The Determinants of Foreign Direct Investment in Real Estate:

An American Case Study

by

Thomas Waites

An essay submitted to the Department of Economics

in partial fulfillment of the requirements for

the degree of Master of Arts

Queen's University

Kingston, Ontario, Canada

September 2014

Acknowledgments

I would first like to thank my family and close friends who have always been understanding, loving, and supportive of me throughout my undergraduate and graduate studies. I would also like to thank my supervisor, Dr. Neave, for his support, guidance, and generosity with his time. Finally, I would like to thank the MA class of 2014. When I look back on my time at Queen's, I will fondly remember the wonderful group of people that I had the pleasure of sharing this past year with.

-Thomas Waites

TABLE OF CONTENTS

1. Introduction

Since the 1980s there has been a significant movement in world markets towards deregulation and internationalization. Prior to this, real estate assets had barriers that made holding this asset class prohibitive to international investors. The globalization of capital markets has led to a significant decrease in these barriers. This has been crucial for improving the viability of real estate markets to international investors, as they require liquid capital markets accompanied by stable financial services sectors. This is important to investors, as they often require access to local financing and credit to reduce the cross-currency risks that they may encounter.[1] The result of the globalization of capital markets has been an unprecedented increase in the amount of foreign direct investment in real estate (FDIRE) worldwide.[2] This trend can readily be seen in the United States where FDIRE in commercial property grew from $89.9 billion in 1987 to $182.7 billion by 1999.[3] It is expected that the further integration of global markets will continue to lead to an increase in transparency and liquidity and a decline in the barriers and restrictions faced by cross-border real estate investors. It is anticipated that this will lead to a continued surge in international real estate investment.[4]

The importance of FDIRE inflows cannot be overstated. Studies conducted on foreign direct investment (FDI), which are applicable to FDIRE, show that capital flows from the home country to the host country results in an increase to the host country's

---

[1] Tan Keng, "The Role of International Property Trusts in Australian Mixed-Asset Portfolios." Proceedings of Tenth Annual Conference of Pacific Rim Real Estate Society (2004): 12.

[2] Hassan Fereidouni and Tajul Masron, "Real Estate Market Factors and Foreign Real Estate Investment." Journal of Economic Studies Vol. 40 No. 4 (2013): 448.

[3] Bureau of Economic Analysis. "Foreign Direct Investment in the United States (FDIUS)" Web. April 18 2014 <http://www.bea.gov/international/di1fdiop_archive.htm>.

[4] Onousa Boontanorm, "International Diversification Opportunities for Real Estate Investment Portfolios: A Fresh Look Focusing on Private Real Estate After the Great Crash." Massachusetts Institute of Technology (2010): 11.

production and productivity as this leads to existing resources being used in a more efficient manner. FDI has also been proven to result in the transfer of new technologies to the host country, regional economic development through the creation of new job opportunities, and improved access to export markets through an increase in trans-national activities. It is through these channels that FDI can stimulate increases in efficiency, productivity, innovation, competitiveness, and reduce regional economic disparities.[5] Specifically for the real estate market, FDIRE can lead to a decrease in the cost of real estate and also the enhancement of the supply and quality of the real estate property stock.[6] It is for these reasons that regions across the world compete for FDIRE, as it is clearly a driver for regional economic development and growth.

Conversely, the inflow of FDIRE can cause concern, as it can be a contributing factor to a housing bubble in a booming property market. In 2006, it was estimated that the abnormally rapid increase in U.S. housing prices had led to an increase in real estate wealth by $5 trillion dollars compared to if housing prices had followed a normal growth trend. The wealth effect from this increase in real estate prices was estimated to have created additional annual consumption of $250 billion. If this housing bubble had been completely corrected it would have led to a 2% drop in GDP.[7] Furthermore, this type of bubble can lead to waves of defaults and solvency issues for financial institutions. It is clear that the collapse of a housing bubble can have catastrophic consequences for a nation's economy and financial system. With this in mind, it can readily be seen that a large influx of FDIRE may cause concern for investors, policymakers, and ordinary

---

[5] George M.,Korres, "Regionalisation, Growth, and Economic Integration." (Heidelberg, New York: Physica-Verlag, 2007): 102-103.
[6] Fereidouni and Masron: 449-450.
[7] Dean Baker, "The Menace of Unchecked Housing Bubbles." The Economists' Voice (2006).

citizens. In recent years, London, England and Toronto, Canada have experienced a large

influx of FDIRE in their booming property markets. In London, there has been a recent

controversy about foreign investment driving up property prices in such a manner that

housing is no longer available or affordable for many Londoners.[8] In Canada, mortgage

rules were changed in 2012 partially because of concerns that the condominium market in

Toronto was facing a potential bubble. Many people have speculated that the Toronto real

estate market is being driven by foreign real estate investment inflows.[9] While Toronto

and London provide recent examples of the issues that surround foreign investment in the

real estate market, these concerns are not a new phenomenon. Examples of issues

pertaining to foreign real estate investment can be found in the past and in many different

regions across the world. For example, in the 1990s there was great concern and backlash

because Japanese investors inflated the real estate prices in Queensland, Australia.[10]

Foreign investment in real estate becomes a very contentious issue when there is a

concern that FDIRE inflows are causing a dangerous housing market bubble. It is clear

that the FDIRE flows are an important economic issue that needs to be further elucidated.

　　　The ability to study FDIRE flows is currently limited to a few countries and

regions due to the lack of appropriate data series. The result of this is that the empirical

literature on the effects that socio-economic and institutional influences have on FDIRE

has been very limited. For example, neither Canada nor the United Kingdom currently

tracks the flow of FDIRE into their municipalities, provinces or counties. The United

---

[8] Douglas Todd "England Ready to Restrict Foreign Ownership. Will Canada?", *The Vancouver Sun*, February 3, 2014, Web. April 20, 2014. <http://blogs.vancouversun.com/2014/02/03/london-ready-to-restrict-foreign-ownership-will-vancouver/> .

[9] Bill Curry "Flaherty clamps down on mortgage rules to cool overheating markets," *The Globe and Mail*, June 21, 2012. Web. April 20 2014. ‹ http://www.tor ontorealtyblog.com/archives/flaherty-clamps-down-on-mortgage-rules/7328›.

[10] Stuart Ross, "A Model for Examining Foreign Direct Investment in Real Estate." Journal of New Business Ideas & Trends Vol. 9 No. 2 (2011): 24.

States is one of very few countries that maintain thorough and available records of their

FDIRE inflows at the national and regional. For this reason, the empirical section of this

paper will focus on the drivers for the locational choice of foreign direct investment in

real estate in the United States. First, a review of the existing literature on FDIRE will be

given. Second, the factors that attribute to the aggregate FDIRE inflow into the United

States will be examined. Finally, an assessment of the factor that makes a state attractive

to foreign investors will be given. It is with this examination of the real estate market in

the United States, that lessons about the nature of FDIRE inflows will not only be

applicable to the American real estate market, but will also be transferrable to the real

estate industry in other countries and regions of the world.

2. Why Investors Invest in Foreign Real Estate

Hudson-Wilson, Fabozzi and Gordon summarize the reason for including real

estate in an investment portfolio as: 1) To reduce the overall risk of the portfolio by

diversifying with assets that respond to shocks differently, 2) To achieve a return that is

comparable to other assets, 3) To hedge against inflation, 4) To deliver strong cash

flows.[11] These reasons will be examined and explained in the following section of this

literature review.

2a. Diversification

The main approach for studying foreign investment in real estate has been based

on Markowitz's portfolio theory.[12] In his paper, Markowitz states that investors ought to

base their decisions on the rule that they should seek to maximize their expected returns

---

[11] Keng: 14.
[12] Ross: 24.

while also seeking to minimize the variance of those returns.[13] Markowitz calls this the "expected returns-variance of returns (E-V) rule." Diversification within a portfolio is foundational when an investor is selecting a portfolio that is congruent with the E-V rule. This is achieved through creating a portfolio that combines investments with differing degrees of correlation. It may not necessarily be the case that the portfolio which investors choose is the one that has the maximum expected return and the minimum variance. Investors face a tradeoff between the expected return and variance. Investors may choose to increase their expected return by incurring a greater variance, and vice versa.[14]

Investors commonly use international diversification as a strategy to create greater risk-return efficiency in their portfolios. The reason for this is that asset returns in different countries are not perfectly correlated.[15] However, while the globalization of capital markets has made it easier for investors to diversify with international investments, it has also led to greater interdependence amongst many countries' economies. The result of this is that international stock markets have become increasingly more correlated. This means that the opportunities for international diversification have become more difficult to find in financial markets.[16] This has led to an increased interest in real estate investment since it is believed that real estate is primarily driven by local market factors. It has been shown that mixed asset portfolios benefit from the addition of real estate because of the evidence that there is a low correlation between property and

---

[13] Harry Markowitz, "Portfolio Selection." The Journal of Finance Vol. 7 No.1 (1952): 77.
[14] Markowitz: 79.
[15] Piet M. A., Eichholtz, "Does International Diversification Work Better for Real Estate than for Stocks and Bonds." Financial Analysts Journal Vol. 52 No.1 (2011): 56.
[16] Boontanorm: 13.

financial asset returns.[17] Even with significant increases in the integration of capital markets, it has been shown that there was not a significant increase in the correlation between real estate and stocks or bonds from the 1990s to the 2000s. In the period from 1980 to 2009, there was only one year, 2008, where the U.S. real estate and stock markets had synchronized negative returns.[18] It is clear that the magnitude of the downturn in 2008 was an aberration and not the norm. The diversification benefits that are created by real estate can be undermined in an extreme market downturn, but it is clear that its risk-reducing capacity is still important for investors. Furthermore, it has been proven that real estate returns have a significantly lower international correlation than the returns for stocks or bonds. It can be seen that international real estate investments ought to carry a greater ability to reduce risk, as they are much less susceptible to global capital market influences than international stock or bond investments.[19]

Studies that have examined the Markowitz portfolio optimization framework have attempted to see whether investors' actual real estate allocation within their portfolios match the theory. It has been discovered that when comparing commercial real estate returns with financial asset returns, investors allocate a lower amount to real estate than theory would suggest. This suggests that the Markowitz framework overstates the importance of real estate investments. There have been many reasons that have been given for why this might be the case. It has been found that reported real estate returns do not account for the illiquidity in the market, the high transaction costs, heterogeneity, and capital constraints. Furthermore, foreign investors often have less knowledge about real

