

Impact of Disposable Income on REITs return

Aditya R Limaye, Andres E Rivas Chavez and Ahmed Elkassabgi

ABSTRACT

This paper seeks to analyze the impact of disposable income on REITs return. We find that an increase in the disposable income (ratio of labor income to consumption) leads to a decline in the REITs return.

INTRODUCTION

REITs were introduced in 1960 so as to allow investors to invest in commercial real estate without the need to acquire the underlying property. The creation of REITs allowed investors to earn income by investing in commercial real estate such as offices, hotels, warehouses, shopping malls and other commercial properties without locking in a larger base investment in a less liquid secondary market.

The nature of REITs has changed since their inception primarily due to different legislations over a period of time. Some of the major legislations that have impacted REITs are US Tax Reform of 1986, Revenue Reconciliation Act of 1993, REITs Modernization Act of 1999 and the REITs Investment and Diversification Act of 2003. These legislations have ensured that the REITs have become more easily accessible to investors along with a reduction

in their risk. This has generated significant interest in the use of REITs as a source of investment for diversification by investors while forming their portfolio.

Investors need to consider their level of income and consumption while deciding the nature of their portfolio whether to invest in stocks, bonds, REITs or other types of securities. This has ensured that REITs are affected by the level of income of the individual similar to other financial securities. Recently a study by Santos and Veronesi (2006) showed that disposable income (ratio of labor income to consumption) had a significant negative impact on stock market return. Additionally, as the investors today have a choice to invest in different financial securities including REITs and stocks, it would be interesting to determine the impact of labor income and consumption on the REITs return. Hence, this study seeks to extend the literature on REITs by analyzing the impact of disposable income (ratio of labor income to consumption) on REITs return.

LITERATURE REVIEW

Labor Income plays an important role in determining the availability of resources for investors and plays an important role in explaining the stock market return (Heaton and Lucas, 2000; Jacobs and Wang, 2004; Jagannathan and Wang, 1996). A strand of literature showed that labor Income had a positive impact on the stock market return (Jagannathan and Wang, 1996) or a negative impact on the stock market return (Heaton and Lucas, 2000). Also the evolution of Consumption CAPM by Breeden (1979) laid the foundation for a strand of literature analyzed the impact of consumption on the stock market return (Bansal et al., 2005; Jacobs and Wang, 2004; Lettau and Ludvigson, 2001; Parker and Julliard, 2005; Yogo, 2006). Furthermore, researchers analyzing the impact of consumption on the stock market return initially showed that consumption has a significant negative impact on the stock market return (Jacobs and Wang,

2004; Lettau and Ludvigson, 2001). However recent evidence showed that consumption has a significant positive impact on the stock market return (Bansal et al., 2005; Parker and Julliard, 2005; Yogo, 2006).

Lately, another strand of literature suggests the importance of considering the ratio of consumption and wealth (Duffee, 2005; Lettau and Ludvigson, 2001). A seminal paper by Santos and Veronesi (2006) analyzed the impact of disposable income (ratio of labor income/consumption) on the stock return. They found that disposable income has a significant negative impact on the stock market return. They argue that this is because the changes in the ratio of equilibrium return to the labor income affects the conditional covariance between the equilibrium return and consumption growth and this leads to changes in the premiums investors require to hold stocks. Also, they found that ignoring the ratio of labor income to consumption led to severe mispricing of the CAPM model.

It is important to consider both labor income and consumption when analyzing the preferences of investors because any investor who invests in financial markets has to choose between investing his available wealth in financial markets and consuming it for household or other purposes.

Additionally, a number of studies have shown REITs to be complements for stocks (Ambrose et al., 1992; Clayton and MacKinnon, 2003; Gyourko and Linneman, 1988; Ling and Naranjo, 1999; Liu et al., 1990; Liu and Mei, 1992; Neil Myer and Webb, 1993; Oppenheimer and Grissom, 1998; Ross and Zisler, 1991; Scott, 1990). This indicates that an increase in the stock market return would increase the REITs return. This is important for investors when they analyze whether to invest in Stock market or REITs or some other security.

