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Determinants of Chinese Foreign Direct Investment in Europe: A Panel Data Analysis

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Abstract:
This paper seeks to identify the determinants of Chinese FDI in Europe, this is achieved via panel data analysis using transaction data of Chinese FDI from 2005 to 2019 to find the determinants. Our findings suggest that FDI restrictions will have a significant negative impact on FDI. In contrast, the number of patent applications positively impacts Chinese FDI, indicating seeking strategic assets, particularly technology and know-how. Moreover and interestingly, market seeking though the analog of GDPG / market growth will not significantly influence Chinese FDI decisions. Also, corruption controls, trade relations, and political stability appear not to be significant for Chinese investors. With the major determinants, it appears clear that technology seeking in strategic assets is the primary motivation behind Chinese acquisitions in Europe in recent years.

Key Word**: **Chinese FDI, Panel data analysis, Made in China 2025, asset seeking

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I. Introduction

The European Union and Europe as a whole remains one of the most attractive locations in the world for FDI, with 6.7 % of the world's population and (GDP) 18% of global nominal GDP according to the (IMF 2020). With a single common market and with 19 of the 27 member states sharing the Euro as a common currency. The EU received - 30% of the global FDI flows last year (World Bank, 2019). Europe has long been an attractive destination for Chinese investments. Since the early 2000's Chinese FDI into Europe increasing ramped up peaking in 2016 at 37.3 billion Euros almost double the previous year (Hanemann and Huotari, 2018), Bloomberg noted that the continent saw roughly 45% percent more China-related activity than the U.S. From 2008 to 2018 totalling over $318 billion (Bloomberg, 2018).

The growth of Chinese outbound investments is a product of China's transformation towards a market-based economy with higher value-added industries, including technology and services. The success of China's economic transformation partly depends on an increased commercial presence abroad and deepening international linkages (ETNC, 2017). China has a relatively sophisticated regulatory framework dealing with outward FDI. It encourages the type of outward FDI that contributes directly to China's development (e.g. by obtaining natural resources, promoting exports or strengthening the country's technological base).

This has resulted in a clear focus on the major European economies, Between 2000 and 2019, the UK saw the largest total Investment at 50.3 billion euros nearby double that of Germany, however since 2015 the Southern European countries increasingly saw more interest from Chinese FDI accounting for almost half of all Chinese EU investment in 2015 high value M&A deals. It is also noteworthy as all these transactions were carried out or funded by Chinese State owned enterprise's. Central and Eastern European countries (CEE) have been lagging behind their Western EU despite their eagerness for investments from China (Hansuakul and Levinger, 2014). This could be explained by Chinese companies tend to rely heavily on their existing networks due to the uncertainty of investing in countries with political, economic, cultural, legal differences. In addition, there appears to be a fear to be a first mover regards to investment by Chinese companies, as they tend to follow others. On a sector-based perspective Transport, utilities & infrastructure and technology have become the top sectors for Chinese investment in Europe in recent years. High-tech and advanced manufacturing industries accounted for a significant share of total Chinese investment in 2017. In Western Europe, China has been investing in the energy sector and high-tech companies mainly acquiring technology as part of its' Made in China 2025' strategy.

Also, financial and logistics services and its consumer markets are targeted. Both Eastern and Southern Europe are considered attractive investment destinations for production for the European markets and for infrastructure investments. In Southern Europe, Chinese investors participated in the privatizations during the Eurozone crisis. Investments in Eastern Europe remained small in scale, despite infrastructure projects as part of the BRI (which mostly generated construction projects as opposed to direct investment) for Greenfield investments there is also variation across sectors. The EU received more than a third of China's Greenfield

investment in manufacturing and a quarter of investment in services. Companies such as Huawei Technologies and ZTE have brought numerous Greenfield investments to the EU while M&A played a minor role for them according to; (Hansuakul and Levinger, 2014). With these factors in mind ,t his paper will analyse the determinants of Chinese *InFDI* in Europ*e* and its key determinants based on panel data analysis including market seeking, Technology seeking FDI restrictions and political factors which will be represented through various variables in the model.

