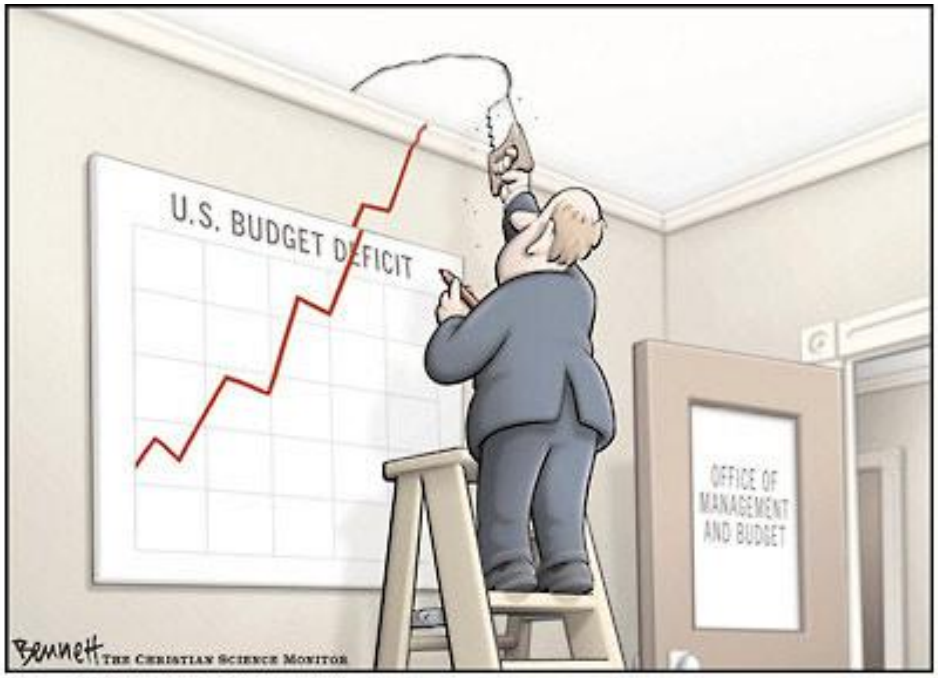
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THE FEDERAL BUDGET DEFICIT AND ITS DETERMINANTS THROUGHOUT THE BUSINESS CYCLE



Charles Z. Haas
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By:

Charles Z. Haas

Submitted to The Department of Economics

Project Advisor: Stephen D. Casler Ph.D.

Second Reader: Jialu Liu Ph.D.

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I hereby recognize and pledge to fulfill my responsibilities as defined in the Honor Code and to maintain the integrity of both myself and the College as a whole.

Your Signature

Your Name

Charles Z. Haas

Acknowledgments

I would like to start by thanking my wonderful family for supporting me throughout my college career and being there for advice and guidance. I would also like to thank all of my Professors throughout my college career, without them this senior comprehensive research project would not exist. Professor Stephen Casler was my Comp advisor and was a huge help with editing and giving me advice for this paper. Finally I would like to thank all of my friends who have been with me and supported me with my Comp. I hope that all readers will thoroughly enjoy my Comp.

Table of Contents

List of Tables v

List of Figures vi

Abstract vii

Chapter 1: *The Federal Budget Deficit: An Overview* 1

1.1 *Introduction* 1
1.2 *Importance of the Federal Budget Deficit* 2
1.3 *Trends and Movements* 5
1.4 *Conclusion* 11

Chapter 2: *The Federal Budget Deficit Theoretical Considerations* 12

2.0 *Introduction* 12
2.1 *The Budget Deficit and Components of Aggregate Spending: Overview* 12
2.2 *IS/LM Curve* 14
2.2.1 Basics & History of the IS/LM Model 14
2.2.2 IS Curve Formation & Shifts 16
2.2.2.1 The Effects of IS Shifts on the Budget Deficit 18
2.2.3 LM Curve Formation & Shifts 20
2.3 *Theoretical Expectations* 22