---

[17] Colin Lizieri, "After the Fall: Real Estate in the Mixed-Asset Portfolio in the Aftermath of the Global Financial Crisis." The Journal of Portfolio Management, Special Real Estate Issue (2013): 43.
[18] Boontanorm: 34.
[19] Eichholtz: 61.

estate markets than local investors. Some of these issues have been alleviated with the increased securitization of real estate assets through real estate investments trusts (REITs). This could lead to an increase in international real estate investments and more highly integrated real estate markets. However, greater integration may lead to lowered risk-reducing capabilities for international real estate investments.[20]

Despite the possible theoretical overstatement of the importance of real estate in mixed-asset portfolios, it has still been found empirically that commercial real estate is a vital component of an optimized Markowitz portfolio.[21]

2b. Hedge Against Inflation

It is often argued that real estate provides a positive hedge against inflation.[22] Studies that were conducted in the U.S. and U.K. showed that real estate provides protection against rising domestic inflation rates.[23] This means that in the event of an inflation shock, real estate returns compensate the investors by offsetting the negative shock. Furthermore, it has been shown that including real estate in mixed-asset portfolios provides a greater degree of protection against inflation.[24] Real estate's inflation hedging ability makes it both unique and attractive to investors as it can provide protection during high inflation and strong real returns during periods of low inflation.[25]

---

[20] Eichholtz: 56.
[21] Lizieri: 45.
[22] Mark J.P. Anson, et al., "Why Real Estate?" The Journal of Portfolio Management Vol. 31 No. 5 (2005): 17.
[23] Martin Hoesli, "Real Estate as a Hedge Against Inflation." Journal of Property Valuation & Investment Vol. 12 No. 3 (1994): 51.
[24] Charles H. Wurtzcbach, "The Impact of Inflation and Vacancy on Real Estate Returns." The Journal of Real Estate Research, Vol. 6 (1991): 154.
[25] Wurtzcbach: 167.

2c. Cash Flows

It was found in an American study that from 1987 to 2004, real estate generated stronger income return than bonds and stocks with average income returns of 8.3%, 7.3%, and 2.5% respectively. It can easily be seen that if an investor needs to rely on the annual income that is generated through cash flows rather than the unrealized income from capital appreciation, then real estate is generally a far superior asset to hold.[26] This feature of real estate may make holding this type of asset an attractive investment to some, while this factor may not influence others investment decisions. If an investor is solely focused on the total return, and not how it is realized, this particular strength of real estate may not be important at all.

3. Literature Review

In the FDIRE literature, there have been a number of factors that have been explored as having a potential effect on the locational choice of foreign real estate investment. The literature is divided in its exploration of these variables. Some studies are conducted with respect to the macroeconomic variables (i.e. exchange rates) that effect FDIRE. Many of the macroeconomic variables that are explored in the FDIRE literature are an extension of the already existing theory on the factors that effect FDI flows. The major macroeconomic indicators that have been shown to affect FDI are gross domestic product (GDP), GDP growth, exchange rates, interest rates, inflation rates, and net export levels.[27] On the other hand, some studies focus on the local real estate market variables (i.e. property prices) that affect FDIRE. The local real estate market factors that

---

[26] Anson, et al.: 19.
[27] Min Liang and Sunghoon Yoon, "The Determinants of Foreign Direct Investment in U.S. Real Estate: An Empirical Analysis." Massachusetts Institute of Technology (2011): 18.

have been explored are not an extension of the existing FDI theory. There is little existing theoretical basis for the local real estate market variables that affect FDIRE. In the following section, the existing literature on the macroeconomic and the local real estate market factors that affect FDIRE will be examined.

3a. Macroeconomic Factors

3ai. Interest Rates

The relationship between financing costs and FDIRE has been explored in the literature. The reason that financing costs within the host country is explored is because foreign investors rely heavily upon the host country's financial system to raise the capital that is needed for their investment.[28] Since a high interest rate increases the cost of financing, one would anticipate that interest rates would negatively influence the impact of the inflows of FDIRE for the host country. In a study conducted by Rodriguez and Bustillo (2010), it was determined that FDIRE inflows in Spain are negatively related with the country's long-term interest rate.[29] The commonly used proxy in the literature for interest rates is the 10-year government bond yield. It was found that domestic government bond yields in the United States, the United Kingdom, France, the Netherlands, Sweden, and Switzerland were negatively correlated with FDIRE flows.[30]

3aii. Exchange Rates

It has been noted in the literature that the impact exchange rates have on FDIRE flows has been relatively unexplored in comparison to the other factors that affect

---

[28] Liang and Yoon: 9.
[29] R. Bustillo and C. Rodríguez, "Modeling Foreign Real Estate Investment: The Spanish Case." Journal of Real Estate Finance and Economics Vol. 41 (2010).
[30] Brian Wood, "Factors Affecting Foreign Investment in US Real Estate." John Hopkins University (2012): 10.

FDIRE. Ross (2011) studied the effect that the exchange rate between the Australian dollar and the British pound had on FDIRE flows from the United Kingdom to Queensland. Over the course of the time period studied, the Australian dollar appreciated with respect to the British pound. One would intuitively anticipate that this appreciation would have led to a decline in the amount of FDIRE flows from the United Kingdom. However, it was found that FDIRE flows were persistent and continued to grow despite the relative price disadvantage that the appreciation caused investors from the United Kingdom.[31] In another study, Rodriguez and Bustillo (2010) were able to show that a depreciated local currency had a positive impact on FDIRE in Spain.[32] The link between foreign direct investment (FDI) and exchange rates has been more firmly established. For example, Froot and Stein (1991) showed that a 10 percent depreciation in the U.S. dollar would lead to an approximate increase of FDI flows by $5 billion.[33]

3aiii. Political Stability

Intuitively, one would anticipate that greater political stability would have a positive impact on FDIRE flows. It seems unlikely that foreign investors would want to invest in a country that has an unstable government, terrorism, war, or other forms of civil unrest. Political stability can be seen as being even more significant to the real estate investment market than other asset markets because real estate is often a relatively more

---

[31] Ross: 26.
[32] R. Bustillo and C. Rodríguez.
[33] Liang and Yoon: 18.

illiquid asset.[34] Unsurprisingly, it was found that in countries like Taiwan, political instability is a deterrent for foreign real estate investors.[35]

3aiv. Gross Domestic Product for the Home Country

The existing FDI literature suggests that as a country develops and becomes wealthier, it continues to gain the capacity and ability to take advantage of foreign investment opportunities. The theoretical and empirical research shows that GDP for the home country has a positive relationship with outward FDI flows.[36] One would anticipate that the relationship between FDI flows and GDP for the home country would also hold for FDIRE flows.

3av. Inflation

As discussed earlier, real estate can act as a hedge against inflation where higher levels of inflation are considered to be a positive attribute for real estate investment as this can stimulate income growth. In Ross (2011) it was shown that high domestic and foreign inflation rates were associated with greater FDIRE inflows in Queensland from the United Kingdom.[37] This is the empirical result that one would expect from the previously reviewed theoretical literature on commercial real estate.

---

[34] Hassan Fereidouni and Tajul Masron, "Real Estate Market Factors and Foreign Real Estate Investment." Journal of Economic Studies Vol. 40 No. 4 (2013): 455.
[35] Dominique Fischer, Peddy Pi-Ying Lai, "The Determinant of Foreign Property Investment in Island Nations- The Case of Taiwan." Pacific Rim Property Research Journal Vol. 13 (2007).
[36] Liang and Yoon: 24.
[37] Ross: 29.

3b. Local Real Estate Market Factors

3bi. Property Price

Since real estate can be viewed as a financial asset, it makes sense to include the property price as an independent variable since the price of real estate should hold a relationship with the quantity demanded of the asset. From previous studies, the relationship that the price of real estate has with the level of FDIRE is inconclusive. Studies conducted by Bagchi-Sen (1995) found that property prices are a major determinant of FDIRE in the United States.[38] Furthermore, He et al. (2009) determined that increasing housing prices in China led to a greater inflow of FDIRE.[39] From these findings, and similar studies that have been conducted, one would anticipate that rising housing prices would attract FDIRE. However, Rodriguez and Bustillo (2010) show that demand and the inflow of FDIRE are negatively related in the long-term with higher property prices, which is showcased in a paper that used Spain as a case study. The results from the aforementioned study are congruent with rudimentary demand theory.[40]

3bii. Market Size

Fereidouni and Masron (2013) state that market size is one of the most important factors in explaining FDIRE flows. In the aforementioned paper, market size is a term that is used to denote local market factors that would affect the flow of FDIRE to the

[38] Hassan Fereidouni and Tajul Masron, "Real Estate Market Factors and Foreign Real Estate Investment." Journal of Economic Studies Vol. 40 No. 4 (2013): 458.

[39] Hassan Fereidouni and Tajul Masron, "The Effect of FDI on Foreign Real Estate Investment: Evidence from Emerging Economies." International Journal of Strategic Property Management Vol. 17 No. 1 (2013): 4.

[40] Hassan Fereidouni and Tajul Masron, "Real Estate Market Factors and Foreign Real Estate Investment." Journal of Economic Studies Vol. 40 No. 4 (2013): 458.

region.[41] The vast majority of research that has been conducted on the determinants of

FDIRE inflow has used one or more independent variables to capture the notion of

market size. The most commonly used variables are GDP per capita and personal income

per capita. He et al. (2009) argued that an area with a higher GDP per capita would be

expected to have a higher internal demand for real estate. Consequently, this would

attract FDIRE because the stronger local demand would result in higher revenues for the

property owner.[42] Chin, Dent and Roberts (2006) conclude from their empirical research

that strong and stable economies are the most important factor in determining a region's

ability to attract FDIRE.[43] Furthermore, Falkenbach (2009) showed that a region with a

greater market size would attract greater inflows of FDIRE simply because there would

be a greater number of real estate investment opportunities available to foreign

investors.[44] Chen and Hobbs (2003) found that the size of a region's economy positively

affects investment activity, as larger and well-established economies are much better

equipped to withstand and recover from economic downturns than smaller economies.[45]

The population of a region has also been used as a proxy for market size in the

literature. The literature on the affect of population on FDIRE is less developed.

However, it has been shown that the urbanization process of a region leads to a stronger

real estate market structure and improves the quality of the physical real estate assets.

---

[41] Hassan Fereidouni and Tajul Masron, "The Effect of FDI on Foreign Real Estate Investment: Evidence from Emerging Economies." International Journal of Strategic Property Management Vol. 17 No. 1 (2013): 11.