II. Literature Review

While western media portrays all Chinese FDI as part of political strategy, the commercial motivations of investment in the EU should not be negated. In fact, the commercial objective is still considered the predominant driver for investment decisions from China (Hanemann and Huotari, 2016). Literature on FDI all states the same general motivations being the seeking of; Markets, Strategic assets, Resources Technology, and Diversification as the primary reasons for FDI; this is supported by (Buckley et al., 2018; Ramasamy, Yeung, and Laforet, 2012;). The majority of PRC's businesses in the EU have been concentrated on strategic asset and market seeking (Clegg and Voss 2014), .and that motivations are broadly the same for Chinese firms but with Chinese characteristics.

Although some of these motivations are true for Chinese investments, they do not entirely fit investments in Europe. The European Think-tank Network on China (ETNC) analysed Chinese investments in Europe on a country level and showed that European economies have a wide range of assets and features that Chinese investors seek (ETNC, 2017).

2.1 Technology seeking

'Made in China 2025' (MIC 2025) In May 2015, as blueprint on how to achieve this technological push through a series of polices and targets for the nation to develop the desire of the PRC's authorities to make the state a "globally competitive manufacturing superpower largely independent of foreign technology"(Zenglein et all 2019). MIC 2025 encouraged the upgrading of Chinese industry and production via acquiring core technologies through the establishment of R&D centers, high-tech enterprises, and mergers and acquisitions. (MIC 2025) This wording has raised concerns in Europe and the united states as they argue that it undermines fair competition. (Jost et al., 2016).

Strategic asset seeking has long been considered one of the main motivations behind Chinese investments leading to the growing concerns in EU countries; this is due to Chinese MNC and SOE's wanting to catch up with their foreign competitors in terms of technology and processes. This is supported by the sectors targeted in the MOC 2025 program and the EC's sector-based concerns. If this were the case, it would present itself as acquisitions in high-tech fields and major European nations.

2.2 Market seeking

It has long been established in literature since John J Dunnings pivotal 1993 work that the market seeking is a crucial motivation for all firms overseas expansion (Dunning 1993). This was found to be the case for Chinese firms in (Buckleys et al 2010) work on the "Determinants of Chinese outward Forign Direct Investment". They found that this was driven by excessive competition in the Chinese domestic market as well as the overcapacity of the SOE's leading to their aggressive market-seeking strategy in Europe. The rationale for this is obvious Europe is the second world's largest market with more than 500 million inhabitants with high purchasing power.

2.3 FDI Restrictiveness

The European Union countries have traditionally been considered the most open to FDI globally, defined by OECED Foreign Direct Investment Regulatory Restrictiveness Index, with the most open all being located in Europe. This lead to Europe being the world's largest FDI recipient in 2017 and 11.3 trillion US dollars in 2019 (OCED 2020)

With Europe introducing FDI screening for the first time and a raft of national-level policies, all of these will lead to a more restrictive FDI environment that will make Europe a less attractive destination for Chinese investors. Therefore, in light of these restrictions, we would expect a negative impact on Chinese FDI.

2.4 Political factors

Other factors determining FDI have been found to be national-level institutional factors such as political instability which have been issues in country's such a Greece following the great recession in 2008 and the UK following Brexit and the uncertainty and direct political instability this lead too. Finally papers have not been able to reach a consensus view on the impact that corruption has host country levels of FDI an updated study by (Navickas et al., 2016; Draskovic et al., 2019) showed that corruption has adverse effect on FDI

inflows in Europe, therefore following their finding s we will assume that Chinese investors should avoid investments in areas with lower corruption controls.