Chapter 3: *The Federal Budget Deficit: Empirical Analysis* 25

3.0 *Introduction* 25
3.1 *Regression Analysis: An Overview* 25
3.1.1 Coefficients 26
3.1.2 T-statistics & R^2 values 27
3.1.3 Gathering Annual Data 28
3.2 *Empirical Results & Analysis* 29
3.2.1 Interpreting the Coefficients 30
3.2.2 Interpreting t-statistics & R^2 31
3.3 *Empirical Conclusion* 33

Chapter 4: *Conclusion and Recommendation* 34

4.1 *Conclusion* 34
4.2 *Recommendation* 36

Appendix A 39

Appendix B 40

Appendix C 41

Appendix D 42

List of Tables

1.5 *Federal Receipts and Outlays by Major Category* 8

3.0 *Regression Results* 29

List of Figures

1.1 *U.S. Federal Budget Deficit* 3

1.2 *CBO Deficit Projections* 4

1.3 *U.S. Federal Deficit as a Percentage of GDP* 6

1.4 *U.S. Defense Spending* 7

1.6 *Deficit and GDP Growth Rates* 11

2.1 *The IS LM Curve* 16

2.2 *Negatively Sloped IS Curve* 17

2.3 *Shifts in IS Curve* 19

2.4 *Upward Sloping LM Curve* 20

2.5 *Shifts in LM Curve* 21

Abstract

The purpose of this senior thesis is examine the determinants of the federal budget deficit, including GDP, government spending, and tax policies over the business cycle. The United States currently has the largest budget deficit in history and it does not appear to be decreasing anytime soon. Without a solution to reduce the deficit and balance the budget, younger generations will have to pay for the deficits of older generations and larger economic problems will occur. This senior thesis begins by giving an overview of budget deficits, their importance and examines its trends and movements over the business cycle. Next, this study explains the budget deficit and its components of aggregate spending, theoretical considerations of budget deficits, specifically the IS LM model and theoretical expectations. Following, as a part of the empirical analysis, a regression analysis is run to estimate the relationships among several coefficients that determine the federal budget deficit. Empirical results and analysis follow, as well as interpretations for all coefficients. Overall the results of the empirical analysis are not significant but the coefficients are still used to hypothetically evaluate the impact of the explanatory variables on the federal budget deficit. A recommendation of how the United States government can reduce the federal deficit is also presented.

Chapter I:
The Federal Budget Deficit: An Overview

1.1 Introduction:

The United States currently has the largest federal budget deficit in its history and it does not appear to be decreasing anytime soon. A budget deficit is defined as the difference between current government spending on goods and services and total current revenue from all types of taxes net of transfer payments. The opposite of a budget deficit is a budget surplus, and when inflows equal outflows, the budget is said to be balanced. (Cebula, 1987) The federal budget deficit shows the relationship between government spending and its income. If we spend more than we create in revenue, our economy moves further into deficit and if we create more revenue than we spend, we are in a surplus. When our government determines its budget annually, the deficit plays a major role in the amount of spending it can undertake.

The purpose of this paper is to examine the determinants of the federal budget deficit, including GDP, government spending, and tax policies over the business cycle. In this chapter, I first explore the importance of budget deficits to the economy, how they affect producers and consumers, and the burden they place on our generation. Second I look at deficit trends over the business cycle, and its relationship with real GDP growth and other variables. Looking at the real values of the federal deficits over the years helps us to better understand the reasons for them and how government policy has affected them. In later chapters I discuss the economic theory behind budget deficits. Along with the main theory of Keynesian economics, specifically the IS/LM model, we will be able to fully understand budget deficits, their causes and best practices to fix them.

1.2 Importance of the federal budget deficit:

Is the concern over rising deficits warranted? There is a growing worry in the United States over the possible economic problems resulting from rapidly growing and large federal budget deficits. With the fiscal cliff and astronomical debt, the federal budget deficit is more important than ever. My generation will be paying for the deficit of other generations if we do not find a solution to balance the budget.