Furthermore, the intention of REITs was to give investors (individuals or institutions) access to income producing real estate without having to own the real estate. This was made possible due to several legislations that changed the pricing and the risk of REITs. Several studies show that the institutional investment increased in REITs after the legislations and the reforms of the 1990s (Below et al., 2000; Crain et al., 2000; Ghosh et al., 1996; Han et al., 1998; Ling and Ryngaert, 1997). Specifically the study by Ling and Ryngaert (1997) found that the institutional ownership in REITs during the 1991 to 1994 period was 41.7%. This is a tremendous increase over the 10.1% institutional ownership in the 1980 to 1988 period shown by Wang et al. (1992).

Legislations such as the Revenue Reconciliation Act of 1993 eliminated the “five or fewer rule” which dramatically increased the institutional ownership and the pricing of REITs (Below et al., 2000; Downs, 1998). This led to a reduction in the unsystematic risk of investors (Crain et al., 2000). Additionally, Crain et al. (2000) state that institutional ownership increased after the Revenue Reconciliation Act of 1993 due to increased liquidity and the changes in taxation in the REITs market. This was followed by the REIT Tax Simplification Act of 1997 which reduced the systematic risk of investors (Xu and Yiu, 2010). Other legislations such as the Revenue Reconciliation Act of 2003 have reduced the barriers for foreign institutional investors to invest in REITs. This increased access of institutional investors to REITs has ensured that REITs are a source of diversification for the institutional investors thus increasing their involvement while forming a portfolio (Hartzell et al., 1999; Huerta, 2013).

These changes in the structure of REITs have also increased the involvement of individual investors. The fact that REITs are required to give back at least 90 percent of its earnings in the form of dividends serves as an attractive tool to individual investors.

Additionally, the American Tax payer Relief Act of 2012 signed by President Barack Obama on January 1, 2013 ensured that the maximum taxation on qualified dividends for individuals that earn less than \$ 400,000 per year would be 15% and for individuals with income in excess of \$ 400,000 per year, the rate would be 20%. This has ensured that REITs would not be denied their share of individual investors due to taxation policies as REITs earn a majority of their income from dividends.

These advantages have ensured that REITs and real estate would serve as an important recommendation for investing for individual investors. The importance of investing in real estate by individuals has also been highlighted by different financial professionals and investment advisors. Malkiel (2003) states “Basically there are only four types of investment categories that you need to consider: Cash, Bonds, Common Stocks and Real Estate.” Additionally, the increase in the demand for REITs and their changing nature has ensured that the investment advisors have started recommending REITs as a form of investment instead of traditional real estate. This has been highlighted in the following recommended portfolio for individual investors by Swensen (2005). He recommends an investment of twenty percent invested in US REITs, fifteen percent each in foreign developed equities, US Treasury bonds and US TIPS, five percent in emerging market equity and the remaining thirty percent of the investment in US Equity. This is as per his book *Unconventional Success: A Fundamental Approach to Personal Investment*.

This has also led to an increased interest amongst researchers portraying the importance of investing in REITs for individuals. Studies such as Doug and Don (2004), Grandmont-Gariboldi (2010) have found that optimal portfolio allocation was weighted heavily with REITs and investment in REITs by individuals led to a reduction in the risk of the portfolio. Also, another study by Bhuyan et al. (2014) showed that REITs outperform both stocks and bonds and

therefore according to them, investors should put higher weights on REITs in their portfolio. This has ensured that individual investors have started using REITs as a security to diversify their portfolio.

The above research indicates the importance of investing in REITs for institutional and individual investors. This has ensured that REITs have increasingly been considered as vehicles of investment for individuals and institutions.

Additionally, an investor often makes his decisions regarding the percentage of money to be invested in the financial markets based on the availability of income after spending on the necessities that are required to run a household which is known as consumption. An investor that does not have enough income would be forced to take on more debt if he still wishes to invest in the financial markets and would have to take on an increased risk of paying off the debt along with the interest payments.

