

# An Examination Of The Country Liquidity Index To Predict A Country's Foreign Direct Investment

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## ABSTRACT

*Foreign direct investment (FDI) is critical to the economic development of any nation regardless of its level of growth. There is a plethora of research on the determining factors of FDI, both economic and non-economic, but very little on the weighted influence of these factors. This research is an attempt to categorize and rank the major determinates of FDI. The conclusion reached by this research is that economic condition of a country is a major determining factor for FDI, but there are other competing factors, as well, that have major impact on FDI. Using the Country Liquidity Index (CLI) as a barometer, the FDI is regressed to develop a model to predict the potential FDI of a country. Results conclude that only 22.46% of a country's FDI is explained by economic factors leaving the remaining 77.54% unexplained. This research attempts to explain the unexplained factors and rank the countries as overinvested and underinvested. A review of the data for the over and underinvested countries indicates that political factors and third country influences may outweigh economic factors when it comes to FDI. The paper concludes with a ranking of 62 countries and their foreign direct investment potential along with their current over/under foreign direct investments.*

**Keywords:** Country Liquidity Index; Foreign Direct Investment; FDI

## INTRODUCTION

*"For the first time since 2001, the U. S. knocked China out of first place in an annual survey of executives rating favorable places for foreign direct investment." (Hagerty, 2013)*

In 2011, foreign direct investment (FDI) in the top 100 countries totaled \$1,713,523,303,561 in U.S. dollars (World Bank Database, 2013). Previous literature indicates that a country's economic environment/conditions are the major determinant of foreign investment. However, further examination of the literature indicates no published work addresses how much a country's economic condition affects its ability to obtain foreign direct investments. This paper examines the previous literature on determinants of FDI, ranks the determinants by interest, develops a model that relates the economic factors of FDI to the Country Liquidity Index, and concludes by examining and ranking countries that are over or under invested.

The importance of this work is twofold. On the academic side, it is important to identify the determinants of FDI and evaluate their weights in the investment decision. On the business side, this work identifies countries that have potential for additional FDI.

## LITERATURE REVIEW

The literature in this field follows two major research tracks, determinants of foreign direct investment and specific country and industry case studies. This literature survey begins by identifying, categorizing, and ranking

the determinants of FDI. Next, individual case studies of various countries and industries are examined to complete the review of FDI determinants. The literature review concludes by identifying gaps in the previous literature indicating further areas of research needed in this field.

Determinants for foreign direct investment can be categorized into five major areas: foreign country factors, political factors, home country factors, business investment cycles, and third country influences.

Foreign country factors accounted for the majority (54 journal articles) of the research. Within the specific foreign country factors, were sixteen major sub-factors identified in the literature that influences FDI. In order of most important (number of times mentioned) to least important the factors are:

