

## **ACCT 133 – Excel**

### **Investments and The power of compounded interest**

#### **The purpose of this assignment is threefold:**

- To use popular Internet sites to research historical rates of returns on popular investing vehicles.
- To teach you how to set up an investment schedule.
- To teach you how to utilize a powerful investing feature called =FV (Future Value) built into the Excel Program

#### **An Overview:**

Attached is a “Best of the Web” at a glance guide, which contains URL’s of many popular accounting and finance sites. Choose a few of them and check them out. While you are browsing, you should be cognizant of interest rates or other return rates on investment vehicles that you may be interested in.

Investments play a significant role in your ability to accumulate and preserve wealth. No single investment is right for everyone. There are many different factors that come into play when choosing the right investment. I would strongly suggest you consider taking one of two classes – either BUSF 125 – Personal Finance, or a brand new class offered for the first time this year BUSF 51 – Retirement Planning. In both of these classes, you will learn the power of compounded interest. Compounding is a relatively easy mathematical process by which your money increases in value. This occurs slowly at first, but then picks up much more speed in the later life of the investment. To save well, you **MUST** start early – like **NOW!!!!** The key to building up your savings is to have a plan, to stick with the plan, and to start now. The tools of **HOW** to do this will be covered in the above mentioned classes.

There are three basic types of common investment vehicles – Cash Investments, Bonds, and Stocks. (There are others also like commodities, real estate, foreign stocks, etc.) Each one has their own types of investments incorporated within the above categories. Some are safer than others. In any case, the returns on all of them can be researched and then used to project future investment growth.

### **The Project**

Research some common mutual funds or other investments using the URL addresses attached. (I would suggest using Quicken.com or Morningstar.com). Many of these sites

list return rates over the past year, 3-year, 5-year, and 10-year time frames. Choose a monthly investment amount that you can afford, whether it be \$25 or \$100, something in between, or even more. Use a historical interest rate from any of the funds that you find that you may be interested in. (Don't be afraid to review a prospectus when you have questions about a fund – such as what is the minimum amount of investment, fees for premature withdrawals, access to funds, etc.)

Set up a compounded investment schedule. You can use the example of the one attached. You should make your schedule as flexible as possible so that you can enter any amount of investment and any interest rate and have the table compute for you automatically. **You should provide a table for at least the first three years (to demonstrate that you understand how the basic math works.) At the bottom of the schedule, calculate the value of the investment using benchmarks of 10 years, 20 years, 30 years, 40 years, and 50 years.** You should do this using the built in FV (future value) function that Excel provides. A handout has been provided to you, which details the parameters of the function. We will discuss the computation in class. The only new concept introduced in this problem is the =FV function. The rest of it is basic math using very basic Excel formulas. You should be able to complete the table with the knowledge you have acquired over the course of the semester.

Identify the fund that you choose to complete your model. Also list the URL where you pulled your data from. I would expect you to create a model for at least two funds. For each fund, use at least two different contribution amounts. Your model will be graded heavily on flexibility. I plan on taking your rates and inputting it into a generic model. I should come up with the same answers that you do.

### **More about the =FV function**

The = FV function uses five variables to return the future value of an annuity based on the data input by the user. The general set up of the function looks like this:

=FV(rate of return,# of payments,the amount of an annuity,the balance at the beginning,and the type)

The first two variables will usually be in monthly terms...that is if you are making monthly contributions, then the rate of return must be divided by 12, and the number of payments will be in terms of the number of monthly amounts. The amount of the annuity must be input with a negative sign in front of it. The "type" or the last variable will either be a 0 if payments are made at the end of the month or a type 1 if payments are made at the beginning of the month. (Since our payments are made at the beginning of the month, use a type 1.) For more information on how the formula works, you may wish to consult the Help menu and type in =FV.

### **Conclusion:**

You have learned a great deal of information about Excel and how to apply it to basic

accounting concepts over the course of the semester. There is so much more to learn about the program. It has hundreds of functions built into it. Unfortunately because the prerequisite for this course is only BUSA 100, we are limited in what we can teach you. I would strongly encourage you to take a finance class – one of the two mentioned above, and to continue working with and learning the Excel program, while incorporating the investment knowledge you obtain in the classroom. *YOU need to be in control of your financial future.* With the tools you have learned in this class and others, you should be able to build the wealth that you will need for retirement or any other purpose.

# FV

## See Also

Returns the future value of an investment based on periodic, constant payments and a constant interest rate.