This has led to an interest among a number of academicians and researchers regarding the impact of income on the nature of their investments. A strand of literature (Benzoni et al., 2007; Bodie and Crane, 1997; Bodie et al., 1992; Cocco et al., 2005; Galor and Zeira, 1993; Viceira, 2001) showed that the level of income of the individual plays an important role in the nature of investments that the person decides to undertake when forming his portfolio.

Specifically the study by Viceira (2001) showed that the optimal allocation of financial securities depends on the riskiness of the labor income and their stage in the life cycle. Also, they found that employed investors had a greater percentage of investment in stocks as compared to retired investors. Additionally, an increased variation in the labor income led to a reduction in the willingness of the investor to invest in the risky asset and a greater willingness among the

investor to save the money. Hence the level of income of the individual plays an important role in determining his preferences when allocating his portfolio. Therefore, if the investors that invest in REITs are going to be individuals then their labor income will have an impact on their decisions to invest in REITs.

Also institutional investors that invest in REITs include banks, insurance companies, investment advisors, mutual funds and others (Devos et al., 2013). These institutions get their sources of income from the individual investors that invest in them. The individual investors make their decisions to invest in any particular financial institution based on their level of income. Thus the level of income of the individual would have a great impact on the availability of the funds with the institutions. This would greatly impact the nature of investments made by the institutions and would have an impact on whether the institutions are willing to invest in REITs or not.

This shows that the labor income and consumption of the individual plays an important role in determining the return from the REITs. Hence, it is important to analyze the impact of labor income and consumption on the REITs return.

DATA

This paper analyzes the impact of disposable income on REITs return. In order to analyze this relationship, the data for disposable income, that is, the ratio of labor income to consumption was obtained from the Bureau of Economic Analysis website. Data was also collected for wages and salaries, proprietors' income, rental income, personal dividends and interest income, personal taxes, nondurables, and services. In the first step the calculations of labor income and consumption were done. Labor Income and Consumption were calculated as per Santos and

Veronesi (2006). Consumption is calculated as the sum of nondurables and services excluding shoes and clothing. The formula used to calculate labor income is as shown below.

Labor Income

$$= \text{Wages and Salaries} + \text{Transfer Payments} + \text{other labor income} \\ - \text{personal contributions for social insurance} - \text{taxes}$$

Also taxes are calculated as shown below.

Taxes =

$$\frac{\text{Wages and Salaries} * \text{personal tax and non tax payments}}{\text{Wages and Salaries} + \text{Proprietors Income with IVA and Ccadj} + \text{rental income} + \text{personal dividend and interest income}}$$

Finally disposable income was calculated as the ratio of labor income to consumption.

The proxy for the individual investor sentiment is the American Association of Individual Investors (AAII) survey. AAII conducts a survey among a random sample of its members. The respondents of the survey are asked to provide their market perception for the following six months. AAII classifies the respondents of its survey into bullish, bearish and neutral and publishes its results every week. The individual investor sentiment index is constructed as the difference between the number of bullish and bearish investors from the survey known as the bull bear spread as per Brown and Cliff (2004).

The proxy for the institutional investor sentiment is the Investor Intelligence (II) survey. II classifies the perception of investment advisory newsletters as bullish, bearish and neutral and publishes its results every week. The institutional investor sentiment index is constructed as bull

bear spread as per Brown and Cliff (2004). Additionally, this paper uses a sentiment indicator based on the perception of market conditions of commercial real estate investors. The Real Estate Research Corporation (RERC) captures a perception of investment conditions for ten different types of commercial properties including REITs, pension funds, insurance companies, banks, private funds, opportunity funds, financial companies and union funds. The RERC index is constructed as the average of the investment conditions from these ten types of commercial properties as per Huerta (2013).