III. Model And Data Description

3.1 Data Selection

All the data is from the EU 28 it should be noted this includes the United Kingdom as was still counted a member until end of transition period 31st December 2020, also as some countries did not have significant data they were removed later in this analysis focusing on 24 out of the 28. The time is from 2005 - 2019 this was chosen for two reason firstly, 2005 is the beginning China Global Investment Tracker (CGIT) data and secondly in order to avoid the distortion caused by the COVID pandemic we excluded the limited 2020 data. The other variables are form the World Bank and OCED from the same time all data sources. With major determinants identified we formulated the regression below note c donates country and t time period, with full details of variables and source found in **Table No1:.**

$$\mathbf{In\ (InFDIct) = ai + \beta 1\ GDPGct + \beta 2\ InPAct + \beta 3\ FRct + \beta 4\ CTAXRct + \beta 5\ PSct + \beta 6\ CCct + Uct}$$

Table no 1: Summary of Variables

Type of variable	mark	title	Source
Dependent variable	*InFDI*	IFDI	China Global Investment Tracker
Independent variables	GDPG	Existing market size	World Bank
	*In*PA	Patent Applications	World Bank
	FR	FDI Restrictiveness	OCED
	PS	Political Stability	World Bank
	CC	Corruption control	World Bank
	TR	Trade relations	World Bank
	CTAXR	Corporate tax rate	OCED

Table no2: Basic Descriptive Statistics.

Descriptive statistics for the independent variables					
Chinese FDI (*In*FDI)	Obs	Min	Max	Mean	Standard deviation
GDP growth (GDPG)	392	-14.814	25.163	2.09	3.764
Patent applications (*In*PA)	366	0.0693	10.804	6.539	2.093
FDI restrictiveness (FR)	240	0.004	0.149	0.033	0.024
Political stability (PS)	392	-0.474	1.596	0.745	0.395
Corruption control (CC)	392	-0.267	2.470	1.023	0.790
Trade relations (TR)	364	0.0046	1.0535	0.054	0.1267

Table no2: The table above shows the statistics of all variable data following natural logarithm processing, according to the analysis of the results in the table above, we know that the data has good volatility and can be used for the next analysis

Table no 3 : Correlation Matrix for the Independent Variables

Correlation matrix for the independent variables						
Chinese FDI (*In*FDI)	1	2	3	4	5	6
GDP growth (GDPG)	1.0000					
Patent applications (*In*PA)	-0.2418	1.0000				
FDI restrictiveness (FR)	0.0345	0.3118	1.0000			
Political stability (PS)	0.2542	-0.179	0.1058	1.0000		
Corruption control (CC)	0.0423	0.2598	0.0862	0.5288	1.0000	
Trade relations (TR)	-0.334	-0.0741	-0.0114	-0.4335	-0.322	1.0000

Table no3: Correlation analysis was used to study the correlation between lnFDI and GDPG, lnPA, FR, PS, CC, TR. We carried out the Hausman test resulting in X2= 7.02 (p=0.3194) and found the differences in coefficient are not systematic. Considering that there may be collinearity between the variables and other

variables, a multicollinearity test was performed on it, we therefore carried out a VIF variance inflation factor test resulting in a VIF=3.97 indicating moderate correlation but not serious multicollinearity.

IV. Results

Table no 4: As can be seen from the table 4 we applied both fixed-effects (FE), and random-effects (RE) model analysis to our data, with better fit for the data and the higher R squared value of the RE model we shall use it for the rest of our analysis. As can be seen from the above table, the model R square value is 0.3324, which means that GDPG, lnPA, FR, PS, CC, TR can explain the 33.24% change in lnFDI. The final analysis shows that GDPG, PS, CC, TR do not show significance meaning that they do not affect lnFDI in a significant way therefore the associated hypotheses must be rejected. However, both InPa and FR showed significant negative impact on Chinese FDI levels into the EU host country. From the analysis of significance and regression coefficient results, we can see that the explanatory power is relatively stable, and the significance of the variables is stable. It shows that the model is relatively stable, and the variable influence ability and significance stability are good.