## Syntax

**FV(rate,nper,pmt,pv,type)**

For a more complete description of the arguments in FV and for more information on annuity functions, see PV.

**Rate** is the interest rate per period.

**Nper** is the total number of payment periods in an annuity.

**Pmt** is the payment made each period; it cannot change over the life of the annuity. Typically, pmt contains principal and interest but no other fees or taxes.

**Pv** is the present value, or the lump-sum amount that a series of future payments is worth right now. If pv is omitted, it is assumed to be 0 (zero).

**Type** is the number 0 or 1 and indicates when payments are due. If type is omitted, it is assumed to be 0.

<b>Set type equal to</b>	<b>If payments are due</b>
0	At the end of the period
1	At the beginning of the period

## Remarks

- Make sure that you are consistent about the units you use for specifying rate and nper. If you make monthly payments on a four-year loan at 12 percent annual interest, use 12%/12 for rate and 4\*12 for nper. If you make annual payments on the same loan, use 12% for rate and 4 for nper.
- For all the arguments, cash you pay out, such as deposits to savings, is represented by negative numbers; cash you receive, such as dividend checks, is represented by positive numbers.

## Examples

FV(0.5%, 10, -200, -500, 1) equals \$2581.40

FV(1%, 12, -1000) equals \$12,682.50

FV(11%/12, 35, -2000, , 1) equals \$82,846.25

Suppose you want to save money for a special project occurring a year from now. You deposit \$1,000 into a savings account that earns 6 percent annual interest compounded monthly (monthly interest of 6%/12, or 0.5%). You plan to deposit \$100 at the beginning of every month for the next 12 months. How much money will be in the account at the end of 12 months?

FV(0.5%, 12, -100, -1000, 1) equals \$2301.40

# BEST OF THE WEB: AN AT-A-GLANCE GUIDE

Whether you're hunting for a hot IPO or planning for retirement, the sites listed below have what you need. Symbols denote particularly attractive features. Head to our website at [www.money.com/contents](http://www.money.com/contents) to download them all directly to your bookmarks file.

SUPERSITES		
YAHOO! FINANCE	<a href="http://finance.yahoo.com">finance.yahoo.com</a>	☑ ☒ ☓
MSN MONEYCENTRAL	<a href="http://www.moneycentral.com">www.moneycentral.com</a>	☑ ☒ ☓
QUICKEN.COM	<a href="http://www.quicken.com">www.quicken.com</a>	☑ ☒
INVESTING SITES		
DIRECTORIES		
SUPERSTAR INVESTOR	<a href="http://www.superstarinvestor.com">www.superstarinvestor.com</a>	☑ ☒ ☓
DOW JONES BUSINESS DIRECTORY	<a href="http://www.businessdirectory.dowjones.com">www.businessdirectory.dowjones.com</a>	☑
FINANCIAL NEWS		
CBS MARKETWATCH	<a href="http://www.marketwatch.com">www.marketwatch.com</a>	☑
CNNFN	<a href="http://www.cnnfn.com">www.cnnfn.com</a>	☑ ☒
STOCK QUOTES AND RESEARCH		
YAHOO! FINANCE	<a href="http://finance.yahoo.com">finance.yahoo.com</a>	☑ ☒
MSN MONEYCENTRAL	<a href="http://www.moneycentral.com/investor">www.moneycentral.com/investor</a>	☑
THOMSON INVESTORS NETWORK	<a href="http://www.thomsoninvest.net">www.thomsoninvest.net</a>	☑
10K WIZARD	<a href="http://www.10kwizard.com">www.10kwizard.com</a>	☑
PORTFOLIO TRACKING AND ANALYSIS		
CNBC.COM	<a href="http://www.cnbc.com">www.cnbc.com</a>	☑
QUICKEN.COM	<a href="http://www.quicken.com">www.quicken.com</a>	☑
MUTUAL FUNDS		
MORNINGSTAR.COM	<a href="http://www.morningstar.com">www.morningstar.com</a>	☑ ☒ ☓
FUNDALARM	<a href="http://www.fundalarm.com">www.fundalarm.com</a>	☑
SCREENING TOOLS		
MSN INVESTMENT FINDER	<a href="http://www.moneycentral.com/investor">www.moneycentral.com/investor</a>	☑ ☒
QUICKEN STOCK SEARCH	<a href="http://www.quicken.com/investments">www.quicken.com/investments</a>	☑
CHARTS		
MSN MONEYCENTRAL	<a href="http://www.moneycentral.com/investor">www.moneycentral.com/investor</a>	☑
BIGCHARTS	<a href="http://www.bigcharts.com">www.bigcharts.com</a>	☑
ONLINE BROKERAGES		
CHARLES SCHWAB	<a href="http://www.schwab.com">www.schwab.com</a>	☑ ☒ ☓
NATIONAL DISCOUNT BROKERS	<a href="http://www.ndb.com">www.ndb.com</a>	☑ ☒
DATEK ONLINE	<a href="http://www.datek.com">www.datek.com</a>	☑
MESSAGE BOARDS		
RAGING BULL	<a href="http://www.ragingbull.com">www.ragingbull.com</a>	☑ ☒
SILICON INVESTOR	<a href="http://www.siliconinvestor.com">www.siliconinvestor.com</a>	☑
THE MOTLEY FOOL	<a href="http://www.fool.com">www.fool.com</a>	☑
BONDS		
INVESTING IN BONDS	<a href="http://www.investinginbonds.com">www.investinginbonds.com</a>	☑
E*TRADE BOND CENTER	<a href="http://www.etrade.com">www.etrade.com</a>	☑ ☒
IPOS		
IPO CENTRAL	<a href="http://www.ipocentral.com">www.ipocentral.com</a>	☑
IPO EDGE	<a href="http://www.quote.com/ipo">www.quote.com/ipo</a>	☑
INTERNATIONAL		
WORLDLYINVESTOR.COM	<a href="http://www.worldlyinvestor.com">www.worldlyinvestor.com</a>	☑
EMERGING MARKETS COMPANION	<a href="http://www.emgmkt.com">www.emgmkt.com</a>	☑