[42] Hassan Fereidouni and Tajul Masron, "Real Estate Market Factors and Foreign Real Estate Investment." Journal of Economic Studies Vol. 40 No. 4 (2013): 456.

[43] Lieser, Karsetn, "Pricing of Specific Real Estate Market Risks for 66 Countries Worldwide." University of Navarra (2011): 1.

[44] Heidi Falkenbach, "Market Selection for International Real Estate Investments." International Journal of Strategic Property Management Vol. 13 No. 4 (2009).

[45] Jun Chen and Peter Hobbs, "Global Real Estate Risk Index." The Journal of Portfolio Management, Vol. 29, No.5. (2003): 67.

Growing urban areas experience rising land and building values, which make real estate investments increasingly valuable. For this reason, investors prefer to invest in larger, growing cities.[46] From studies that have been conducted on the locational determinants of FDI, it has been shown that foreign investors have a preference for more populous regions.[47]

Market size can also be measured using the growth rates of population and income. These two growth rates are indicative of the local market's growth potential. It is expected that foreign investors will seek out real estate investment opportunities in markets that have higher income and population growth rates.[48]

3bii. Commercial Rental Vacancy Rates

In a study of FDIRE in the United States by Liang and Yoon (2011), commercial rental vacancy rates were used as an indicator of commercial real estate market activities and as an indirect measure of market returns. The authors state that vacancy rates can be interpreted in two different ways. One view is that high vacancy rates are usually indicative of lower rents, which leads to lower revenues for the commercial property investors and ultimately a lower return on investment. If high vacancy rates are viewed in this manner by foreign real estate investors, it would make a region less attractive for those investors. Conversely, if vacancy rates are high, it may be the case that optimistic investors who are relatively less risk averse may seek out markets with high vacancy rates. The reason for this is that areas with high vacancy rates would have comparatively

---

[46] Groh, Alexander Peter and Karsten Lieser, "The Determinants of International Commercial Real Estate Investment." University of Navarra (2011): 5.

[47] Sharmistha Bagchi-Sen, and James O. Wheeler "A Spatial and Temporal Model of Foreign Direct Investment in the United States", Economic Geography Vol. 65 No. 2 (1989).

[48] Liang and Yoon: 35.

lower purchase prices for commercial properties that would lead to relatively higher returns on investment if the real estate market in that area were to improve.[49] It can be seen in the theoretical literature that commercial rental vacancy rates have an ambiguous effect on FDIRE. In their study, Liang and Yoon find that high vacancy rates have a significantly negative effect on FDIRE inflows in a region. This suggests that foreign investors prefer to purchase commercial real estate in regions that have relatively lower vacancy rates and that foreign investors do not take a relatively more risky opportunistic approach when investing abroad.[50]

Furthermore, Kermani (2012) focuses heavily on the importance of the elasticity of supply in residential and commercial real estate markets in his thesis on the boom and bust cycles in the United States real estate market. It can be seen that commercial rental vacancy rates can be used as a proxy for the supply elasticity in a particular real estate market. Kermani finds that when supply is inelastic, an increase in the demand for real estate leads to a rise in prices, which creates a wealth effect and relaxed credit constraints; contrary to the scenario when supply is elastic. It is because of this that the regions with the relatively more inelastic supply in their real estate markets experience amplified boom-bust patterns.[51] While investors would certainly want to avoid purchasing commercial real estate in an area that is prone to dramatic busts, it can also be argued that when the supply is relatively more inelastic, investors would be attracted to investing in these areas, as they are more likely to experience booms and rising prices.

---

[49] Liang and Yoon: 34.
[50] Liang and Yoon: 47.
[51] Amir Kermani, "Cheap Credit, Collateral and the Boom-Bust Cycle." Massachusetts Institute of Technology (2012): 3.

4. Data

4a. Aggregate U.S. FDIRE Model

Table 1

Dependent Variable	Name	Source
Foreign Direct Investment in Real Estate	FDIRE	Bureau of Economic Analysis, Table III.D.17 Commercial Property of Affiliates, State by Country of UBO
Independent Variables		
Trade Weight U.S. Currency Index	TradeWeightedIndex	Federal Reserve Bank of St. Louis, Economic Research
10-Year U.S. Government Bond Yield	BondYield	Federal Reserve Bank of St. Louis, Economic Research
Real U.S. GDP per Capita	GDPPerCapita	Federal Reserve Bank of St. Louis, Economic Research
Growth Rate of Consumer Price Index in the United States	InflationRate	Federal Reserve Bank of St. Louis, Economic Research

All of the variables that were used for this macroeconomic model are measured using annual data for the time period from 1987 to 2007.

4ai. Dependent Variable

The dependent variable for this model is the commercial property of affiliates. This variable will serve as a proxy for FDIRE in the U.S. The commercial property of affiliates data is a measure of the gross year-end book value of all commercial buildings and land that are owned by affiliates of foreign-owned firms. This data set was discontinued after the 2007 Foreign Direct Investment in the United States survey. The data for Maine, Rhode Island, New Hampshire, Delaware, North Dakota, South Dakota, Arizona, New Mexico, Montana, and Alaska was either incomplete or missing. These ten states have been excluded from the study.

4aii. Independent Variables

The interest rate variable that is used for this study is the U.S. 10-year government bond yield. The exchange rate variable is the trade weighted U.S. currency index. For the trade weighted U.S. currency index, a rise (fall) in the index is indicative of an appreciation (depreciation) of the U.S. dollar against a basket of 26 world currencies. The indicator for GDP that is used is the real GDP per capita in the United States. Finally, the inflation rate is measured by the growth rate in the consumer price index for the United States.

4b. Model of Aggregate U.S. FDIRE Inflows from Canada

Table 2

Dependent Variable	Name	Source
Foreign Direct Investment in Real Estate Inflows from Canada	CANFDIRE	Bureau of Economic Analysis, Table III.D.17 Commercial Property of Affiliates, State by Country of UBO
Independent Variables		
CDN/U.S. Exchange Rate	CDNUSExchange	Federal Reserve Bank of St. Louis, Economic Research
Calculated from 10-Year U.S. Government Bond Yield and 10-Year Canadian Government Bond Yield	BondYieldSpread	Federal Reserve Bank of St. Louis, Economic Research
Real U.S. GDP per Capita	USGDPPerCapita	Federal Reserve Bank of St. Louis, Economic Research
Growth Rate of Consumer Price Index in Canada	InflationRate	Federal Reserve Bank of St. Louis, Economic Research

All of the variables that were used for this macroeconomic model are measured using annual data for the time period from 1987 to 2007.

4bi. Dependent Variable

The dependent variable for this model is the amount invested by Canadians in commercial properties in the United States. This variable will serve as a proxy for FDIRE inflows in the U.S. from Canadians.

4bii. Independent Variables

The interest rate variable that is used for this study is the 10-year government bond yield spread between the United States and Canada. This variable was calculated by subtracting the U.S. 10-year government bond yield from the Canadian 10-year government bond yield. The exchange rate variable is the Canadian and U.S. exchange rate. This is measured in terms of the number of Canadian dollars that are required to purchase an American dollar. This means that a rise (fall) in the exchange rate is indicative of a depreciation (appreciation) of the Canadian dollar relative to the American dollar. The real GDP per capita indicator that is used in this model is that same as the one found in the previous macroeconomic model. Finally, the inflation rate is measured by the growth rate in the Canadian consumer price index.

4c. State Specific Regression Model

Table 3

Dependent Variable	Name	Source
Foreign Direct Investment in Real Estate	FDIRE	Bureau of Economic Analysis, Table III.D.17 Commercial Property of Affiliates, State by Country of UBO
Independent Variables		
Resident Population by State	Population	Federal Reserve Bank of St. Louis, Economic Research
Per Capita Personal Income by State	Income	Federal Reserve Bank of St. Louis, Economic Research

Growth Rate of Resident Population by State	PopulationGrowth	Federal Reserve Bank of St. Louis, Economic Research
Growth Rate of Per Capita Personal Income by State	IncomeGrowth	Federal Reserve Bank of St. Louis, Economic Research
All-Transactions House Price Index by State	LagPriceIndex	Federal Reserve Bank of St. Louis, Economic Research
Commercial Rental Vacancy Rate	VacancyRate	Federal Reserve Bank of St. Louis, Economic Research

All of the variables that were used for this market model are measured using annual data for the time period from 1989 to 2007.

4ci. Dependent Variable

The dependent variable for this model is the commercial property of affiliates. This variable will serve as a proxy for FDIRE in the United States. Once again, the data for Maine, Rhode Island, New Hampshire, Delaware, North Dakota, South Dakota, Arizona, New Mexico, Montana, and Alaska was excluded from the study.

4ci. Independent Variables

The proxy that is used for commercial property prices is the All-Transactions House Price Index for each state. Since an index for commercial properties does not exist at the state level, this housing price index is the best proxy that is available. Using a price variable is unique as there were no previous studies that used a price variable when examining the U.S. real estate market. It would be problematic for this regression analysis if the dependent variable, FDIRE, and this independent variable influenced each other. To avoid this issue, this model uses a one period lag for the price index. This is also a reasonable assumption as it is unlikely that investors would immediately react to a fluctuation in real estate prices. Four variables are used as proxies for market size. The first is per capita personal income by state. This variable can be viewed as a measure of

the wealth within the state. The second variable is the growth rate of income. The third variable that is used to capture market size is the state's population. The fourth variable is the population growth rate. Finally, the commercial rental vacancy rate is used as a proxy for the level of real estate market activity and the relative elasticity of supply in the market.

5. Results: Macroeconomic FDIRE Models for the United States

Several different regression models were created in an attempt to illustrate the relationships between the macroeconomic variables and the aggregate FDIRE flows into the United States. The FDIRE flows into the United States were compared against major American macroeconomic indictors. However, it proved to be unfeasible to create a model that showed statistical significance for all of the macroeconomic variables when using the complete dataset. Furthermore, many of the relationships in the data were found to contradict the existing FDI and FDIRE literature. It was also found that the regression models that were created gave results that were consistent with the existing literature if only part of the data series was used. In the following section, two models will be presented for examining FDIRE inflows in the United States from 1987 to 1996. The first model will show the factors that influence the aggregate inflows of FDIRE into the United States. The second model will show the factors that influence Canadian investment in the U.S. real estate market. This model is a country specific model for one of the largest contributors to FDIRE in the United States. While the model has been created for Canada, it is possible for this model to be conducted for any of the contributing countries to the United States' FDIRE. Following the presentation of these

two models, the entire dataset from 1987 to 2007 will be viewed through graphs, rather than regression analysis, in a methodology that is akin to the one used by Ross (2011).