According to Cebula, federal budget deficits are an economic threat; he states that the problem arises when the Treasury borrows to finance a deficit. By doing this, the Treasury floods the market with many forms of government bonds which, in turn, causes interest rates to rise. (Cebula, 1987)

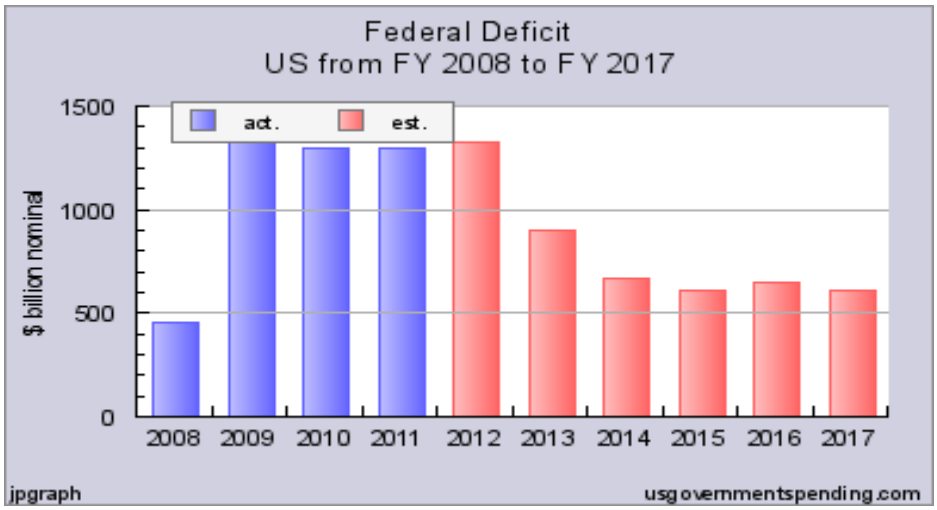
Many people think that the federal deficit is the same thing as the federal debt. In reality there are very different. As stated earlier, the deficit is the difference between current government spending on goods and services and total current revenue from all types of taxes net of transfer payments. The national debt is the accumulation of budget deficits from previous years that have not been paid off. (Hall & Papell, 2005)

Since the budget deficit is the difference in costs and revenues within the United States government, U.S. citizens are personally responsible for fixing them. If a country is in deficit, it has to increase revenue or decrease spending to get out of it. The deficit in the United States at the end of 2012 was over one trillion dollars for the fourth straight year. In response, it appears that the government is raising taxes. A rise in tax revenue is a simple way for the government to create more revenue. However this affects tax payers by decreasing disposable income.

The degree of concern over the federal deficit is exemplified not only by daily news stories but also by various studies that project federal deficits. Figure 1.1 is based on data from

the United States government's finances until 2011 and shows the United States federal budget deficit for the past few years and estimates the deficit through 2017.

Figure 1.1 U.S. Federal Budget Deficit



With our nation's deficit the greatest it has been relative to GDP in decades, many Americans have been looking for ways to eliminate our debt. At the end of 2012, President Bush's tax cuts expired and America faced the so called "fiscal cliff". The federal deficit is directly affected by this because it will affect government revenues and consumer disposable income. It was estimated by the U.S. Congressional Budget office that if we go over the fiscal cliff it would lead to a mild recession and higher unemployment in 2013. (Congressional Budget Office, n.d.)