METHODOLOGY

This study analyzes the impact of disposable income on REITs return. Disposable income is calculated as the ratio of labor income to consumption. The calculation of labor income and consumption is done as per the formula used in Santos and Veronesi (2006) and Lettau and Ludvigson (2001). The equation is as shown below:

$NAREITlogRETrf$

$$= \beta_0 + \beta_1 * aaiibullbear + \beta_2 * Advbullbear + \beta_3 * crerc + \beta_4 * swtc + \beta_5 * smb + \beta_6 * hml + \beta_6 * mktrf + \beta_7 * def + \beta_8 * prem + \varepsilon,$$

Where

- $NAREITlogRETrf$ is the dependent variable of this regression. This is calculated as the difference between the log of the return from the NAREIT index and the risk free rate.
- $AAIIBullBear$ is used as an indicator of individual investor sentiment. The individual investor sentiment indicator is found by calculating the difference between the number of bullish and bearish investors obtained from the index published by the American Association of Individual Investors, as per Brown and Cliff (2004) and Huerta (2013).

The expected sign of AAIbullbear is positive as per Giacomini (2011) and Huerta (2013).

- Advbullbear is used as an indicator of institutional investor sentiment. The institutional investor sentiment indicator is found by calculating the difference between the number of bullish and bearish investors obtained from the Investors' Intelligence Index. The calculation of this variable is as per Brown and Cliff (2004) and Huerta (2013). The expected sign of Advbullbear is positive as per Giacomini (2011) and Huerta (2013).
- cRERC indicates the change in the RERC. The change in the RERC is used as an indicator of commercial real estate sentiment as per Huerta (2013). The RERC indicator is found by calculating the average of the "investment conditions" obtained for ten types of commercial properties by the Real Estate Research Corporation, as per Huerta (2013). The expected sign of RERC is positive as per Huerta (2013).
- SWTC is used as an indicator of disposable income (ratio of labor income to consumption). Labor income and consumption are calculated as per Lettau and Ludvigson (2001), Santos and Veronesi (2006). Labor income is calculated as the sum of wages and salaries, transfer payments and other labor income minus personal contributions for social insurance minus taxes. Taxes are defined as the product of personal tax and non-tax payments and the ratio of wages and salaries to the sum of wages and salaries, proprietors' income with inventory evaluation and capital consumption adjustments, rental income, personal dividends and personal interest income. Consumption is defined as the sum of non-durables and services excluding clothing and shoes. The expected sign of SWTC is negative.

- SMB (small minus big) is the difference between the average return on three small portfolios and average return on three large portfolios. This variable indicates whether the portfolio manager is more inclined on investing in small market capitalization firms compared to large market capitalization firms. A positive SMB indicates that the portfolio manager was investing more in stocks of low market capitalization firms to capture the abnormal return. SMB seeks to capture the small firm effect as generally smaller firms tend to outperform larger firms. The expected sign of SMB is positive, as per Huerta (2013) and Lee et al. (2008).
- HML (high minus low) is the difference between the average return on two value portfolios and the average return on two growth portfolios. This variable indicates whether the portfolio manager is more interested in investing in value stocks (that have higher book to market ratio) rather than growth stocks. Higher book to market stocks show abnormal returns. A positive HML indicates that the portfolio manager was investing more in value stocks. The expected sign of HML is positive, as per Huerta (2013) and Lee et al. (2008)
- Mkt_r - is the excess market return calculated as the difference between the return from the market portfolio and the risk free rate. The return from the market portfolio is the value weighted return on all NYSE, AMEX and NASDAQ stocks. The risk free rate is the one-month Treasury bill rate. The expected sign of the excess market return is positive as per Huerta (2013) and Lee et al. (2008).
- DEF is the default risk premium. DEF is calculated as the difference between the Moody's seasoned Aaa Corporate Bond Yield and Moody's seasoned Baa Corporate Bond Yield. The calculation of this variable is as per Huerta (2013). DEF shows the

additional amount that a borrower must pay to compensate the lender for assuming default risk. Default premiums tend to be high during recessions (Fama, 1986). The expected sign of DEF is negative, as per Lee et al. (2008) and Huerta (2013), and PREM is the term risk premium. It is calculated as the difference between the 20-year Treasury bond rate and one month Treasury bill rate. The term risk premium increases with maturity when the business cycle is strong (Fama, 1986). The expected sign of PREM is positive as per Lee et al. (2008) and Huerta (2013).

