Speculation – Real Estate

SUBMITTED BY: Nina Hoe, University of Pennsylvania

SUBJECT(S): Computation

GRADE LEVEL(S): 9, 10, 11, 12

OVERVIEW:

This lesson begins by introducing real estate as a vehicle for investment. Students think about the concept of a rental property and learn the terms REIT, NOI, and gross income. Students then compute NOIs for both no debt and debt involving real estate investments. They finish by comparing the two options to one another, and to the other methods of investing (savings accounts, CODs, stocks that pay dividends).

RELATED ARTICLES:

- "What Are Your Investment Choices? From Condos to Gold to Plain Cash"
- "Portfolio Management: Making Decisions about Your Investments"
- "Behind the Big Investment into Florian Hagenbuch's Latin American Startup"

Standards:

WGYP:

- Mathematical Foundations
- Number Relationships
- Patterns, Functions, and Algebra
- Problem Solving

Common Core:

N-Q.1. Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.

N-RN.1. Explain how the definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents.

Objectives/Purposes: Students learn to compute NOIs from real estate investments. Students think critically as they compare NOIs and ROIs across investment opportunities.

Knowledge@Wharton Articles:

- "Falling Prices, Foreclosures and Fear: What's Next for the Housing Market?"
- "Real Estate's Future: 'It Depends on What Degree of Risk You Are Looking For'"
- "Tentatively and Sporadically, Real Estate Investing Makes a Comeback"
- "Where the Deals Are: Real Estate in Emerging Markets"

Other Resources/Materials:

Calculators

Whole Class Discussion: (*10 mins*)

Have students reflect upon what they learned about saving money, spending, budgeting, interest rates, and investing in previous lessons.

Remember, an **investment** is putting money into something with a highly secure, expected gain. We talked about investing money into savings accounts where you are guaranteed by the bank to get your principal back as well as a certain, predetermined amount of interest. While nothing is ever 100% secure, there is another type of investing that is less secure, called **speculation.**

Play the Wharton Global Youth Program (WGYP) Glossary: Speculation

"Speculation is a transaction in which you hope to make money, but you are not sure you will. The last time I went to Las Vegas, I bet $10 that the Phillies would win the upcoming World Series. But my bet was just speculation, because I'm not guaranteed to make money."

Another way of speculating other than buying stocks or commodities is through buying real estate on the hopes that the property or home values will increase in a particular area or because of the economy in general.

1. Discuss the "housing bubble." What have students heard about home prices in the past few years?

Have students turn to a partner and answer the following question:

1. What types of properties or locations might you speculate would increase in value in the next few years? ***(An "up and coming" area of town, a new vacation spot. Also, have students talk about buying a "fixer-upper" where you might think that you can do work to improve the condition of the property that you buy and sell it for a much higher price that exceeds the costs put into fixing it up.)***

Play WGYP Glossary: REIT

"Real estate investment trust. This is a security that's treated like a stock, and invests in real estate. Because REITs receive special tax consideration, they may offer investors higher yields. Investing in a REIT is a liquid, dividend-paying means of participating in the real estate market. REITs give investors the opportunity to invest in real estate without requiring a large investment."

A **security** is a thing deposited or pledged as a guarantee of the fulfillment of an undertaking or the repayment of a loan, to be forfeited in case of default.

This is a way of buying real estate in similar ways to stocks.

Introduce the idea of **median home price.** Discuss why it is common to discuss median home prices as opposed to average home prices. ***(A few incredibly large/expensive homes skew the average.)***

In a 40 – 45 minute class period, choose between small group/pair activity 1 or 2.

<u>Small Group/Pair Activity (1)</u> (20 – 25 mins)

(*2 mins*) Have students break up into pairs and discuss median home prices in the United States. Ask them to estimate the current median home price. Refer to the census data.

(*5 – 10 mins*) Have students estimate how median home prices have changed in the past 50 years (thinking in increments of 10 years) and more specifically in the last 10 years (thinking in increments of 1 year). Ask them to make 2 graphs in the their notebook, with years on the x axis. On one graph x should range from 1960 – 2010 (count by 10s) and the other x should range from 2000 – 2010 (count by 1s). Have students report back on their guesses.

(*5 – 10 mins*) Show graphs from the census data on the overhead or draw on the board. Have individual students compute the **return on investment** or **yield** of buying a home at the median home price in 1960 and selling in 1970, 1980, etc. and buying in 2000 and selling in 2001, 2002, 2003, etc. Write those numbers on the board. Look at the patterns and talk about the fluctuations. What if you were forced to sell at a particular moment in time and couldn't wait for an upswing?