1. Economic factors (37 journal articles): exchange rate (Rasheed, Sabir, Tahir, & Farooq, 2012), interest rates (Uwubanmwun & Ajao, 2012), available credit in country (Jurcau, Andreicovici, & Matis, 2011), growth rates (Selelo & Sikwila, 2012), inflation (Srinivasan, 2011), GDP (Choong & Lam, 2010), unemployment rate and per capita income (Pearson, Nyonna, & Kim, 2012).
2. Favorable government regulations (35 journal articles): trade openness (Azam & Kukman, 2010), taxes (Leitao, 2010), low corruption (Mateev, 2009), strong property rights (Kawai, 2009), environmental regulations (Jimenez, Duran, & De la Fuente, 2011) and stable government (Lin F., 2010).
3. Potential market size (17 journal articles): current target market within the country or area (Liu & Pearson, 2010; Mhlanga, Blalock, & Christy, 2010).
4. Well trained local workforce (11 journal articles): amount and availability of skilled labor in country (Dutta & Osei-Yeboah, 2013; Liu, Daly, & Varua, 2012).
5. Current relationship status (9 journal articles): already a current trading partner (Rienda, Claver, & Quer, 2013), have existing FDI with home country (Cheng & Chung, 2012) or have current established network linkages (Noh & Yean, 2013).
6. Industry regional specialization (7 journal articles): industrial clusters of manufacturing (Hu, 2013) or specific technology production assets (Rienda, Claver, & Quer, 2013).
7. Natural environmental resources (7 journal articles): current availability of natural resources for business purposes (Doytch, 2012; Ekanayake, Legerwood, & Halkides, 2012).
8. Current infrastructure (6 journal articles): infrastructure is current or can support expansion (Nurudeen, Wafure, & Auta, 2011; Hailu, 2010).
9. Low wage labor force (5 journal articles): amount of low wage workers available for production purposes (Hayakawa, Lee, & Park, 2013; Leibrecht & Scharler, 2009).
10. Geographical closeness (4 journal articles): countries that are in close physical presence to home country. Usually a border country (Mateev, 2009; Ragoussis, 2011).
11. Current economic development status (3 journal articles): used Dunning's Investment Development Path model to determine when to invest in a country (Molina-Martinez & Alcaraz-Vargas, 2012).
12. Cultural Proximity (3 journal articles): to include similar cultures (Jimenez, Duran, & De la Fuente, 2011) and languages (Sharma & Bandara, 2010).
13. Protective labor rights for employees (2 journal articles): Egan (2012) argued countries with more protective labor laws are less risky and should attract FDI, while Leibrecht & Scharler (2009) found no significant relationship between FDI and labor laws.
14. Ownership, location, and internalization (2 journal articles): discusses the uses of Dunning's Eclectic Paradigm to determine FDI (Park, Lee, & Hong, 2011).
15. Member of a trade organization like the WTO (2 journal articles): Aw & Tan (2010) found that countries belonging to trade organizations had higher levels of FDI.
16. Low entry costs (1 journal article): countries with lower market entry costs had higher levels of FDI (Hayakawa, Lee, & Park, 2013).

Political factors (23 journal articles) were the second most addressed category in FDI. The number one political reason governments wanted FDI was economic. Seventeen articles discussed either improving (Stankeviciene & Lakstutiene, 2012; Molina-Martinez & Alcaraz-Vargas, 2012), developing (Uwubanmwun & Ajao, 2012) or transforming the economy (Sharma & Bandara, 2010) through FDI. In addition, several articles specifically addressed how economic development improves political stability (Amal, Tomio, & Raboch, 2010;

Suliman & Mollick, 2009), reduces poverty (Kalirajan & Singh, 2010) and creates jobs (Hijzen, Jean, & Mayer, 2011; Subramaniam & Baharumshah, 2011).

Technology was the second most addressed political factor with three articles. Politicians wanted FDI to advance current technologies (Miyamoto, Lu, & Shimazaki, 2011) and create technology spillover to other businesses and industries (Elmawazini, 2010; Fedderke & Romm, 2006).

The remaining political reasons for supporting FDI found in the literature were using FDI to limit competition (Owusu-Antwi, 2012), secure foreign resources (Wang, 2012) and exporting pollution or trash (Hall, 2009; Spatareanu, 2007).

Home country factors for foreign direct investment (5 journal articles) include home government support for FDI (Cheng & Chung, 2012), companies seeking specific knowledge they did not possess (Chidlow, Salciuviene, & Young, 2009), a follow the leader mentality (Buch, Kleinert, Lipponer, & Toubal, 2005), high local wages (Hayakawa, Lee, & Park, 2013) and home country tax rates (Wijewerra & Mounter, 2007).

Business investment cycles (2 journal articles) addressed how FDI ebbs and flows with current economic (Pradhan & Saha, 2011) and business cycles (Cavallari & D'Addona, 2013). Cavallari (2013) showed how the current business cycle affected the FDI in the United States while Pradhan (2011) found evidence that FDI increased in India when there was an economic expansion driving increased world consumption.

Third country influences (Baltagi, Egger, & Pfafermayr, 2007) examined how actions of another country influenced FDI between two other countries. They looked at how the United States could affect the FDI between two other countries through a complex integration strategies model of multinational companies.