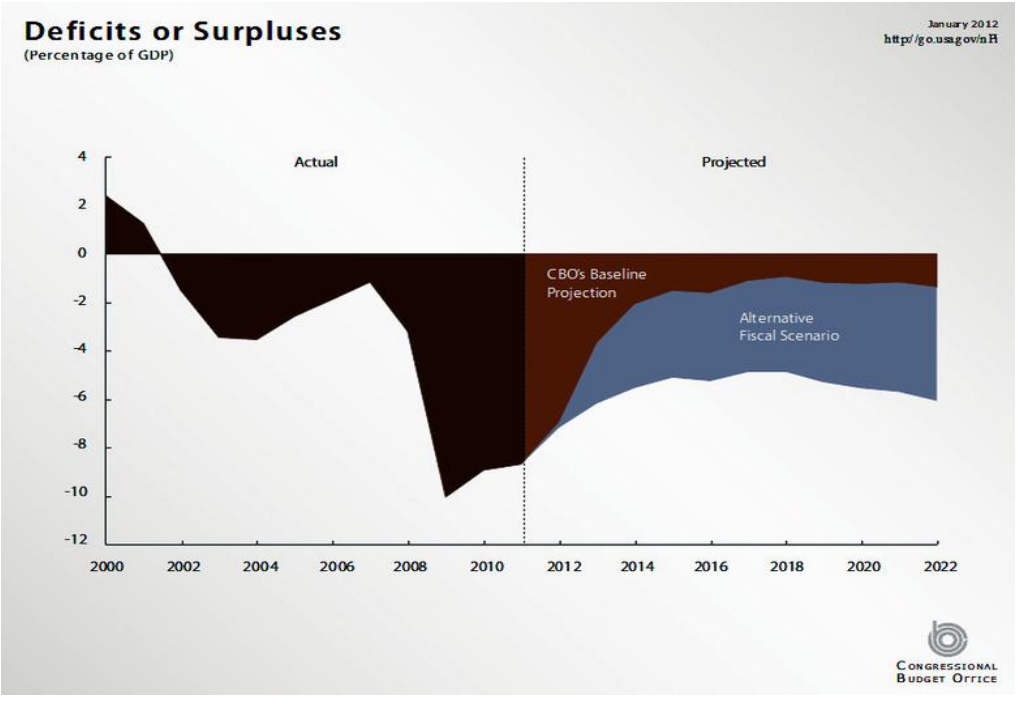
President Obama signed the American Taxpayer Relief Act in January of 2013 to avert the fiscal cliff. The new law makes permanent the Bush administrations tax cuts for individuals earning less than $400,000 per year and couples earning less than $450,000. It raises the tax rate on individuals who make more than that from 35% to 39.6%. It also increased the capital gains tax and the estate tax, and it made changes to the alternative minimum tax to index it for

inflation. These tax increases are estimated to raise about $600 billion in new tax revenues over the next ten years. (American Taxpayer Relief Act, 2012)

The act not only raises taxes, it also included spending provisions in some areas. There were various cuts in spending, and long-term unemployment benefits were extended. This extension costs $30 billion and may give people an incentive to stay on unemployment instead of looking for a job. By extending unemployment benefits, the government is also increasing its costs, which, in turn, will increase the federal budget deficit. (American Taxpayer Relief Act, 2012)

The Congressional Budget Office analyzes the effects of legislation on the deficit and the economy. Figure 1.2 shows the Congressional Budget Office's budget deficit projections as a percentage of GDP through the year 2022. The CBO's baseline projection predicts significant deficit reduction due to the expiration of the Bush tax cuts and implementation of the Budget Control Act in 2011. (Congressional Budget Office, n.d.)

Figure 1.2 CBO Deficit Projections



The CBO also has an alternative projection in which it assumes a limited deficit reduction. According to the CBO, the deficit in 2013 will be moderately lower than 2012 due to additional tax revenue from higher payroll tax rates and higher income tax rates on wealthier taxpayers. Economic growth will also be slower in 2013 due to deficit reduction in the short-run. (Congressional Budget Office, n.d.)

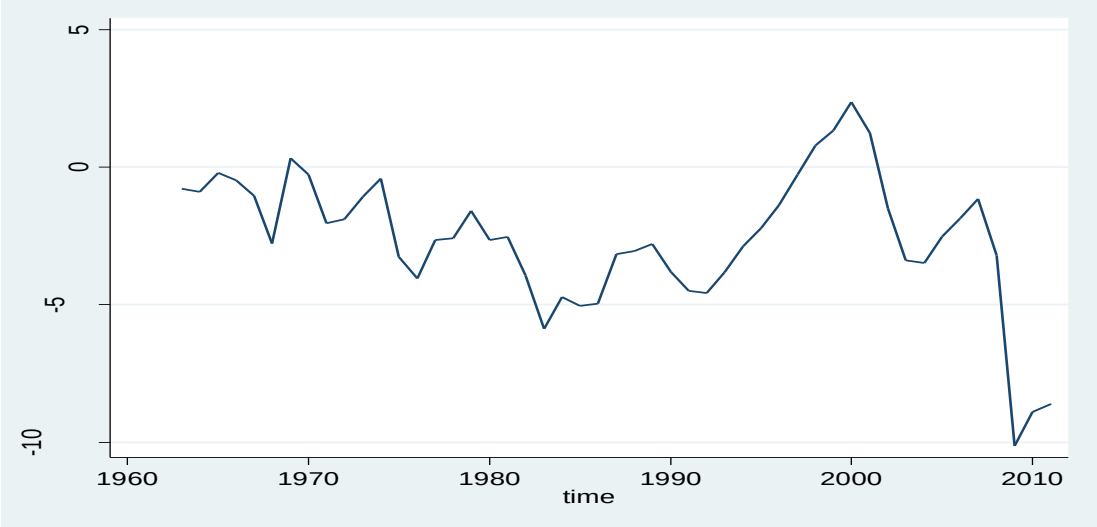
The new tax revenues generated by the American Taxpayer Relief Act will help eliminate the federal deficit over time but are still not enough to eliminate it completely, as we can conclude from the Congressional Budget Office's projections. With the political debate over increasing the Unites States debt ceiling and record amounts of government spending, there are still questions and uncertainties surrounding the federal budget deficit that will directly affect U.S. citizens.