MISCELLANEOUS		
NETSTOCK DIRECT	<a href="http://www.netstockdirect.com">www.netstockdirect.com</a>	☑
INVESTTOOLS	<a href="http://www.investtools.com">www.investtools.com</a>	☑
STOCK DETECTIVE	<a href="http://www.stockdetective.com">www.stockdetective.com</a>	☑
MARKETPLAYER.COM	<a href="http://www.marketplayer.com">www.marketplayer.com</a>	☑
CLEARSTATION	<a href="http://www.clearstation.com">www.clearstation.com</a>	☑
MULTEX INVESTOR	<a href="http://www.multexinvestor.com">www.multexinvestor.com</a>	☑
SAVING AND SPENDING		
BANKING		
WINGSPANBANK.COM	<a href="http://www.wingspan.com">www.wingspan.com</a>	☑ ☒
BANKRATE.COM	<a href="http://www.bankrate.com">www.bankrate.com</a>	☑
CREDIT CARDS		
NEXTCARD	<a href="http://www.nextcard.com">www.nextcard.com</a>	☑ ☒
CARDWEB.COM	<a href="http://www.cardweb.com">www.cardweb.com</a>	☑
TAXES		
MSN MONEYCENTRAL	<a href="http://www.moneycentral.com/tax/home.asp">www.moneycentral.com/tax/home.asp</a>	☑ ☒
FAIRMARK PRESS TAX GUIDE	<a href="http://www.fairmark.com">www.fairmark.com</a>	☑
CALCULATORS		
FINANCENTER	<a href="http://www.financenter.com">www.financenter.com</a>	☑ ☒
RETIREMENT PLANNING		
AMERICAN EXPRESS	<a href="http://www.americanexpress.com/401k">www.americanexpress.com/401k</a>	☑ ☒
THIRDAGE	<a href="http://www.thirdage.com">www.thirdage.com</a>	☑
INSURANCE		
INSWEB	<a href="http://www.insweb.com">www.insweb.com</a>	☑
QUICKEN INSURANCE	<a href="http://www.quickeninsurance.com">www.quickeninsurance.com</a>	☑
INSURE.COM	<a href="http://www.insure.com">www.insure.com</a>	☑
HOME BUYING		
REALTOR.COM	<a href="http://www.realtor.com">www.realtor.com</a>	☑
OWNERS.COM	<a href="http://www.owners.com">www.owners.com</a>	☑
YAHOO! REAL ESTATE	<a href="http://realestate.yahoo.com">realestate.yahoo.com</a>	☑ ☒
MORTGAGES		
E-LOAN	<a href="http://www.eloan.com">www.eloan.com</a>	☑
IOWN	<a href="http://www.iown.com">www.iown.com</a>	☑
CARS		
CARSDIRECT.COM	<a href="http://www.carsdirect.com">www.carsdirect.com</a>	☑
AUTONATION USA	<a href="http://www.autousa.com">www.autousa.com</a>	☑
EDMUNDS.COM	<a href="http://www.edmunds.com">www.edmunds.com</a>	☑
TRAVEL		
TRAVELOCITY.COM	<a href="http://www.travelocity.com">www.travelocity.com</a>	☑ ☒ ☓
EXPEDIA.COM	<a href="http://www.expedia.com">www.expedia.com</a>	☑ ☒