5a. Aggregate U.S. FDIRE Model for 1987 to 1996

An OLS regression model was used for analyzing the economic indicators that affected U.S. FDIRE inflows from 1987 to 1996.

The regression model that is used is specified as:

$$FDIRE_t = \boldsymbol{\beta}_0 + \boldsymbol{\beta}_1 TradeWeightedIndex_t + \boldsymbol{\beta}_2 BondYield_t + \boldsymbol{\beta}_3 GDPPerCapita_t + \boldsymbol{\beta}_4 InflationRate_t + u_t$$

where the t subscript represents the tth year

5ai. Results

Table 4

Variable	Coefficient	Standard Error	T-Stat	p-value
Constant	605355.6	143597.5	4.22	0.008
Trade Weighted Exchange Rate Index	-3555.168	1971.706	-2.08	0.116
Real GDP Per Capita	-373721.6	482067.7	-0.78	0.473
Inflation Rate	780928.5	1122787	0.70	0.518
10-Year Bond Yield	-21305.92	1871.706	-1.90	0.042

$R^2 = 0.8473$

It can be seen from the results above that the trade weighted exchange rate index, real GDP per capita, and the inflation rate are not statistically significant in this empirical analysis. However, it can be seen that the 10-year bond yield is statistically significant. It was anticipated from the literature reviewed that the variables in this model would be statistically significant. While this model yields stronger results than the ones tested with

the entire dataset, it can be seen that this model is not consistent with the results that have

been presented in similar empirical literature.

5b. Model of Aggregate U.S. FDIRE Inflows from Canada for 1987 to 1996

A simple OLS regression model was used for analyzing the economic indicators

that affected U.S. FDIRE inflows from Canada for the period of 1987 to 1996.

The regression model that is used is specified as:

$$CANFDIRE_t = \beta_0 + \beta_1 CDNUSExchange_t + \beta_2 BondYieldSpread_t + \beta_3 CANInflationRate_t + \beta_4 USGDPPerCapita_t + u_t$$

where the t subscript represents the tth year

5bi. Results

Table 5

Variable	Coefficient	Standard Error	T-Stat	p-value
Constant	54218.91	8278.748	6.55	0.001
CDN/US Exchange Rate	-28289.01	5876.147	-4.81	0.005
U.S. Real GDP Per Capita	3687.93	36139.89	0.10	0.923
Canadian Inflation Rate	40476	27228.85	1.49	0.197
10-Year Bond Yield Spread	3129.235	1222.195	2.56	0.043

$R^2 = 0.9584$

It can be seen from the results shown above that the exchange rate is statistically

significant. From the literature reviewed, it was expected that the exchange rate would

have a negative relationship with the amount of FDIRE inflows. It is clear from the

results that as the Canadian dollar depreciates that the FDIRE inflows are negatively

affected. It can also be seen that real GDP per capita and the Canadian inflation rate are

not statistically significant. This result is inconsistent with the literature that was reviewed. Finally, the 10-year bond yield spread has been found to be statistically significant and positively related with the amount of FDIRE that flows from Canada to the United States. This means that when the 10-year bond yield is higher in Canada than in the United States, Canadians invest relatively more in the American commercial real estate market. This result is consistent with the literature that was reviewed.

5c. Graphical Interpretation of Macroeconomic Indicators Effecting FDIRE

5ci. Political Stability

Figure 1: Total U.S. FDIRE from 1987 to 2007
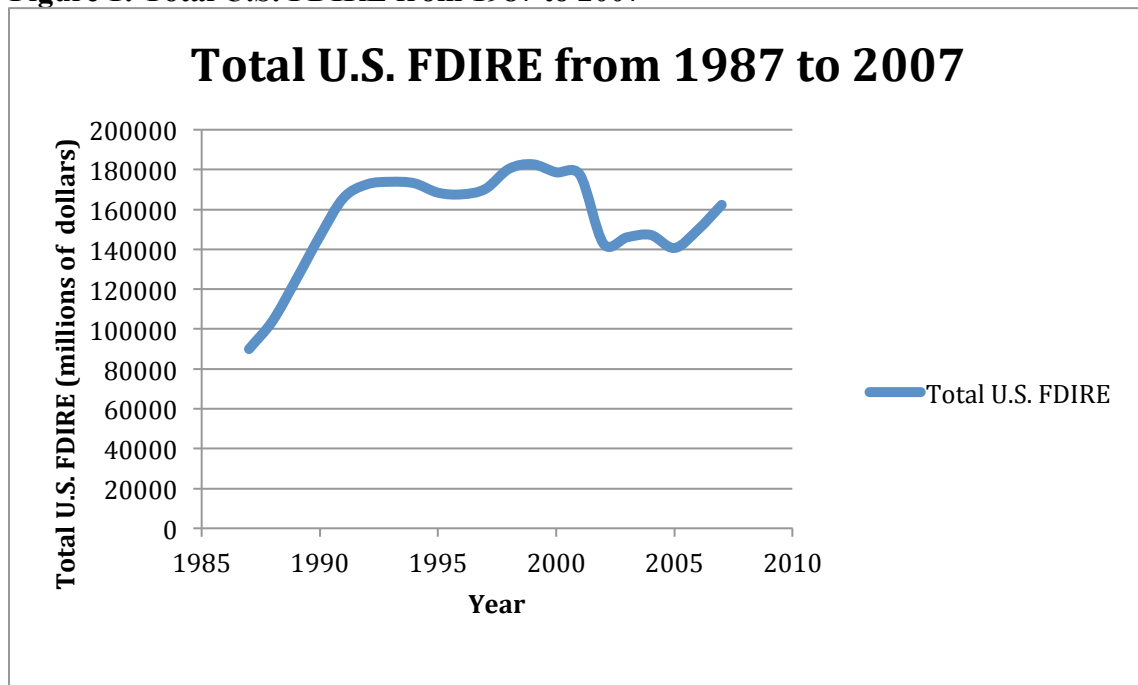
Figure 1 shows that FDIRE in the United States rose steadily from 1987 until 1995. In 1996, FDIRE fell slightly and then continue to rise until it reached its climax in 1999. It is clear that there was a significant decline in the aggregate amount of FDIRE in the United States from 2001 to 2002. None of the literature that was reviewed gave an explanation for this 19.5% decline in FDIRE. There are two likely reasons for this drop in

FDIRE. The first cause is that it may have been a result of the terrorist attacks that occurred in the United States on September 11th, 2001. The second reason for this major drop in FDIRE may have been the dot-com bubble burst.

There is no literature on the effects of terrorist attacks on FDIRE. However, there is literature on the effects of terrorist acts on FDI. An article from the Asian Development Bank states that a,

> "… loss of foreign investor confidence following acts of terrorism would prompt large outflows of capital in affected countries, and that once a country is branded a terrorist target, it would attract reduced levels of FDI."[52]

Furthermore, Stanišić (2013) showed that if political stability changed by one standard deviation in his model, that it would lead to a 46% change in FDI as a share of GDP.[53] Stanišić also cites political stability as being the most important factor for determining FDI.[54] It remains to be seen what the exact impact was on FDIRE from the September 11th, 2001 terrorist attacks on the United States. However, it is likely that this had a significant impact on FDIRE.

When viewing Figure 1, it can be seen that the shock to FDIRE from 2001 to 2002 was persistent; FDIRE in the U.S. did not begin to steadily climb back to its earlier levels until 2005. This shock to political stability in 2001 might be the reason that the macroeconomic regression analysis gave results that were contrary to the theoretical and empirical literature on FDIRE and FDI.

---

[52] Daniel Wagner "The Impact of Terrorism on Foreign Direct Investment", *The Asian Development Bank*, February 2006.
[53] Stanišić, Dragana, "Terrorist Attacks and Foreign Direct Investment Flows Between Investors and Hosts." The 8th Young Economists' Seminar to 19th Dubrovnik Economic Conference, June 2013: 25.
[54] Stanišić: 1.

It has also been shown that the dot-com bubble burst, which started in 2000, significantly eroded household wealth in the United States by $6.2 trillion over the course of the two years following this crash.[55] While the dot-com bubble burst only resulted in a mild recession, it is possible that this event coupled with the terrorist attacks on September 11th 2001 were the cause of this major decline in FDIRE in the United States.

5cii. Exchange Rates

Figure 2: Trade Weighted U.S. Currency Index and Total FDIRE in the U.S.
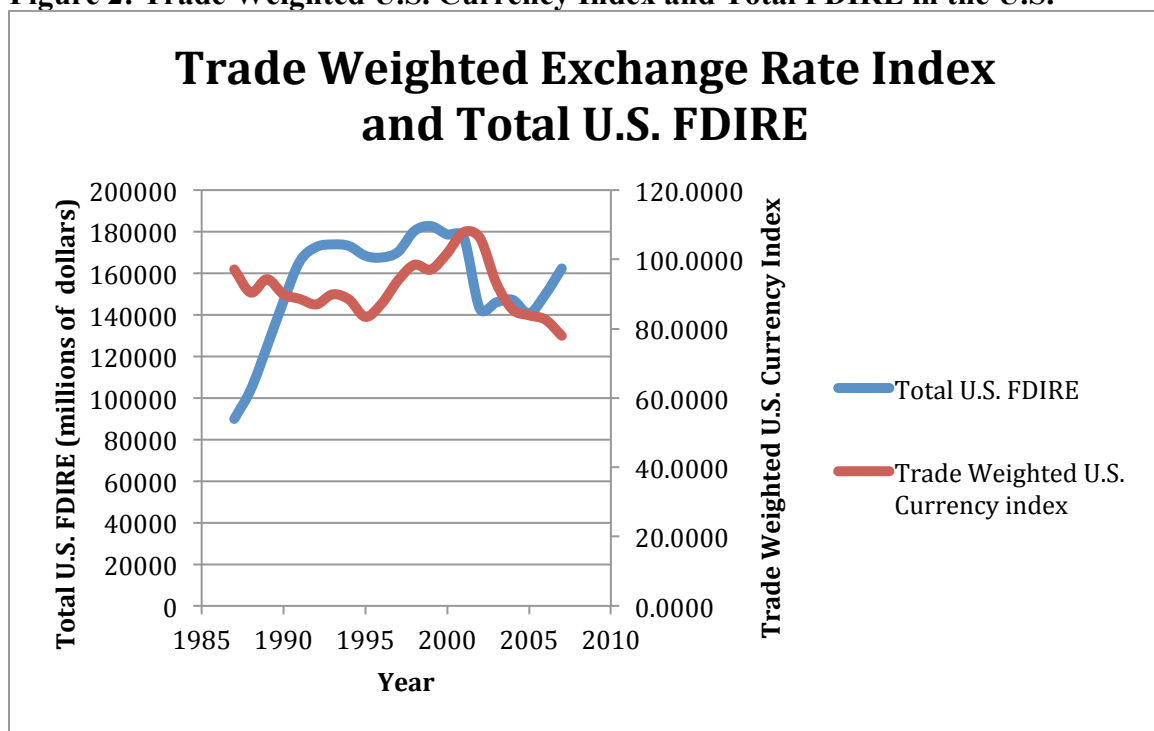
Figure 2 shows a plot of the trade weighted U.S. currency index and its relationship with the total amount of FDIRE flows into the United States. From the literature, one would anticipate that an appreciation (depreciation) of the U.S. dollar would lead to a decrease (increase) in FDIRE inflows. It can be seen that from 1987 to