Summarizing the determinants of the foreign direct investment research track indicates that economics appears to be the number one examined reason for FDI. Both foreign country and political categories rated economics as the key factor in FDI. However, no research ever examined the weight the economic factors contribute in the FDI process.

### **Country and Industry Case Studies**

Next, the literature examines the second research track of case studies on FDI. In specific, what are the breadth and depth of current research with respect to countries and industries?

#### *Country Case Studies*

The number one country examined in case studies is China (10 journal articles) (Liu, Daly, & Varua, 2012; Mucchielli & Yu, 2011). Followed by Malaysia (6 journal articles) (Noh & Yean, 2013; Athukorala & Wagle, 2011), Pakistan (5 journal articles) (Zafar, 2013; Rasheed, Sabir, Tahir, & Farooq, 2012), India (4 journal articles) (Syddl & Sreenivasa, 2011; Vivoda, 2011), Korea (3 journal articles) (Ha, Lee, Kim, & Rhee, 2009; Kim & Rhee, 2009), Nigeria (3 journal articles) (Uwubanmwun & Ajao, 2012; Olufemi Oke, Ezike, & Ojogbo, 2021), Africa (3 journal articles) (Owusu-Antwi, 2012; Mhlanga, Blalock, & Christy, 2010), Egypt, Jordan, Yemen (3 journal articles) (Al Abbadi, 2010; Bakir & Alfawwaz, 2009), and the United Kingdom (2 journal articles) (Dimitropoulou, McCann, & Burke, 2013; Fallon & Cook, 2010). The following countries only had one case study article written: Norway (Rezza, 2013), Taiwan (Hayakawa, Lee, & Park, 2013), Mozambique (Tembe & Xu, 2012), Botswana (Selelo & Sikwila, 2012), Mexico (Molina-Martinez & Alcaraz-Vargas, 2012), Russia (Anil, Armutlulu, Canel, & Porterfield, 2011), Canada (Leitao, 2010), Turkey (Zeren & Ergun, 2010), Spain (Rodriguez & Bustillo, 2010), Australia (Sharma & Bandara, 2010), Czech & Slovak Republic (Venkataramany & Miklovich, 2010), Indonesia (Azam & Kukman, 2010), Albania (Bitzenis & Szamosi, 2009), Cambodia (Cuyvers, Soeng, Plasman, & Van Den Bulcke, 2011), and Poland (Chidlow, Salciuviene, & Young, 2009). In addition to specific country studies, the literature presented various regional studies to include Europe (4 journal articles) (Jimenez, Duran, & De la Fuente, 2011; Artige & Nicolini, 2010), and single articles on Eastern Europe (Doytch, 2012), the Baltic (Stankeviciene & Lakstutiene, 2012), Central Asia (Doytch, 2012), South Asia (Bhavan, Xu, & Zhong, 2011), and Latin America (Amal, Tomio, & Raboch, 2010).

Although most case studies were country specific one case study examined in-country differences. Hu (2013) discovered that FDI within the country of China varied by region indicating that for large countries the country study approaches may not be reliable.

#### *Industry Case Studies*

In addition to country case studies, the literature examined industry case studies addressing FDI in manufacturing (5 journal articles) (Rezza, 2013; Lin F., 2010), service sector (4 journal articles) (Noh & Yean, 2013; Ramasamy & Yeung, 2010), and pharmaceuticals (2 journal articles) (Syddl & Sreenivasa, 2011; Jiang, 2006). Single journal articles examined FDI in banking (Gulamhussen, 2012), Agricultural (Doytch, 2012), information technology and telecommunications (Syddl & Sreenivasa, 2011), mining (Vivoda, 2011), and real estate (Rodriguez & Bustillo, 2010).

The literature concerning the determinants of FDI included 29 countries, 4 world regions, both manufacturing and service sectors, and industry specific businesses. Yet no journal article addresses the weighted influence that a country's economic condition has on foreign direct investment compared with the other 15 major determinants of FDI. This leaves a gap in current literature that this research will explore.