1.3 Trends & Movements:

Having discussed the importance of federal budget deficits, we can now take a look at the trends and movements of deficits over the business cycle. When we look at the United States federal budget deficit as a percentage of GDP, we can see some volatility over the past 40 years. Figure 1.3 shows a graph of the federal deficit as a percentage of GDP. Any time the graph goes above zero we have a surplus and anytime it is below zero there is a deficit. Up until recent times, the deficit has usually been under 5 percent of GDP, but in the most recent recession we can see it increases to around 10 percent of GDP. It is interesting to note that since 1960 there have only been two episodes of surplus. The first takes place briefly in the late 1960's and the second is during the late 1990's.

The surplus of the 1990's could be due to the technology boom and the fast growth of the internet sector. However in the 1990's President Clinton's tax and spending policies were much different than those of the years before him and created arguably the most prosperous decade in United States history. Clinton focused on establishing fiscal discipline and eliminating the budget deficit, maintaining low interest rates and encouraged private sector investment, investment in human capital, and elimination of protectionist taxes. In 1993 Clinton signed the Omnibus Budget Reconciliation Act. This act created a higher income tax bracket for high income individuals. It also gave businesses an income tax rate of 35 percent and increased the tax on fuel. With this act, tax revenues increased and consumption was not affected negatively. This allowed the government to eliminate the deficit and have a surplus in the 1990's. (Steuerle, 2001)

Figure 1.3: U.S. Federal Deficit as a Percentage of GDP

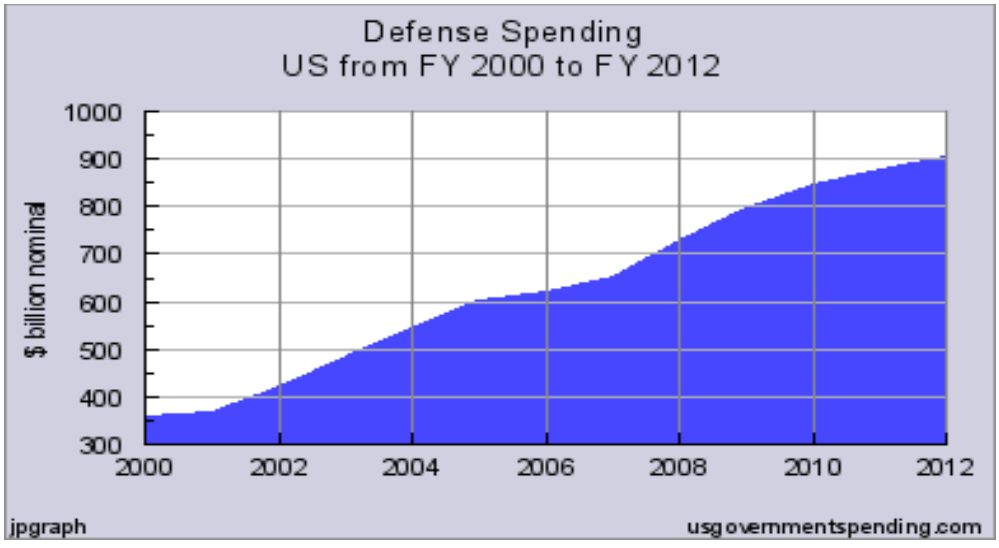


When we look at recessionary periods in our history we can see a relationship between them and the federal deficit. In every recession since 1960, the federal deficit has increased, as seen in Figure 1.3. We can see that there is an increase in the federal deficit during the years 1969-1970 and 1973-1975, which are both times of a recession. There is also an increase during

the early 1980's recession and the early 1990's recession. In more recent recessions there have been more drastic increases in the deficit. In the early 2000's recession and the great recession of 2007 we can see a sharp increase in the deficit. There is a noticeable trend of an increasing deficit from 1960 until 1990. After 1990 the United States had a booming economic period and had a surplus and now it seems that the trend is continuing.