---

[55] Mian, Atif and Amir Sufi, "Why the Housing Bubble Tanked the Economy and the Tech Bubble Didn't," *FiveThirtyEight Economic*, Web. May 12 2014 < http://fivethirty eight.com/ features/why-the-housing-bubble-tanked-the-economy-and-the-tech-bubble-didnt/>

1995, there is a gradual appreciation of the U.S. dollar. This is accompanied by an overall increase in the amount of FDIRE during the same period. This is inconsistent with what one would anticipate. Furthermore, from 2001 to 2002, a significant depreciation of the U.S. dollar also coincides with a significant decrease in total FDIRE in the United States. However, it can also be seen that a continued fall in the U.S. dollar also coincides with an increase in FDIRE from 2002 to 2004 and 2005 to 2007. It can be seen that the trade weighted U.S. currency index holds a stronger relationship with total FDIRE than the US/CDN exchange rate. However, the relationship is not as clear as one would expect from previous studies that have been conducted.

Figure 3: $CDN/$US Exchange Rate and Total Canadian FDIRE in the U.S.

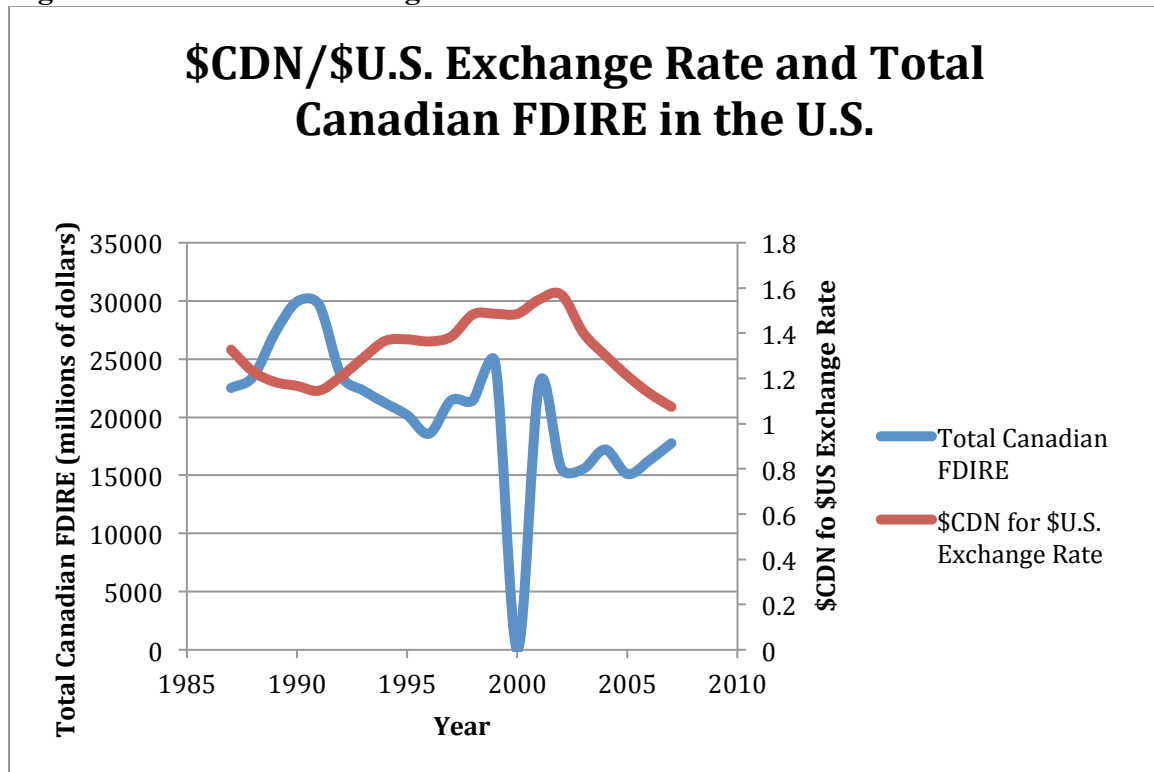Figure 3 shows a plot of the $CDN/$US exchange rate and its relationship with the total amount of FDIRE flows from Canada to the United States. It can be seen from

1987 to 1991 that the Canadian dollar is appreciating and the FDIRE inflows from Canada are increasing. The Canadian dollar depreciates from 1992 to 1998, which is also matched by a decline and stagnation in the FDIRE inflows from Canada. This is consistent with what one would intuitively anticipate. However, it can be seen that after 2002 the Canadian dollar steadily appreciates until 2007 but FDIRE flows from Canada decline and are stagnant during this period. This is inconsistent with the literature. It is clear from the regression analysis conducted earlier that the exchange rate is statistically significant for the first half of the dataset but that it loses its meaningfulness in the second half of the dataset.

5ciii. Interest Rates

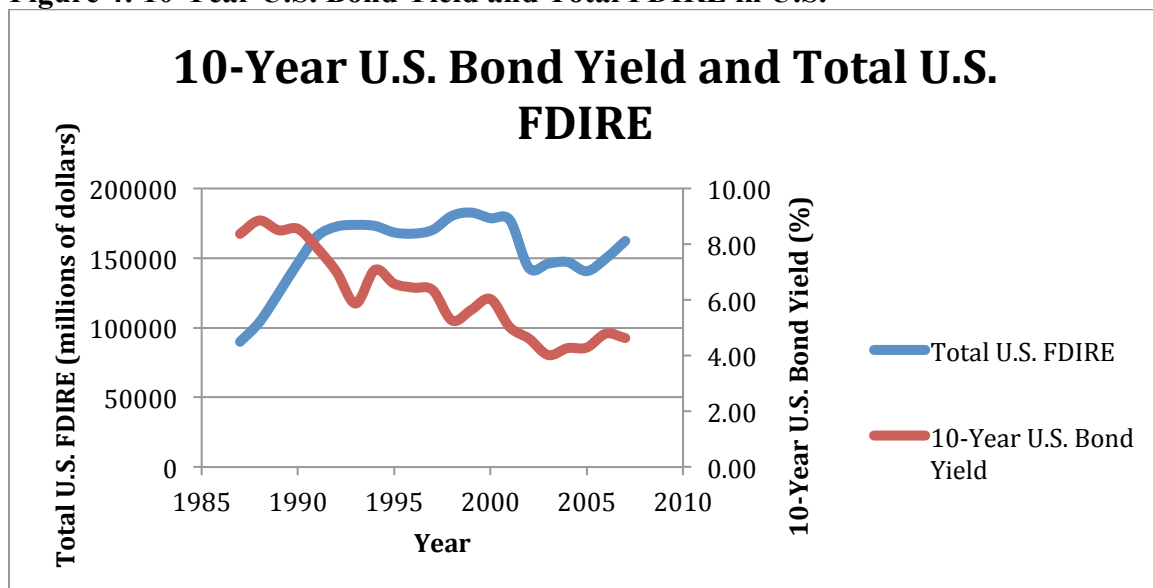**Figure 4: 10-Year U.S. Bond Yield and Total FDIRE in U.S.**

Figure 4 shows the relationship between the 10-year U.S government bond yield and aggregate FDIRE flows into the U.S. It can be seen that the 10-year U.S. government bond yield falls from 1988 to 1994, which is accompanied by an increase in the total U.S. FDIRE inflows. The bond yield rises in 1994, which coincides with stagnation in FDIRE.

The bond yield then begins to fall gradually until 2000, which is also accompanied by an increase in FDIRE. This is consistent with what one would anticipate seeing as the literature states that one should anticipate that higher (lower) interest rates would lead to lower (higher) FDIRE flows. After 2000, we see that this relationship does not hold and that the results start to become inconsistent with what would one anticipate. However, one should not place too much significance on this result as it is ultimately the relative interest rates of the host country to the home country that are more important than just the host country's interest rate itself. This is a point that much of the literature does not discuss.