### **METHODOLOGY**

To determine the impact of a country's economic factors to the foreign direct investment it receives requires a measure of a country's current economic condition. The issue is that there is no one agreed upon measure to determine this. However, the Country Liquidity Index (Sparks, Desai, & Thirumurthy, 2012) developed a measure of how well a country's government was managing its available cash. The higher the index number, the more attractive the country is to foreign investment. Countries with a negative Liquidity Index carry too much debt and would not be suitable for FDI. The Country Liquidity Index (CLI) currently ranks 63 of the world's top countries and is based primarily on the economic criteria that businesses can use to identify FDI opportunities.

Using the Country Liquidity Index as a proxy for the country's economic factors that affect FDI, a relationship between the CLI and FDI would indicate the weight that economic factors have in influencing the foreign direct investment amounts for a country. Various regression techniques (linear, exponential, log) were examined to find the best regression fit for the data. Foreign direct investment data from the World Bank was available for 62 of the CLI countries. World Bank's 2011 data, the latest complete set, was used for this study.

Based on the SPSS results of the various regression models, the linear regression model was chosen as the best fit model by both the R-Squared and p values. This gives the regression formula for a country's FDI as:

$$FDI = b_0 + b_1 (CLI)$$

where:

FDI - Foreign direct investment in US dollars

CLI - Country Liquidity Index

### **RESULTS AND ANALYSIS**

The results of the regression revealed an FDI prediction formula of:

$$FDI = 58,074,771,998 + 4,301,407,944 (CLI)$$

The p-value for the CLI coefficient was 0.000059 indicating a statistically significant relationship. Adjusted R-Squared for the model was 0.2246, indicating that 22.46% of the reason for a country's foreign direct investment is explained by economic factors. Based on the regression formula, a table of countries with their predicted 2011, FDI amounts was generated. (Appendix A) The table is sorted by country from the highest predicted FDI to the lowest predicted FDI, and by the country that is most overinvested to the country that is most underinvested.

The significant result of this study is that although economic factors are the number one studied factor in foreign direct investment, they do not account for a large percentage of the reason a country obtains FDI. In fact, 77.54% of the reasons for FDI still have yet to be addressed. The literature review presented 16 foreign country factors, 5 political factors, 5 home country factors, business and economic cycle factors, and third country intervention factors that still need to be measured and related to FDI to get a complete picture. Further, analysis of the countries that are over/under invested may lead to new insights.

The top 10 over invested countries are: United States (\$173,018,737,004), China (\$167,898,324,238), Belgium (\$65,481,706,161), Brazil (\$57,504,651,489), Russia (\$36,131,012,707), India (\$25,951,091,584), Egypt (\$20,518,304,797), Italy (\$19,623,061,601), Greece (\$18,614,780,944), and Singapore (\$18,406,963,600). Examining the first two, United States and China and comparing them to the 29 reasons in the literature would indicate 'follow the leader' mentality, favorable government regulations and potential market size for strong FDI. These three factors may also be true for India. Countries like Brazil, Russia, Egypt, Italy, and Greece with weaker or failing economies are attracting far too much foreign investment then their economic numbers support. This may indicate third country influences are politically supporting these countries. Therefore, political concerns may have greater weight then economic factors in FDI.

The top 10 underinvested countries are: Finland (\$50,885,848,323), New Zealand (\$49,746,484,373), Switzerland (\$48,425,610,794), Sweden (\$47,144,849,022), Japan (\$43,827,557,674), Estonia (\$40,612,653,929), Luxembourg (\$35,864,212,815), Norway (\$34,419,827,018), Denmark (\$33,021,322,379), and the Netherlands (\$32,762,075,278). The top 10 underinvested countries all have developed infrastructure, stable governments, good economies, fairly open trade regulations, good potential market sizes, well trained workforces, and are members of various trade organizations. Yet they are not receiving the amount of FDI they should, based on their economies. This indicates that political factors or third country influences steering money away from these countries may be a heavily weighted factor in FDI.