Table 1 shows the description of the variables and their expected signs. The dependent variable is NAREITlogRETrf. The expected sign of the investor sentiment indicators of aaiibullbear (individual investor sentiment), advbullbear (institutional investor sentiment), cRERC (commercial real estate sentiment) is positive as explained above. The expected sign of swtc (disposable income or ratio of labor income to consumption) is negative as explained above. Additionally, the expected sign of the Fama and French (1992) indicators of smb, hml and mktrf is positive as explained above. Alternatively, the expected sign of the Fama and French bond market indicator of DEF is negative and the expected sign of the Fama and French bond market indicator of PREM is positive as explained above.

Table 1

Description of Variables and their expected signs

Variable	Description	Expected Sign
NAREITlogRETrf	The difference between the log return from the NAREIT U.S. Real Estate Index and the risk free rate	Dependent Variable
aaibullbear	Difference between the percentage of bullish and bearish investors of the American Association of Individual Investors (AAII) Index	positive
advbullbear	Difference between the percentage of bullish and bearish investors of the Investor Intelligence (II) index	positive
cRERC	Change in the average of the “investments conditions” of ten commercial properties published by RERC	positive
swtc	Ratio of labor income to consumption	negative
smb	Difference between the average return on three small portfolios and the average return on three large portfolios	positive
hml	Difference between the average return on two value portfolios and average return on two growth portfolios	positive
mktrf	Difference between the return from the market portfolio and the risk free rate	positive
DEF	Difference between Moody’s seasoned Aaa Corporate Bond Yield and Baa Corporate Bond Yield	negative
PREM	Difference between the 20 year Treasury Bond rate and the 1 month treasury bill rate	positive

The following table, Table 2, shows the list of all data sources used in the model and their frequency. The NAREIT U.S. Real Estate Index used to calculate the REITs return was obtained from the NAREIT website and is available monthly. The individual investor sentiment index,

AAII, published by American Association of Individual Investors was obtained from Thomson's Datastream and is available weekly, Similarly, the institutional investor sentiment index, II, published by Investor's Intelligence was obtained from Thomson's Datastream and is available weekly. The commercial real estate sentiment index, RERC, published by the Real Estate Research Corporation (RERC) was obtained from the RERC website. The labor income and consumption variables that are used to calculate the disposable income were obtained from the Bureau of Economic Analysis (BEA) website. The frequency of these variables is quarterly. The analysis had to be done quarterly because the data for the RERC and the labor income and consumption variables is available quarterly therefore all the other variables are converted to quarterly.

Table 2

Sources and frequency of variables

Variable	Frequency	Source
NAREIT U.S. Real Estate Index	Monthly	NAREIT website
AAII	Weekly	Thomson's DataStream
II	Weekly	Thomson's DataStream
RERC	Quarterly	Real Estate Research Corporation (RERC) website
Labor Income variables	Quarterly	Bureau of Economic Analysis
Consumption variables	Quarterly	Bureau of Economic Analysis
SMB	Daily	Wharton Research Data Services (WRDS)
HML	Daily	Wharton Research Data Services (WRDS)
mktrf	Daily	Wharton Research Data Services (WRDS)
DEF	Monthly	Thomson's DataStream
PREM	Monthly	Thomson's DataStream
rf	Daily	Wharton Research Data Services (WRDS)

Table 3 below shows the descriptive statistics for quarterly data. As shown in the table the commercial real estate sentiment (cRERC) has the highest standard deviation of 3.2099. This is followed by the excess market return (mktrf) which has a standard deviation of 2.9051. The disposable income (SWTC), has a mean of 0.8262 and a standard deviation of 0.0318. The sentiment indicators of the individual investor sentiment (AAIIBullBear) and institutional investor sentiment (AdvBullBear) have very low standard deviation. The Fama and French bond market factor, PREM has the highest mean of 4.9707. Commercial real estate sentiment has got a highest range of 15.411 which can also be seen by the difference between the maximum and minimum values. The median values of the variables indicate the value at the 50th percentile.