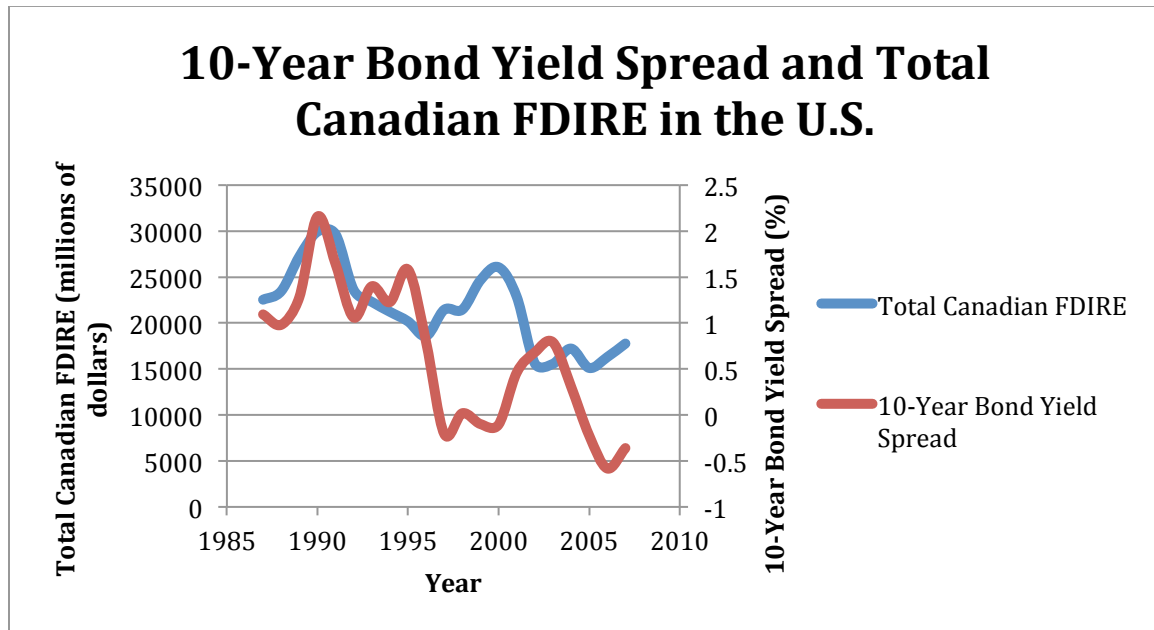**Figure 5: 10-Year Bond Yield Spread Between Canada and U.S. and Total Canadian FDIRE in U.S.**

Figure 5 shows the relationship that the 10-year government bond yield spread between Canada and the U.S. has on FDIRE flows from Canada into the U.S. From the literature, one would anticipate that higher bond yield spreads would lead to a higher

flow of FDIRE from Canada into the U.S.[56] From the figure above, it can be seen that that the bond yield spread and total Canadian FDIRE move in sync from 1987 to 1992. This is consistent with the expectations from the literature. After 1992, it can be seen that the movements in the bond yield spread and total Canadian FDIRE flows become very inconsistent. For example, from 1998 to 2000 there is a fall in the bond yield spread that coincides with a rise in FDIRE. Furthermore, as the yield spread climbs from 2000 to 2003, the amount of FDIRE flows falls significantly. The fall in the yield spread from 2003 to 2004 is associated with a rise in FDIRE. These are not the results that one would anticipate. It can be seen that the bond yield spread has some relationship with the flow of FDIRE into the U.S. but that it is not as strong as the literature suggests.

5civ. GDP Per Capita

Figure 6: Real U.S. GDP Per Capita Growth Rate and Total FDIRE in the U.S.

---
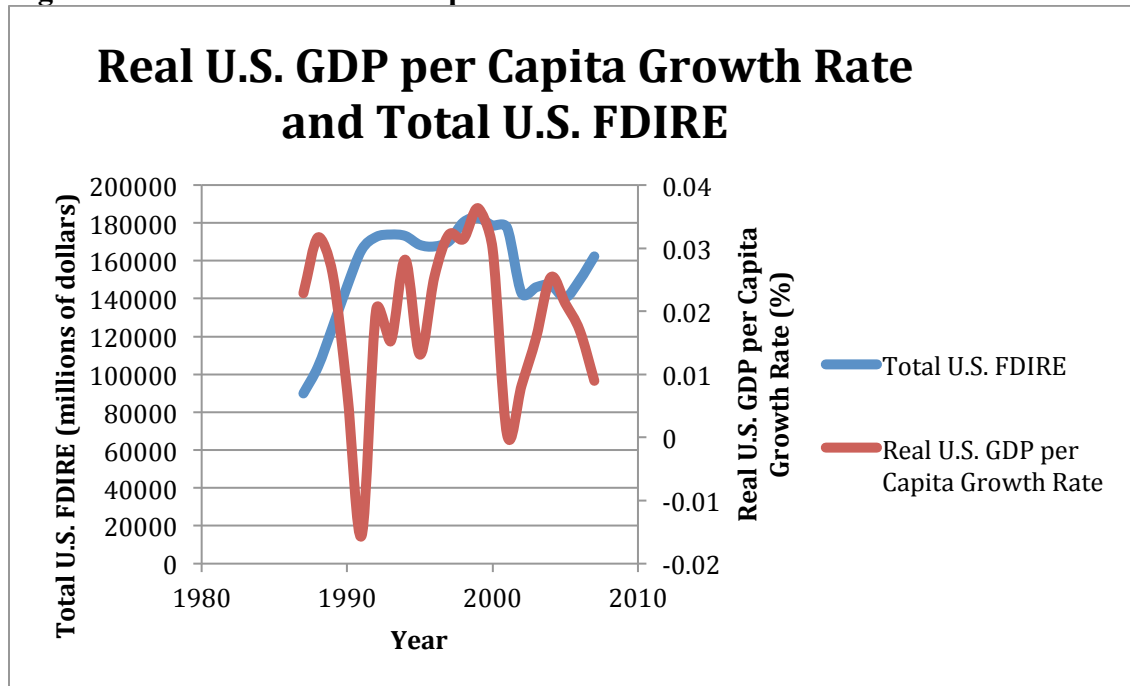
[56] Liang and Yoon: 32.

Figure 6 shows the relationship between the real U.S. GDP per capita growth rate and total FDIRE in the United States. From the literature, one would anticipate that FDIRE inflows and the growth rate of GDP per capita would have a positive relationship. It can be seen that a rising or stable GDP per capita growth coincides with increase U.S. FDIRE inflows in 1987 to 1989, 1991 to 1992, 1998 to 2001, and 2002 to 2005. Furthermore, falling or low GDP per capita growth rates are matched with declining FDIRE inflows in 1992, 1995 and 2002. It is clear that there is a relationship between these two variables in some of the years that are examined in this study. However, there are many years where this relationship does not hold and it was found in a regression analysis that this factor was not statistically significant.

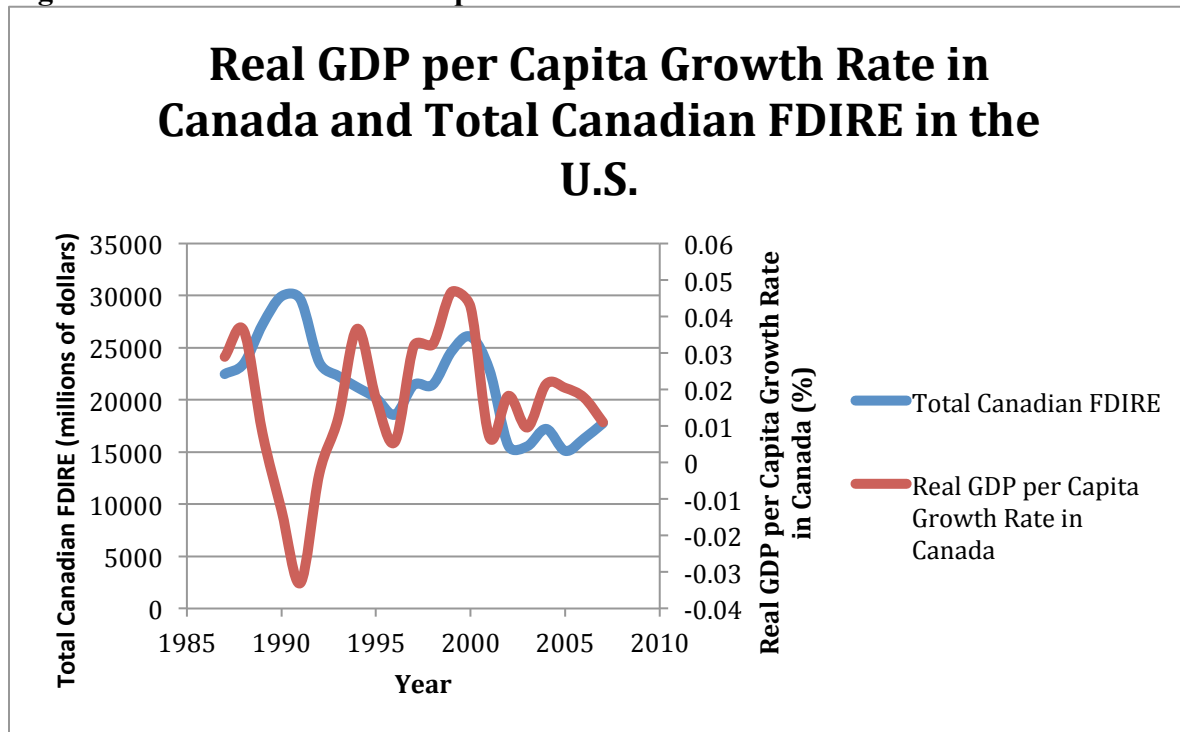**Figure 7: Canadian GDP Per Capita Growth Rate and Canadian FDIRE in the U.S**

Figure 7 shows the relationship between the growth rate of Canadian GDP per capita and Canadian FDIRE in the U.S. From the literature, one would anticipate that the

growth rate of Canadian GDP per capita would have a positive relationship with FDIRE. The data shows this relationship from 1998 to 1999, 2000 to 2001, and 2003 to 2005. However, in the earlier years of this study it can be seen that the relationship between these two variables is ambiguous.

5cv. Inflation

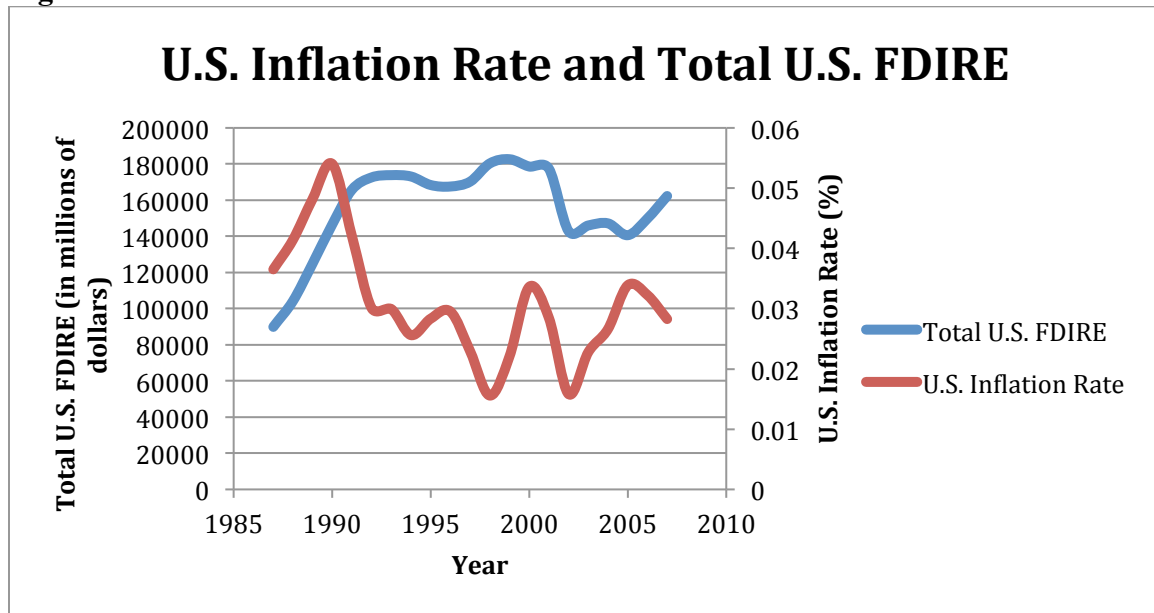**Figure 8: U.S. Inflation Rate and Total FDIRE in the U.S.**

Figure 8 shows a graphical representation of the relationship between the U.S. inflation rate and the total U.S. FDIRE inflows. From the literature reviewed, one would anticipate that as inflation increases (decreases), FDIRE flows increase (decrease). It can be seen from the graph above that from 1987 to 1990 this relationship holds. During the period from 1991 to 1998, inflation begins to fall and becomes much more stable. During this period, it can also be seen that FDIRE stagnates and falls slightly from 1994 to 1997. The observed relationship between FDIRE and the U.S. inflation rate becomes much less clear after this time period. The early periods of this study are consistent with what is anticipated. However, the later periods are not consistent with the literature.