The data results in the study were fairly consistent. However, there is concern about the data points for the United States and China. Both were on the edge of being outliers for the data and are clearly well above the projected regression line. Also it seems that China and the United States are the exceptions from other countries, in that noneconomic factors favor more FDI in these two countries compared to others. This supports the theory that political influences or 'follow the leader' mentality may be heavily weighed factors in FDI.

## **CONCLUSION**

This paper examined the factors that influenced FDI in countries. Based on the literature review, the economic factors seemed to be the number one discussed reason for current FDI levels. However, analysis of economic factors found that only 22.46% of FDI was influenced by a countries economic status. This leaves the remaining 77.54% of FDI factors unexplained. A review of over and under invested countries indicates that political factors and third country influence may weigh more heavily on FDI than economic factors. Further research in this area is needed to better understand the factors that affect FDI and how much each factor influences the investment decision.

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## APPENDIX A: FDI Over and Under Estimates by Country (\$US)

Sorted by Predicted FDI			Sorted by Over/Under Invested		
Country	Predicted Foreign Direct Investment 2011	Over Invested (Under Invested)	Country	Predicted Foreign Direct Investment 2011	Over Invested (Under Invested)
United States	84,509,262,996	173,018,737,004	United States	84,509,262,996	173,018,737,004
Germany	59,238,448,312	(20,171,679,096)	China	52,244,961,192	167,898,324,238
Switzerland	58,502,735,497	(48,425,610,794)	Belgium	36,517,852,369	65,481,706,161
Australia	54,966,074,872	12,672,372,288	Brazil	14,034,005,920	57,504,651,489
Luxembourg	54,229,716,846	(35,864,212,815)	Russia	16,747,463,093	36,131,012,707
New Zealand	54,031,593,996	(49,746,484,373)	India	6,238,908,416	25,951,091,584
China	52,244,961,192	167,898,324,238	Egypt	(21,001,004,797)	20,518,304,797
Sweden	50,198,738,419	(47,144,849,022)	Italy	8,379,461,065	19,623,061,601
Netherlands	46,647,840,133	(32,762,075,278)	Greece	(17,522,800,305)	18,614,780,944
Denmark	46,126,896,617	(33,021,322,379)	Singapore	45,596,490,004	18,406,963,600
United Kingdom	45,696,196,640	(9,452,398,812)	Mexico	4,464,405,583	16,358,892,270
Singapore	45,596,490,004	18,406,963,600	Venezuela	(9,410,732,050)	14,636,732,050
Finland	45,127,851,608	(50,885,848,323)	Australia	54,966,074,872	12,672,372,288
Canada	44,219,179,180	(4,709,063,328)	Colombia	2,937,878,918	10,666,821,827
Japan	43,906,638,879	(43,827,557,674)	Thailand	1,051,109,337	6,728,898,492
Austria	43,080,037,314	(27,346,111,105)	Indonesia	11,559,491,958	6,600,041,773
Norway	41,700,446,744	(34,419,827,018)	France	39,103,600,741	6,105,282,271
Estonia	41,048,740,427	(40,612,653,929)	Morocco	(3,564,731,527)	6,086,096,172
France	39,103,600,741	6,105,282,271	Pakistan	(4,360,578,025)	5,669,348,025
Korea	37,072,346,867	(32,411,446,867)	Portugal	7,540,514,460	5,533,672,662
Chile	36,596,697,177	(19,297,681,290)	Vietnam	3,017,454,965	4,412,545,035
Belgium	36,517,852,369	65,481,706,161	Philippines	(2,228,757,234)	4,097,757,234
Spain	27,522,317,936	3,896,969,036	El Salvador	(3,842,946,593)	4,090,366,593
Uruguay	25,434,758,633	(23,257,519,110)	Peru	4,180,770,743	4,051,866,236
Slovak Republic	25,116,669,516	(21,458,369,437)	Spain	27,522,317,936	3,896,969,036
Ireland	23,798,201,953	(12,292,056,159)	Malaysia	10,053,353,967	1,947,402,417
Saudi Arabia	21,891,473,839	(5,583,193,839)	Turkey	14,408,185,397	1,640,814,603
Poland	21,592,353,931	(6,296,353,931)	Argentina	7,394,266,590	1,276,414,200
Czech Republic	20,040,362,931	(14,659,948,033)	Trinidad and Tobago	(406,723,843)	980,723,843
Slovenia	20,018,726,849	(19,200,736,893)	Bangladesh	1,782,778,828	(985,237,649)
Lithuania	19,834,583,575	(18,391,501,823)	Canada	44,219,179,180	(4,709,063,328)
Russia	16,747,463,093	36,131,012,707	Israel	16,364,508,744	(4,990,808,744)
Israel	16,364,508,744	(4,990,808,744)	Saudi Arabia	21,891,473,839	(5,583,193,839)
Malta	16,350,744,239	(15,884,179,536)	Hungary	15,412,951,279	(5,784,211,552)
Hungary	15,412,951,279	(5,784,211,552)	Poland	21,592,353,931	(6,296,353,931)
Turkey	14,408,185,397	1,640,814,603	South Africa	12,332,756,064	(6,443,449,083)
Brazil	14,034,005,920	57,504,651,489	Romania	9,210,062,939	(6,653,062,939)
Bulgaria	12,782,855,391	(10,195,000,297)	Croatia	10,239,776,987	(8,974,786,024)
South Africa	12,332,756,064	(6,443,449,083)	United Kingdom	45,696,196,640	(9,452,398,812)
Indonesia	11,559,491,958	6,600,041,773	Latvia	10,954,714,001	(9,452,414,001)
Latvia	10,954,714,001	(9,452,414,001)	Bulgaria	12,782,855,391	(10,195,000,297)
Croatia	10,239,776,987	(8,974,786,024)	Ireland	23,798,201,953	(12,292,056,159)
Malaysia	10,053,353,967	1,947,402,417	Czech Republic	20,040,362,931	(14,659,948,033)
Romania	9,210,062,939	(6,653,062,939)	Malta	16,350,744,239	(15,884,179,536)
Italy	8,379,461,065	19,623,061,601	Lithuania	19,834,583,575	(18,391,501,823)
Portugal	7,540,514,460	5,533,672,662	Slovenia	20,018,726,849	(19,200,736,893)
Argentina	7,394,266,590	1,276,414,200	Chile	36,596,697,177	(19,297,681,290)
India	6,238,908,416	25,951,091,584	Germany	59,238,448,312	(20,171,679,096)
Mexico	4,464,405,583	16,358,892,270	Slovak Republic	25,116,669,516	(21,458,369,437)
Peru	4,180,770,743	4,051,866,236	Uruguay	25,434,758,633	(23,257,519,110)
Vietnam	3,017,454,965	4,412,545,035	Austria	43,080,037,314	(27,346,111,105)