At the end of the 1990's the surplus turns into a deficit relatively quickly and has grown to record levels in recent years. Events of the 2000's have led to our current deficit. In 2001 President George W. Bush was elected. With a change in political parties in office there is a change in the national budget and government spending. Soon after Bush was elected the terror attacks of 9/11 happened. After 9/11 the United States military entered Afghanistan, and shortly after that Iraq. (Naftali, 2010) With troops and supplies being sent to multiple countries, military spending had to be increased. Figure 1.4 shows the amount of defense spending in the United States since 2000. Currently the United States is spending about triple what was spent in the year 2000.

Figure 1.4 U.S. Defense Spending



The final cost of the war in Iraq and Afghanistan will run at least $3.7 trillion and could reach as high as $4.4 trillion, according to the research project "Costs of War" by Brown University's Watson Institute for International Studies (Costofwar.org, n.d.).

Not only has the U.S. been spending more on defense but, during the Bush administration, many tax cuts were made that contributed to the mounting deficit. In 2001, the Economic Growth and Tax Relief Reconciliation Act was signed, lowering income tax rates and capital gains tax rates. (Economic Growth and Tax Reconciliation Act, 2001) Due to this act, tax revenues declined. With the increased spending on defense and decreased tax revenues, the deficit increased. Table 1.5 from the *Economic Report of the President* shows federal receipts and outlays by major category from 1990-2013

Table 1.5 Federal Receipts and Outlays by Major Category

TABLE B–80. Federal receipts and outlays, by major category, and surplus or deficit, fiscal years 1990–2013

[Billions of dollars; fiscal years]