Table no 4 : Correlation Matrix for the Independent Variables

Model estimation		
Chinese FDI (*InFDI*)	FE	RE
GDP growth (*GDPG*)	0.0553	-0.0400
	(0.0392)	(0.0388)
Patent applications (*InPA*)	0.8066	0.4765
	(0.3948)*	(0.1036)***
FDI restrictiveness (*FR*)	-32.4840	-14.3562
	(12.6419)**	(5.5244) ***
Political stability (*PS*)	-1.2291	-0.9814
	(0.9685)*	(0.8489)
Corruption control (*CC*)	-0.3051	0.4646
	(1.3298)	(0.3578)
Trade relations (*TR*)	3.0360	1.1479
	(0.6913)***	(1.1227)
Constant	1.4975	2.3355
	(2.8756)	(0.9654)
Observations	200	200
R-squared	0.219	0.3324
Number of countries	24	24
Hausman test	X2= 7.02	
	(p=0.3194)	
Robust standard errors are in parentheses.		
* p < 0.10; ** p < 0.05; *** p < 0.01.		

V. Discussion

The most notable result was the one percent increase in annual patent applications in the host country was associated with a 0.48 percent increase in annual inward Chinese FDI; this does support the idea that firms are seeking strategic assets, particularly technology and know-how, which fits the theory of economic statecraft and the implementation of MIC2025. These findings match those of Blomkvist, K & Drogendijk, R (2016), who also found a significant relationship between the number of patents and Chinese FDI in Europe.

According to the European Patent Office in 2019, EPO states made of 45% of all patent applictions, with 15% From Germany, France 6%, Switzerland 5% and UK 3%. While it is unsurprising that the larger EU nations develop the most patents, Switzerland presents an interesting case for two key reasons: a non-EU member and one of Europe's highest Chinese investment levels $56 billion USD or 15.4% of all Chinese investment in Europe with the largest takeover by a Chinese company to date was the Syngenta in 2015 for $43 billion by ChemChina, which is global leader in pesticides and seeds. It would be defined as strategic asset seeking. Similarly, in 2015 ChemChina with SAFE purchase of Pirelli for $7.8billion was an acquisition of technology and know-how rather than market seeking.

Interestingly market seeking though the analog of GDPG / market growth does not appear to have a significant impact on Chinese FDI decisions; however, this could be down to the single market of the EU as an investment in a single country can be a gateway the whole EU market or simply that strategic asset seeking is the main motivation behind the investments.

Also, corruption controls and political stability appear not to be a significant factor for Chinese investors; this could be down to the relativity similar levels across Europe or down to Chinese experiences in the developing world where these issues are much greater and have all found methods of mitigating these risks. Trade relations appeared insignificant in this study, however as the data being used is from 2019 we may find changes following the COVID-19 pandemic and the signing of the EU-China Comprehensive Agreement on Investment (CAI) as well as other significant factors that may affect trade relations such as the Regulation 19/452 and other measures against Chinese FDI.

Finally, unsurprisingly, FDI restrictions with all other things being equal a one-point increase in FDI restrictiveness would lead to a 1435.6 % percent decrease in Chinese FDI. With the majority of new FDI, restrictions only being implemented in 2020 and COVID-19 delaying the effects of these restrictions due the globally lower amount of FDI we are yet to see the full impact these will have.

VI. Conclusion

This study's objective was to identify the determinants of Chinese FDI . Summary analysis of the data shows that FDI restrictions will have a significant negative impact on FDI. In contrast, the number of patent applications has a positive impact supporting the theory that Chinese Investors are seeking strategic assets, particularly technology and know-how. Moreover and interestingly, market seeking though the analog of GDPG / market growth will not significantly influence Chinese FDI decisions. In addition, corruption controls, trade relations, and political stability appear not to be significant for Chinese investors. With the major determinants, it appears clear that Technology seeking in the form of strategic assets is the main motivation behind Chinese acquisitions in Europe in recent years.

In closing, our findings show that recent successful and unsuccessful transactions that Chinese investors are seeking strategic assets in the form of technology and appear to be following their recommendations laid out in China twenty-five. This could be a consequence of these being the key future growth sectors; however, this also presents an opportunity for further study into the rationale behind these strategic acquisitions and the European policy response such as the further FDI screening mechanisms.

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