**Appendix A cont.**

Colombia	2,937,878,918	10,666,821,827	Korea	37,072,346,867	(32,411,446,867)
Bangladesh	1,782,778,828	(985,237,649)	Netherlands	46,647,840,133	(32,762,075,278)
Thailand	1,051,109,337	6,728,898,492	Denmark	46,126,896,617	(33,021,322,379)
Trinidad and Tobago	(406,723,843)	980,723,843	Norway	41,700,446,744	(34,419,827,018)
Philippines	(2,228,757,234)	4,097,757,234	Luxembourg	54,229,716,846	(35,864,212,815)
Morocco	(3,564,731,527)	6,086,096,172	Estonia	41,048,740,427	(40,612,653,929)
El Salvador	(3,842,946,593)	4,090,366,593	Japan	43,906,638,879	(43,827,557,674)
Pakistan	(4,360,578,025)	5,669,348,025	Sweden	50,198,738,419	(47,144,849,022)
Venezuela	(9,410,732,050)	14,636,732,050	Switzerland	58,502,735,497	(48,425,610,794)
Greece	(17,522,800,305)	18,614,780,944	New Zealand	54,031,593,996	(49,746,484,373)
Egypt	(21,001,004,797)	20,518,304,797	Finland	45,127,851,608	(50,885,848,323)