Fiscal year or period	Receipts (on-budget and off-budget)					Outlays (on-budget and off-budget)										Surplus or deficit (-) (on-budget and off-budget)
	Total	Individual income taxes	Corporation income taxes	Social insurance and retirement receipts	Other	Total	National defense		International affairs	Health	Medicare	Income security	Social security	Net interest	Other	
							Total	Department of Defense, military								
1990.	1,032.0	466.9	93.5	380.0	91.5	1,253.0	299.3	289.7	13.8	57.7	98.1	148.7	248.6	184.3	202.5	-221.0
1991.	1,055.0	467.8	98.1	396.0	93.1	1,324.2	273.3	262.3	15.8	71.2	104.5	172.5	269.0	194.4	223.5	-269.2
1992.	1,091.2	476.0	100.3	413.7	101.3	1,381.5	298.3	286.8	16.1	89.5	119.0	199.6	287.6	199.3	172.1	-290.3
1993.	1,154.3	509.7	117.5	428.3	98.8	1,409.4	291.1	278.5	17.2	99.4	130.6	210.0	304.6	198.7	157.9	-255.1
1994.	1,258.6	543.1	140.4	461.5	113.7	1,461.8	281.6	268.6	17.1	107.1	144.7	217.2	319.6	202.9	171.5	-203.2
1995.	1,351.8	590.2	157.0	484.5	120.1	1,515.7	272.1	259.4	16.4	115.4	159.9	223.8	335.8	232.1	160.2	-164.0
1996.	1,453.1	656.4	171.8	509.4	115.4	1,560.5	265.7	253.1	13.5	119.4	174.2	229.7	349.7	241.1	167.2	-107.4
1997.	1,579.2	737.5	182.3	539.4	120.1	1,601.1	270.5	258.3	15.2	123.8	190.0	235.0	365.3	244.0	157.3	-21.9
1998.	1,721.7	828.6	188.7	571.8	132.6	1,652.5	268.2	255.8	13.1	131.4	192.8	237.8	379.2	241.1	188.9	69.3
1999.	1,827.5	879.5	184.7	611.8	151.5	1,701.8	274.8	261.2	15.2	141.0	190.4	242.5	390.0	229.8	218.1	125.6
2000.	2,025.2	1,004.5	207.3	652.9	160.6	1,789.0	294.4	281.0	17.2	154.5	197.1	253.7	409.4	222.9	239.7	236.2
2001.	1,991.1	994.3	151.1	694.0	151.7	1,862.8	304.7	290.2	16.5	172.2	217.4	269.8	433.0	206.2	243.1	128.2
2002.	1,853.1	858.3	148.0	700.8	146.0	2,010.9	348.5	331.8	22.3	196.5	230.9	312.7	456.0	170.9	273.1	-157.8
2003.	1,782.3	793.7	131.8	713.0	143.9	2,159.9	404.7	387.1	21.2	219.5	249.4	334.6	474.7	153.1	302.6	-377.6
2004.	1,880.1	809.0	189.4	733.4	148.4	2,292.8	455.8	436.4	26.9	240.1	269.4	333.1	495.5	160.2	311.8	-412.7
2005.	2,153.6	927.2	278.3	794.1	154.0	2,472.0	495.3	474.1	34.6	250.5	298.6	345.8	523.3	184.0	339.8	-318.3
2006.	2,406.9	1,043.9	353.9	837.8	171.2	2,655.1	521.8	499.3	29.5	252.7	329.9	352.5	548.5	226.6	393.5	-248.2
2007.	2,568.0	1,163.5	370.2	869.6	164.7	2,728.7	551.3	528.5	28.5	266.4	375.4	366.0	586.2	237.1	317.9	-160.7
2008.	2,524.0	1,145.7	304.3	900.2	173.7	2,982.5	616.1	594.6	28.9	280.6	390.8	431.3	617.0	252.8	365.2	-458.6
2009.	2,105.0	915.3	138.2	890.9	160.5	3,517.7	661.0	636.7	37.5	334.3	430.1	533.2	683.0	186.9	651.6	-1,412.7
2010.	2,162.7	898.5	191.4	864.8	207.9	3,456.2	693.6	666.7	45.2	369.1	451.6	622.2	706.7	196.2	371.6	-1,293.5
2011.	2,303.5	1,091.5	181.1	818.8	212.1	3,603.1	705.6	678.1	45.7	372.5	485.7	597.4	730.8	230.0	435.5	-1,299.6
2012 (estimates).	2,468.6	1,164.7	236.8	840.7	226.5	3,795.5	716.3	688.3	56.3	361.6	484.5	579.6	778.6	224.8	593.9	-1,326.9
2013 (estimates).	2,902.0	1,359.3	347.7	959.1	235.9	3,803.4	701.8	672.9	59.6	385.9	530.2	559.4	825.9	247.7	492.9	-901.4

Note: See Note, Table B–78.

Sources: Department of the Treasury and Office of Management and Budget.

In Table 1.5 we can see all of the different revenues our government collects. When looking at these receipts, notice the difference between individual income tax and corporate income tax. Individual income tax revenues represent anywhere between 40 and 50 percent of total receipts, while corporate income taxes only make up between 5 and 15 percent of total receipts. These taxes make up more than half of our government revenues, and, if taxes are lowered, it directly affects government revenue.

Government outlays are divided into several different categories. The largest categories are National Defense, Medicare, Income Security, and Social Security. National Defense consists of military spending and homeland security. Medicare is a national social insurance program that guarantees access to health insurance for Americans older than 65. Income Security is comprised of many income security programs such as foster care and tax rebates. Lastly social security refers to disability insurance, various social insurance programs and social welfare programs.