A KEY TO THE SYMBOLS			
☑	Editor's choice. The best of the best.	☒	A power tool. Great interactive features.
☑	Educational. Full of basics and primers.	☑	Comprehensive listings or offerings.
☑	Simple to use. Easy to navigate.	☑	Attractive layout and design.

# The Power of Compounding - Example

## Internet Project

Fund:

Monthly Contribution                    50.00

Interest Rate                                12.00%

Year To Date Totals			Cumulative Totals
YTD Cont	Earnings	Total	

Using Excel's  
FV Function

=FV(rate,#pmts,amount,bal,type)

Pmt #	Date	Contribution (From Above)	Interest (P X R X T)	Cum Bal	YTD Cont	YTD Earnings	YTD Total	Cumulative Totals	Using Excel's FV Function
0				0.00					
1	1/1/1999	50.00	0.50	50.50					
2	2/1/1999	50.00	1.01	101.51					
3	3/1/1999	50.00	1.52	153.02					
4	4/1/1999	50.00	2.03	205.05					
5	5/1/1999	50.00	2.55	257.60					
6	6/1/1999	50.00	3.08	310.68					
7	7/1/1999	50.00	3.61	364.28					
8	8/1/1999	50.00	4.14	418.43					
9	9/1/1999	50.00	4.68	473.11					
10	10/1/1999	50.00	5.23	528.34					
11	11/1/1999	50.00	5.78	584.13					
12	12/1/1999	50.00	6.34	640.47	\$800.00	\$40.47	\$640.47	\$640.47	\$640.47
13	1/1/2000	50.00	6.90	697.37					
14	2/1/2000	50.00	7.47	754.84					
15	3/1/2000	50.00	8.05	812.89					
16	4/1/2000	50.00	8.63	871.52					
17	5/1/2000	50.00	9.22	930.74					
18	6/1/2000	50.00	9.81	990.54					
19	7/1/2000	50.00	10.41	1,050.95					
20	8/1/2000	50.00	11.01	1,111.96					
21	9/1/2000	50.00	11.62	1,173.58					
22	10/1/2000	50.00	12.24	1,235.82					
23	11/1/2000	50.00	12.86	1,298.67					
24	12/1/2000	50.00	13.49	1,362.16	\$800.00	\$121.69	\$721.69	\$1,362.16	\$1,362.16
25	1/1/2001	50.00	14.12	1,426.28					
26	2/1/2001	50.00	14.76	1,491.04					
27	3/1/2001	50.00	15.41	1,556.45					
28	4/1/2001	50.00	16.06	1,622.52					
29	5/1/2001	50.00	16.73	1,689.24					
30	6/1/2001	50.00	17.39	1,756.64					
31	7/1/2001	50.00	18.07	1,824.70					
32	8/1/2001	50.00	18.75	1,893.45					
33	9/1/2001	50.00	19.43	1,962.88					
34	10/1/2001	50.00	20.13	2,033.01					
35	11/1/2001	50.00	20.83	2,103.84					
36	12/1/2001	50.00	21.54	2,175.38	\$800.00	\$213.22	\$813.22	\$2,175.38	\$2,175.38
37	1/1/2002	50.00	22.25	2,247.64					
38	2/1/2002	50.00	22.98	2,320.61					
39	3/1/2002	50.00	23.71	2,394.32					
40	4/1/2002	50.00	24.44	2,468.76					
41	5/1/2002	50.00	25.19	2,543.95					
42	6/1/2002	50.00	25.94	2,619.89					
43	7/1/2002	50.00	26.70	2,696.59					
44	8/1/2002	50.00	27.47	2,774.05					
45	9/1/2002	50.00	28.24	2,852.29					
46	10/1/2002	50.00	29.02	2,931.32					
47	11/1/2002	50.00	29.81	3,011.13					
48	12/1/2002	50.00	30.61	3,091.74	\$800.00	\$316.38	\$916.38	\$3,091.74	\$3,091.74

20 years	\$49,957.40
40 years	\$694,121.01
50 years	\$1,972,446.19