(*5 mins*) Then ask students if these ROIs or yields are accurate. What other costs are associated with buying and selling real estate? ***(3% transaction fees on both ends, property taxes, mortgage payments, insurance while holding the property).*** Readjust calculations to incorporate in the expenses. Emphasize that because of significant transaction fees, buying and selling real estate in the short term is very costly and extremely risky. Ask students how much profit an investor would need to see in the short term in order to make a reasonable profit.

<u>Small Group/Pair Activity (2)</u> (*20 – 25 mins*)

Student Worksheet

1. In an "up and coming" area of town, an investor purchased a home for $350,000 with the intent of living in it for two years and then moving to another state for a job. The home cost $350,000 and he paid an additional 3% of that for transaction fees. Additionally, while owning the home, his operational costs for property taxes, maintenance and repair, insurance, and utilities were about $7,000 per year. After the two-year period, he was able to sell the home for $400,000. Given his investment of $350,000 and the other fees and costs he spent, what was the overall return on his investment?
2. What if the same investor was only about to get $355,000 for the property 2 years later. How would that change the ROI?
3. What if in that 2-year period of time, the "up and coming" area stopped "coming" and people decided that it was in fact not a great place to live. Businesses stopped moving in and started moving out and people stopped being interested in living in this place. Two-years later when he tried to sell, the realtor told him that the best price that he

could hope to get would be $275,000. What would have been his total loss if he was forced to sell at that period of time?

4. According to the US Census, median home prices in the US fell from $229,300 in March 2008 to $205,100 to March 2009. What is the percentage change in this?
5. From April of 2010 to April of 2011, median home prices in the US went from $208,300 to $217,900. Calculate the percentage change.
6. If you had a large sum of money to invest, what are factors that might affect whether or not you decide to buy real estate?

Vanguard REIT ETF (the Fund) is an exchange-traded share class of Vanguard REIT Index Fund. The Fund employs a passive management or indexing investment approach designed to track the performance of the MSCI US REIT Index, a benchmark of United States property trusts that covers about two-thirds of the value of the entire United States real estate investment trust (REIT) market. The Fund's investment advisor is Vanguard Quantitative Equity Group.

1. In March of 2008, shares of the Vanguard REIT (NYSE: VNQ) traded for $59 per share. In March of 2009, they traded for $35.
    1. Calculate the percentage change.
    2. How does this compare to what happened with median home prices during this time?
2. In April of 2010, shares of the Vanguard REIT (NYSE: VNQ) traded for $49 per share. In April of 2011, they traded for $57.
    1. Calculate the percentage change.
    2. How does this compare to what happened with median home prices during this time?

Tying It All Together:

<u>Whole Class Discussion</u>: (*5 – 10 mins*)

1. How is the real estate market like the stock market? How is it different?
2. How are owning shares in an REIT and actually owning real estate related?
3. What are reasons to think about speculating on real estate?
4. What are the risks involved?
5. How does the amount of time in which you can/plan to invest the money affect your choices?

**Students should discuss how real estate might fit into an investment strategy based on the amount of time an investor has to invest the money, how much work he or she is willing to put in, whether or not the property will be able to be rented in the meantime, etc.

What Worked and What I Would Do Differently

Period Median Average

1963 $18,000 $19,300

1964 $18,900 $20,500

1965 $20,000 $21,500

1966 $21,400 $23,300

1967 $22,700 $24,600

1968 $24,700 $26,600

1969 $25,600 $27,900

1970 $23,400 $26,600

1971 $25,200 $28,300

1972 $27,600 $30,500

1973 $32,500 $35,500

1974 $35,900 $38,900

1975 $39,300 $42,600

1976 $44,200 $48,000

1977 $48,800 $54,200

1978 $55,700 $62,500

1979 $62,900 $71,800

1980 $64,600 $76,400

1981 $68,900 $83,000

1982 $69,300 $83,900

1983 $75,300 $89,800

1984 $79,900 $97,600

1985 $84,300 $100,800

1986 $92,000 $111,900

1987 $104,500 $127,200

1988 $112,500 $138,300

1989 $120,000 $148,800

1990 $122,900 $149,800

1991 $120,000 $147,200

1992 $121,500 $144,100

1993 $126,500 $147,700

1994 $130,000 $154,500

1995 $133,900 $158,700

1996 $140,000 $166,400

1997 $146,000 $176,200

1998 $152,500 $181,900

1999 $161,000 $195,600

2000 $169,000 $207,000

2001 $175,200 $213,200

2002 $187,600 $228,700

2003 $195,000 $246,300

2004 $221,000 $274,500

2005 $240,900 $297,000

2006 $246,500 $305,900

2007 $247,900 $313,600

2008 $232,100 $292,600

2009 $216,700 $270,900

2010 $221,800 $272,900

Note: The sales price includes the land.