up with female guests was higher than that of male guest, which indicates that the female guests are more controversial. More than 50% of audiences appreciated the show by means of being fed up with it, which means the show brought more entertaining experience than expressed correct value of marriage.

About 60% of interviewees believed that that show did not provide any enlightenment for future marriage. Take Me Out was just an entertainment show in people's heart. Most interviewees refused to take part in the show. Over 50% of interviewees wanted to let it be. More than 40% people agreed to find a partner through the traditional blind date. Apparently, this kind of blind dating show does not change the way of finding a partner.

CONCLUSION AND SUGGESTIONS

After being recently reformulated and reinvented, Take Me Out has become more popular and influential, seemingly indicating the success of its buzz marketing. First of all, audience reaction accelerated the transmission of the show. The controversial topics of Take Me Out reported by

newspapers, shared on the Internet, discussed among audiences, relatives and friends can create more target audience awareness for the show. Secondly, the selection and setting of people contributed to drawing people's attention: the TV host controlled the pace of the show. Both male and female guests had a lot of stories and topics, arousing many discussions. Last but not least, the production of program topics were so controversial to attract audiences' interest. The love and marriage values expressed in the show generated many hot social issues, for example, the yearning for true love, understanding between lovers and attention to the appearance and the character. Besides, there were controversial topics about going for blind date in the screen, such as hyping, faking and influence on social morality. Then, this paper gives the following four suggestions in order to improve *Take Me Out*:

1) Avoid overly controversial topics. To be specific, avoid overly subjective topics. For example, are the standards of spouse selection too strict? The appearance of guests and the economic condition of male guests. Too much dispute makes people embarrassed easily, and it is difficult for the host to reconcile. When it comes to personal controversy, if male and female make improper speech, audiences will be fed up with. In addition, audiences may believe the show has suspicious hype, which may decrease favorable impression on the show. Therefore, it is necessary to control the sensitiveness of topics.

2) Consider to invite tutor Le Jia back to the show. The requirement of asking Le Jia back is very strong in questionnaire, interview and on the Internet. Many people love Le Jia's fierce remark and his good-looking appearance. His perfect match with MengFei was the highlight of the show.

3) Improve the quality of male and female guests. The main reason that people believe male and female guests want to hype themselves is that their behavior is different from most normal people. Perhaps, the male and female are who they are. The program producer chose them on purpose to catch people's attention. On the other hand, the number of certain female and male guests should be controlled properly to improve the quality of the show, for they do have nothing especial and even make people sick of them.

4) Endeavor to provide the information of female guests as truly as possible. Most audiences believed female guests wanted to hype themselves because their performance was too controversial. Although exaggerated performance can catch the eye of audiences, yet it will make the show doubted and have a bad influence on the passion of single male who take part in the show.

5) Broadcast more follow-up of the matched male and female guests. Both of the dressed male and female guests fell in love at first sight on the stage, but what about the life when it comes to reality? *Take Me Out* should pay attention to the follow-up, improving its credibility.

Take Me Out can be leading in the industry in three years because of its creative commercial mode. The most important thing of commercial mode is the technique of attracting audiences. From the perspective of Business Anthropology, it is believed that buzz marketing is the best selling point to attract audiences. *Take Me Out* had an unofficial discussion on recent hot issues at home and abroad by different channels and media, like the TV host, male and female guests, and the segment of lighting all lamps and *Take Me Out* for overseas guests. Based on marriage dating, the show also talked about topics on the aspects of family, society and the country, which make audiences pay attention to not only love and marriage, but also other fields, expanding the influence of *Take Me Out*.

Acknowledgement: Our students Jianwen Zheng, Xiang Yan, Yang Jie, Tan Mingjie, Tan Lu, Chen Xiaona participated in the research project and made their initial contribution for data collecting.

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