Figure 9: Canadian Inflation Rate and Canadian FDIRE in the U.S

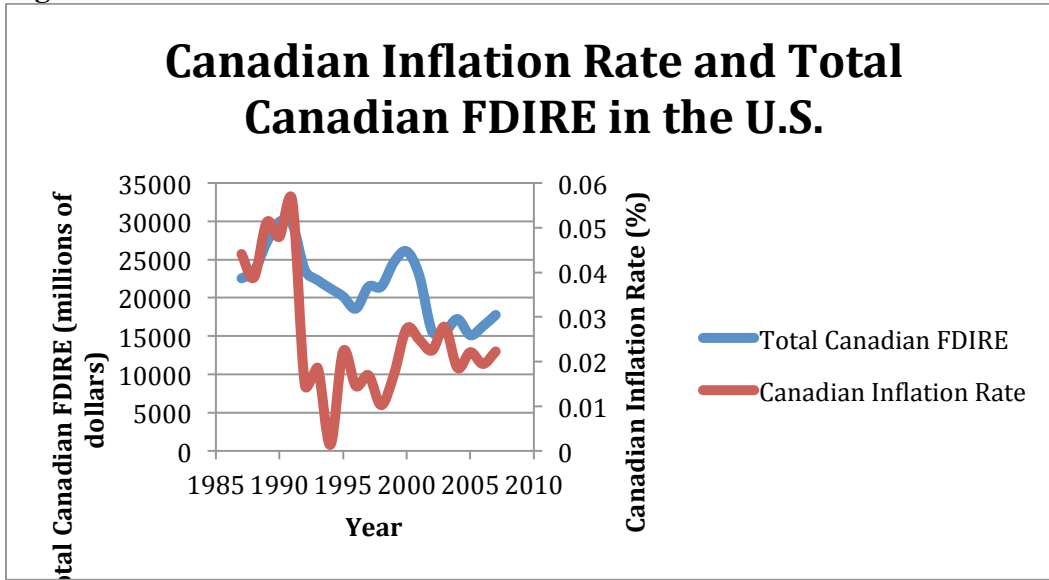**Canadian Inflation Rate and Total Canadian FDIRE in the U.S.**

Figure 9 shows a graph of the representation of the relationship between the Canadian inflation rate and total Canadian FDIRE in the U.S. From the literature reviewed, it is anticipated that as the Canadian inflation rate increases (decreases), FDIRE inflows from Canada will also increase (decrease). From 1992 to 1996, there is a dramatic decline in Canada's inflation rate. This is accompanied by a decline in Canada's FDIRE in the U.S. This ten-year period from 1987 to 1996 is consistent with the literature on inflation rates and real estate investment. From 1999 to 2001 and 2006 to 2007, it can be seen that this relationship also holds true.

6. State Specific Regression Model

6a. Methodology

Panel data is used for the regression model that is answering the research question pertaining to the state specific determinants of FDIRE. This panel data set has a time series element for each cross-sectional state observation. This means that the panel data will enable both a spatial and temporal analysis. The differentiating factor between a

pooled cross section and a panel data set is that the panel data set uses the same cross-

sectional units, American states, for each time period. There are great benefits that are

attained from using panel data instead of simple cross-sectional data for this sort of study.

When one has multiple observations for the same unit, American state), it allows for the

researcher to control for various unobservable characteristics. Furthermore, the use of

only one observation does not allow one to properly make casual inferences about the

data. However, it is possible to make these sorts of inferences with multiple

observations.[57] Ultimately, the increase in sample size will allow for more robust

estimates. For example, two separate regressions with cross-sectional data for 1989 and

2007 were run while attempting to specify the correct model. The results of these two

regressions were varied. It was found that some of the variables that were statistically

significant in one year were found to not be in the other regression and vice versa.

Therefore, it can be seen that the proper specification for the state specific regression

model is through the use of panel data.

The regression model that is used is specified as:

$$FDIRE_t = \beta_0 + \beta_1 Population_{it} + \beta_2 Income_{it} + \beta_3 PopulationGrowth_{it} + \beta_4 IncomeGrowth_{it} + \beta_5 LagPriceIndex_{it} + \beta_6 VacancyRate_{it} + u_{it}$$

where the t subscript represents the tth year
where the i subscript represents the ith state

[57] Jeffrey M.Wooldridge, "Introductory Econometrics: A Modern Approach." (Mason, OH: Thomson/South-Western, 2006): 8-12.

6b. Results

Table 6

Variable	Coefficient	Standard Error	T-Stat	p-value
Constant	-169.966	575.1436	-0.30	0.768
Population	0.8371	0.0177	47.37	0.000
Income	-0.0081	0.0260	-0.31	0.755
Population Growth	-8.3647	86.5372	-0.10	0.923
Income Growth	-26.0940	55.0848	-0.47	0.636
Lag Price Index	5.3258	2.1102	2.52	0.012
Vacancy Rate	-258.0027	37.96652	-6.80	0.000

R^2= 0.7724

6bi. Population and Population Growth Rate

From the regression results above, it can be seen that a state's population has a positive and statistically significant impact on FDIRE. This confirms the hypothesis that foreign investors prefer investing in more populous states. This is consistent with the literature that was reviewed before conducting this study. The results also show that population growth is not statistically significant. This is inconsistent with the literature.

In a study conducted on FDIRE in the United States it was concluded that foreign investors were dispersing their real estate investments from more populous states to less populous states over time.[58] It can be seen from the pie charts below that there is only a slight variation in the percentage of FDIRE for each of the five most populous states, which varies over the period from 1989 to 2007. In 1989, the five most populous states had 56% of FDIRE, in 1998 these states represented 52.8% of total FDIRE in the United States while in 2007 the same states held 51.6% of total FDIRE. This variation in FDIRE over the period of the study is not significant enough to draw a conclusion about the

---

[58] Liang and Yoon: 12.

dispersion of FDIRE from the most populous American states. From this, as well as from the regression analysis, it can be seen that population is a significant determinant of FDIRE in the United States.
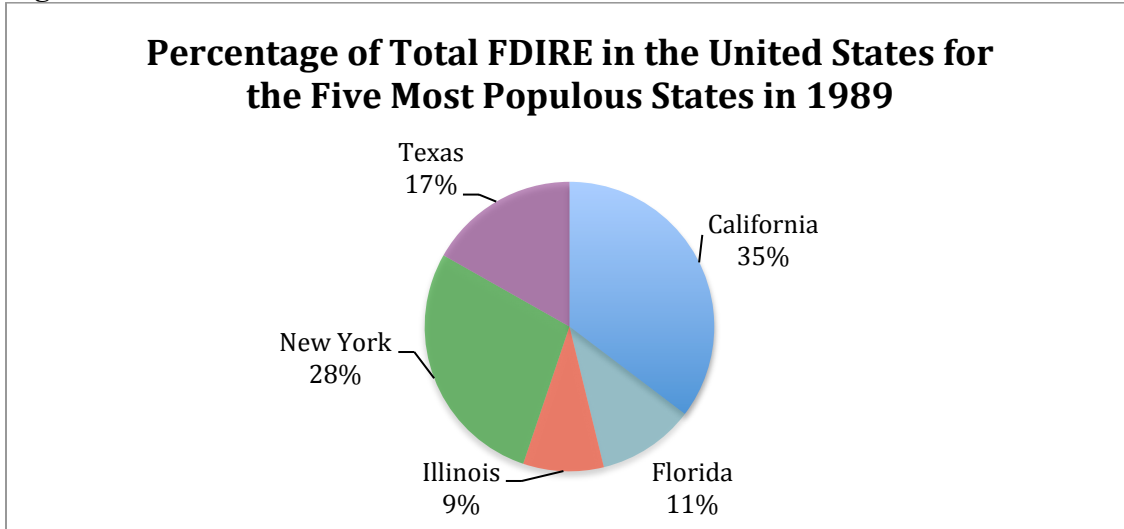
Figure 10

Percentage of Total FDIRE in the United States for the Five Most Populous States in 1989

Figure 11

Percentage of Total FDIRE in the United States for the Five Most Populous States in 1998

Figure 12

Percentage of Total FDIRE in the United States for the Five Most Populous States in 2007