Table 3

Descriptive Statistics

Variable	mean	se(mean)	sd	median	max	min	range	sum
NAREITlogretfr	0.0035	0.0017	0.0152	0.0045	0.0397	-0.0658	0.1055	0.2852
SWTC	0.8262	0.0035	0.0318	0.8380	0.8836	0.76159	0.1220	66.100
AAIIBullBear	0.0573	0.0006	0.0057	0.0578	0.0672	0.04655	0.0206	4.5846
AdvBullBear	0.1515	0.0144	0.1296	0.1582	0.362	-0.1948	0.5568	12.124
cRERC	0.2220	0.3588	3.2099	0.5555	7.1111	-8.3	15.411	17.766
Smb	0.2047	0.1872	1.6744	0.3483	4.11	-3.6133	7.7233	16.383
Hml	0.2925	0.2416	2.1612	0.1933	7.7666	-6.77	14.536	23.4
Mktrf	0.5443	0.3248	2.9052	0.9083	6.4633	-7.7833	14.246	43.543
DEF	-0.955	0.0499	0.4467	-0.84	-0.55	-3.38	2.83	-76.4
PREM	4.9707	0.2052	1.8361	5.05905	7.9856	-0.0032	7.9888	397.66

Table 4 below shows the correlation matrix of the variables used. As shown below the highest correlation of 0.591 exists between the dependent variable NAREITlogRETrf and the independent variable mktrf which is the excess market return. This is followed by the correlation of 0.504 between SWTC and DEF. All other correlations are below 0.5. This shows that there are no problems of multicollinearity in the model.

Results

This study seeks to analyze the impact of disposable income (ratio of labor income to consumption) on the REITs returns. The following table, Table 5 shows the results of the regression analysis. The dependent variable in the regression analysis is the log of the excess NAREIT return. Models 1, 2, 3 and 4 provide results for the univariate regression analyses in which disposable income (SWTC), individual investor sentiment (AAIIBullBear), institutional investor sentiment (AdvBullBear) and the commercial real estate sentiment (cRERC) are included independently. The results from model 1 show that disposable income does not have an impact on REITs returns in the simple regression. The results from model 2 do not provide evidence on the impact of individual investor sentiment (AAIIBullBear) on REITs returns. The results from models 3 and 4 show that the institutional investor sentiment (AdvBullBear) and the commercial real estate sentiment (cRERC) have a significant positive impact on the REITs returns that is statistically significant at the 1% level. Model 5 shows the results of the regression analysis in which all the four variables of disposable income (SWTC), individual investor sentiment (AAIIBullBear), institutional investor sentiment (AdvBullBear) and the commercial real estate

sentiment (cRERC) are included concurrently. The results in model 5 show that institutional investor sentiment (AdvBullbear) has a significant positive impact on REITs returns and is statistically significant at the 1% level, while the commercial real estate sentiment (cRERC) has a significant positive impact on REITs returns and is statistically significant at the 5% level. Also the disposable income (SWTC) and individual investor sentiment (AAIIBullBear) do not have a significant impact on REITs returns. Models 6 and 7 show the results of the regression analyses after adding the Fama and French factors. Model 6 shows the results for the model which includes the Fama and French factors of SMB, HML and Mktf along with disposable income (SWTC), individual investor sentiment (AAIIBullBear), and institutional investor sentiment (AdvBullBear). The results from model 6 show that the commercial real estate sentiment (cRERC) has a significant positive impact on REITs returns and is statistically significant at the 10% level. However the effects of disposable income (SWTC), individual investor sentiment (AAIIBullBear), and institutional investor sentiment (AdvBullBear) do not have any significant impact on REITs returns, while the Fama and French factors of SMB, HML and Excess Market Return are statistically significant at the 1% level of significance.

Table 4
Correlation Analysis.

	NAREITlogretfr	SWTC	AAIIBullBear	AdvBullBear	cRERC	smb	hml	mktrf	DEF	PREM
NAREITlogretfr	1									
SWTC	0.029	1								
AAIIBullBear	-0.013	-0.032	1							
AdvBullBear	0.337	-0.176	0.427	1						
cRERC	0.316	0.026	-0.218	0.105	1					
Smb	0.366	-0.065	0.136	0.166	0.159	1				
Hml	0.415	0.130	0.093	0.148	0.012	-0.16	1			
Mktrf	0.591	0.008	-0.156	0.256	0.244	0.378	-0.236	1		
DEF	0.466	0.504	-0.171	0.231	0.183	-0.098	0.226	0.3041	1	
PREM	-0.016	0.155	0.347	-0.088	-0.086	-0.001	-0.080	0.042	0.2541	1

Table 5

Regression analysis showing the impact of disposable income on the REITs returns.

VARIABLES	(1) Model 1	(2) Model 2	(3) Model 3	(4) Model 4	(5) Model 5	(6) Model 6	(7) Model 7	(8) Model 8
SWTC	0.0136 (0.0539)				0.0402 (0.0498)	-0.0182 (0.0302)	-0.119** (0.059)	-0.116*** (0.034)
AAIBullBear		-0.0352 (0.300)			-0.310 (0.315)	0.0360 (0.199)	0.478 (0.382)	0.530** (0.231)
AdvBullBear			0.039*** (0.0125)		0.0439*** (0.0139)	0.00365 (0.00901)	0.0039 (0.0166)	-0.0201** (0.0100)
cRERC				0.0014*** (0.000508)	0.00117** (0.000511)	0.0006* (0.0003)	0.0011** (0.0005)	0.0005* (0.0003)
Smb						0.0018*** (0.0006)		0.0023*** (0.0006)
Hml						0.0041*** (0.0005)		0.0036*** (0.0004)
mktrf						0.0032*** (0.0004)		0.0028*** (0.0004)
DEF							0.0210*** (0.0050)	0.0143*** (0.0031)
PREM							-0.00143 (0.0010)	-0.0012* (0.0006)
Constant	-0.0077 (0.0446)	0.0055 (0.0173)	-0.0024 (0.0025)	0.0032** (0.0016)	-0.0188 (0.0440)	0.0125 (0.0264)	0.101** (0.0490)	0.0886*** (0.0288)
Observations	80	80	80	80	80	80	80	80
R-squared	0.001	0.000	0.114	0.100	0.209	0.734	0.365	0.797

Standard errors in parentheses*** p<0.01, ** p<0.05, * p<0.1

The dependent variable in Models 1 to 8 is NAREITlogretrf which is the difference between log of REITs return and the risk free rate.

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SWTC or disposable income represents an independent variable which is the ratio of labor income to consumption. AAIIBullBear represents an independent variable which is the difference between the number of bullish and bearish investors of the American Association of Individual Investors (AAII) index. AdvBullBear represents an independent variable which is the difference between the number of bullish and bearish investors of the Investors' Intelligence (II) index. cRERC represents an independent variable which is the change in the RERC index published by Real Estate Research Corporation. smb represents an independent variable of the difference between the average return on three small and large portfolios. hml represents an independent variable of the difference between the average return on two value and growth portfolios. mktrf represents an independent variable of the difference between the return from the market portfolio and the risk free rate. DEF represents an independent variable of the difference between the corporate bond yield of Moody's Aaa and Baa bonds. PREM represents an independent variable of the difference between 20 year treasury bond rate and 1 month t bill rate