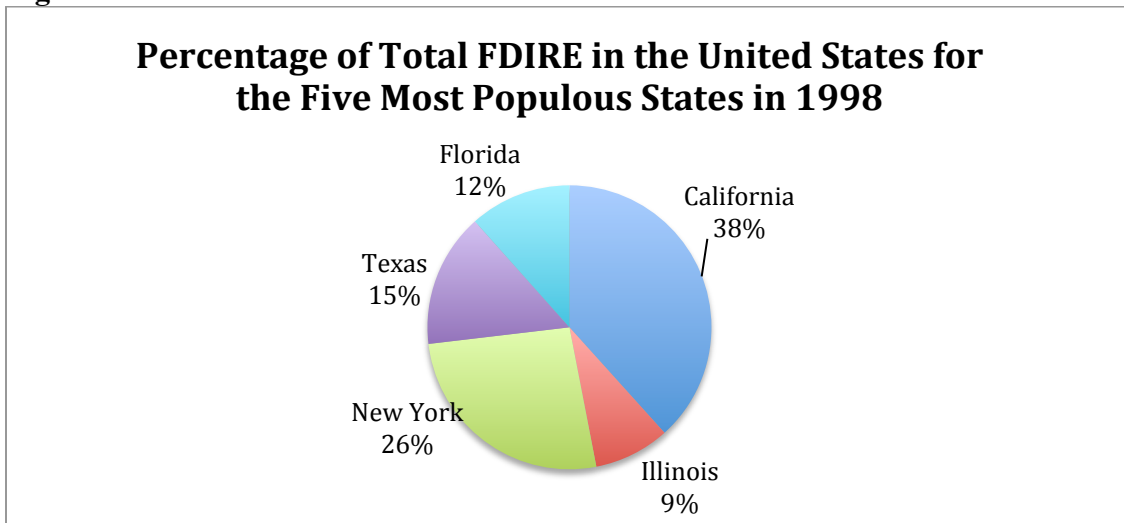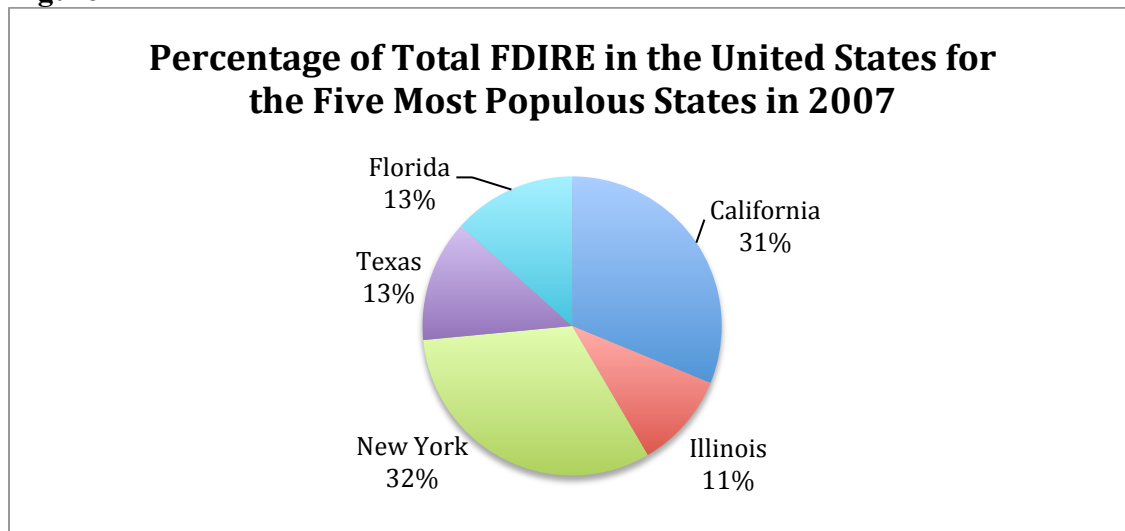Florida 13%
California 31%
Texas 13%
New York 32%
Illinois 11%

6bii. Income and Growth of Income

From the regression results, it can be seen that income and the growth rate of income is not statistically significant in this model. This result is inconsistent with the literature that has been reviewed for this study. It was anticipated that FDIRE would gravitate towards wealthier regions.

6bii. Price Index

From the regression results, it can be seen that the lag of the housing price index has a positive and statistically significant effect on FDIRE. This is consistent with most of the theoretical literature that was reviewed. This finding is also unique because there was no empirical literature that was found to have a price level indicator in a regression analysis of FDIRE in the United States.

6biii. Rental Vacancy Rate

From the regression results, it can be seen that the Rental Vacancy Rate is statistically significant. It was hypothesized in the literature that the rental vacancy rate

might either have a positive or a negative effect on FDIRE. From the only empirical study found, it was shown that the vacancy rate would have a negative relation with FDIRE. The results from this paper are consistent with this study. This suggests that investors in the United States real estate market shy away from markets with high vacancy rates, as it might be indicative of a lower return.

7. Conclusion

In this paper the macroeconomic and the local real estate market approach to understanding FDIRE were discussed through the existing literature and was tested with a case study of the United States. Unfortunately, the model for the macroeconomic variables did not yield many results that were congruent with the existing FDIRE or FDI literature. This was likely the result of a small sample size for this data, the shock to political instability that occurred on September 11th, 2001, and the shock to the economy from the bursting of the dot-com bubble. However, the regression analysis that was performed with the local real estate market approach was able to confirm some of the results that one would anticipate from the literature. It was confirmed that foreign investors prefer more populous regions. It was also confirmed that FDIRE inflows are negatively and significantly related to regions that have higher vacancy rental rates. Furthermore, this paper was unique in that a price level variable had not been previously utilized in a regression analysis on FDIRE in the United States. This price level index was found to be positive and significant with respect to FDIRE.

Foreign direct investment in real estate is an important economic indicator that deserves much greater attention than it has received. It is necessary for researchers to continue to advance the understanding of the mechanisms and factors that affect FDIRE.

Also, many national and regional governments need to start collecting data on the inflows of FDIRE in their region. The lack of data on FDIRE inflows in many of the booming international property markets has led to controversies and concerns, which are indicative of the need for this data. There are also many factors that may potentially affect FDIRE that have not yet been examined in the literature. For example, the implications that state taxation has on FDIRE have not been investigated. The economic issue of FDIRE has not received proper attention, but it is not because there is a lack of new ideas that could be explored.

Bibliography

Anson, Mark J.P., et al., "Why Real Estate?" The Journal of Portfolio Management Vol. 31 No. 5 (2005).

Bagchi-Sen, Sharmistha, James O. Wheeler, "A Spatial and Temporal Model of Foreign Direct Investment in the United States", Economic Geography Vol. 65 No. 2 (1989).

Baker, Dean, "The Menace of Unchecked Housing Bubbles." The Economists' Voice (2006).

Boontanorm, Onousa, "International Diversification Opportunities for Real Estate Investment Portfolios: A Fresh Look Focusing on Private Real Estate After the Great Crash." Massachusetts Institute of Technology (2010).

Bureau of Economic Analysis. "Foreign Direct Investment in the United States (FDIUS)" Web. April 18 2014 <http://www.bea.gov/international/di1fdiop_archive.htm>.

Bustillo, R., C. Rodríguez, "Modeling Foreign Real Estate Investment: The Spanish Case." Journal of Real Estate Finance and Economics Vol. 41 (2010).

Chen, Jun and Peter Hobbs, "Global Real Estate Risk Index." The Journal of Portfolio Management, Vol. 29, No.5. (2003).

Curry, Bill "Flaherty clamps down on mortgage rules to cool overheating markets," *The Globe and Mail*, June 21, 2012. Web. April 20 2014. ‹ http://www.tor ontorealtyblog.com/archives/flaherty-clamps-down-on-mortgage-rules/7328>.

Eichholtz, Piet M. A., "Does International Diversification Work Better for Real Estate than for Stocks and Bonds." Financial Analysts Journal Vol. 52 No.1 (2011).

Falkenbach, Heidi, "Market Selection for International Real Estate Investments." International Journal of Strategic Property Management Vol. 13 No. 4 (2009).

Fereidouni, Hassan, Tajul Masron, "Real Estate Market Factors and Foreign Real Estate Investment." Journal of Economic Studies Vol. 40 No. 4 (2013).

Fereidouni, Hassan, Tajul Masron, "The Effect of FDI on Foreign Real Estate Investment: Evidence from Emerging Economies." International Journal of Strategic Property Management Vol. 17 No. 1 (2013).

Fischer, Dominique, Peddy Pi-Ying Lai, "The Determinant of Foreign Property Investment in Island Nations- The Case of Taiwan." Pacific Rim Property Research Journal Vol. 13 (2007).

Groh, Alexander Peter and Karsten Lieser, "The Determinants of International Commercial Real Estate Investment." University of Navarra (2011).

Hoesli, Martin, "Real Estate as a Hedge Against Inflation." Journal of Property Valuation & Investment Vol. 12 No. 3 (1994).

Keng, Tan, "The Role of International Property Trusts in Australian Mixed-Asset Portfolios." Proceedings of Tenth Annual Conference of Pacific Rim Real Estate Society (2004).

Kermani, Amir, "Cheap Credit, Collateral and the Boom-Bust Cycle." Massachusetts Institute of Technology (2012).

Korres, George M., "Regionalisation, Growth, and Economic Integration." (Heidelberg, New York: Physica-Verlag, 2007).

Liang, Min, Sunghoon Yoon, "The Determinants of Foreign Direct Investment in U.S. Real Estate: An Empirical Analysis." Massachusetts Institute of Technology (2011).

Lieser, Karsetn, "Pricing of Specific Real Estate Market Risks for 66 Countries Worldwide." University of Navarra (2011).

Lizieri, Colin, "After the Fall: Real Estate in the Mixed-Asset Portfolio in the Aftermath of the Global Financial Crisis." The Journal of Portfolio Management, Special Real Estate Issue (2013).

Markowitz, Harry, "Portfolio Selection." The Journal of Finance Vol. 7 No.1 (1952).

Mian, Atif and Amir Sufi, "Why the Housing Bubble Tanked the Economy and the Tech Bubble Didn't," *FiveThirtyEight Economic*, Web. May 12 2014 < http://fivethirty eight.com/ features/why-the-housing-bubble-tanked-the-economy- and-the-tech-bubble-didnt/>

Ross, Stuart, "A Model for Examining Foreign Direct Investment in Real Estate." Journal of New Business Ideas & Trends Vol. 9 No. 2 (2011).

Stanišić, Dragana, "Terrorist Attacks and Foreign Direct Investment Flows Between Investors and Hosts." The 8th Young Economists' Seminar to 19th Dubrovnik Economic Conference, June 2013.

Todd, Douglas "England Ready to Restrict Foreign Ownership. Will Canada?", *The Vancouver Sun*, February 3, 2014, Web. April 20, 2014. <http://blogs.vancouversun.com/2014/02/03/london-ready-to-restrict-foreign-ownership-will-vancouver/> .

Wagner, Daniel "The Impact of Terrorism on Foreign Direct Investment", *The Asian Development Bank*, February 2006.

Wood, Brian, "Factors Affecting Foreign Investment in US Real Estate." John Hopkins University (2012).

Wooldridge, Jeffrey M., "Introductory Econometrics: A Modern Approach." (Mason, OH: Thomson/South-Western, 2006).

Wurtzcbach, Charles H., "The Impact of Inflation and Vacancy on Real Estate Returns." The Journal of Real Estate Research, Vol. 6 (1991).