Model 7 shows the results when the effects of disposable income (SWTC), individual investor sentiment (AAIIBullBear), institutional investor sentiment (AdvBullBear) and commercial real estate sentiment (cRERC) are considered concurrently along with the Fama and French factors of SMB, HML, Mktrf and the Fama and French Bond market factors of DEF and PREM. Results from this model show that the disposable income (SWTC) has a significant negative impact on REITs returns and is statistically significant at the 5% level of significance. Also the commercial real estate sentiment (cRERC) has a significant positive impact on REITs returns and is statistically significant at the 5% level of significance. Additionally, the individual investor sentiment (AAIIBullBear) and institutional investor sentiment (AdvBullBear) do not have a significant impact on REITs returns. The Fama and French factors of SMB, HML and Mktrf are statistically significant at the 1% level. The Fama and French bond market factor of DEF is statistically significant at the 1% level of significance and PREM is also statistically significant at the 10% level of significance. Model 8 shows the actual model after including all the variables. The results in model 8 show that the disposable income (SWTC) has a significant negative impact on REITs returns and is statistically significant at the 1% level indicating an increase in disposable income leads to a decline in REITs returns. The individual investor sentiment (AAIIBullBear) has a significant positive impact on REITs returns and is statistically significant at the 5% level of significance indicating an increase in individual investor sentiment leads to an increase in REITs returns. Also, the institutional investor sentiment (AdvBullBear) has a significant negative impact on REITs returns and is statistically significant at the 5% level of significance. This shows that an increase in the institutional investor sentiment leads to a decrease in REITs returns. Additionally, the commercial real estate sentiment (cRERC) has a significant positive impact on REITs returns and is statistically significant at the 10% level of

significance which shows an increase in the commercial real estate sentiment leads to an increase in the REITs returns. Alternatively, the Fama and French market factors of SMB, HML, Mktf and DEF are statistically significant at the 1% level of significance while PREM is statistically significant at the 10% level of significance.

The results of this research show that the effect of disposable income on REITs returns is statistically significant when analyzed concurrently along with Fama and French control variables of SMB, HML, Mktf and Fama and French bond market factors of DEF and PREM. This is because the Fama and French control variables of SMB, HML and Mktf control the effect of stock market while the Fama and French bond market factors of DEF and PREM control the effect of bond market. Additionally, it is important to control for the effects of stock market and bond market because investors have the choice to invest in either the stock market, bond market or REITs and therefore an increase in the ratio of labor income to consumption gives investors greater access to REITs, stocks and bonds too.

The results of this study show that an increase in the disposable income of the individuals leads to a decline in the REITs returns. Hence, this study supports the finding of Santos and Veronesi (2006) who find similar relationship between disposable income and stock market return. Additionally, the results also find a positive relationship on the impact of individual investor sentiment on the REITs returns. This shows that individual investors are interested in investing in REITs. However, the results also find an increase in the institutional investor sentiment leads to a decline in the REITs returns. This shows that institutional investors try to avoid investing in REITs. Alternatively, these results also find a positive relationship on the impact of commercial real estate sentiment on the REITs returns. This indicates that commercial real estate investors are interested in investing in REITs.

CONCLUSION

This study seeks to analyze the impact of disposable income (ratio of labor income to consumption) on the REITs returns. The results show that an increase in the disposable income leads to a decline in the REITs return. This study also examined the impact of investor sentiment of individuals, institutions and commercial real estate investors. The results show that the individual investor sentiment and commercial real estate sentiment have a significant positive impact on REITs returns while the institutional investor sentiment has a significant negative impact on REITs returns.

These findings presented above have important implications for both investors and financial professionals interested in investing in REITs as a part of their portfolio and also financial advisors that provide advice to individual investors. Additionally, the findings are also relevant for different institutions like banks and other financial intermediaries that invest in REITs as a part of their portfolio. The findings of this paper support the theory that the decisions made by the investors depend on their ratio of income and consumption which ultimately impact the REITs return.

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