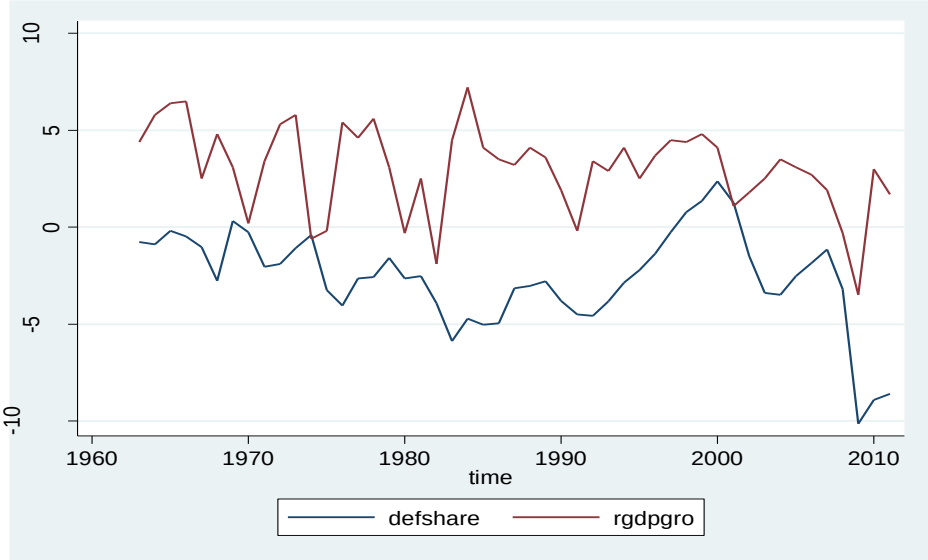
Since the year 2000 there has been increases in federal receipts and outlays. The problem is that the increases are not equal. National defense is 2.38 times larger than in 2000, Medicare is 2.69 times larger; Overall outlays are 2.12 times larger than they were in 2000. With all of these increases in expenditures, revenues need to increase just as much. Individual income taxes are only 1.35 times larger than in the year 2000, corporate income taxes are 1.67 times larger and overall receipts is only 1.43 times larger than in 2000. With a greater increase in expenses than revenues, the United States went from a surplus to an astronomical deficit very quickly. The drop in individual and corporate income taxes in the early 2000's is a direct result of the Bush tax cuts. Along with the decreased tax revenue, we can see a rise in national defense spending in

the 2000's stemming from the conflicts in Afghanistan and Iraq. With all of the increased government spending and decreased tax revenue, the federal deficit increased.

A tax decrease leads to individuals having more disposable income, and hopefully they will purchase goods and increase GDP through an increase in consumption. When the Bush Administration implemented the tax cuts, this was most likely their thought process. Unfortunately in the 2000's the United States endured two recessions, one being the largest this nation has ever seen. The great recession of 2007 caused many businesses to go bankrupt and created a panic across the nation. Consumers were not consuming and producers were not producing. GDP fell, and the unemployment rate skyrocketed. The Government had to pay for various bailouts and the increased unemployed. All of these factors were critical in increasing the deficit to what it is today.

When we compare the federal deficit and GDP growth rates we can see an occasional relationship between the variables. Figure 1.6 shows the federal deficit and GDP growth rates since 1960. In recessionary periods of the mid 1970's, the early 1980's and the early 1990's, GDP growth is decreasing along with the increase in the federal deficit. We can also see this relationship a bit more drastically in the more recent recessions of the early 2000's and the great recession. Through this relationship, we can see that GDP growth and the federal deficit are pro-cyclical in the sense that when GDP growth decreases the federal deficit increases.

Figure 1.6: Deficit and GDP growth rates



1.4 Conclusion

This chapter has provided an introduction to budget deficits and their importance. It has also covered some trends and movements over the business cycle. In the chapters that follow, theoretical considerations regarding budget deficits are presented as well as an empirical analysis of the federal budget deficit. Specifically, the theoretical considerations present an overview of aggregate supply and demand, the basics and history of the IS/LM model, as well as the formation and shift factors of the model. There is also a theoretical analysis of some expected relationships among variables. The empirical analysis provides an overview of regression analysis; it covers some important statistics used in regressions, and shows how data were gathered for the study. Empirical results and analysis are given and interpretation of coefficients and key statistic takes place.

Chapter II:
The Federal Budget Deficit Theoretical Considerations:

2.0 Introduction

It is now time to discuss some theoretical considerations regarding the federal budget deficit. The purpose of this study is to examine the federal budget deficit and how it is affected by GDP, government spending, tax policies and other factors over the business cycle. Towards this end, this chapter discusses the theoretical considerations underlying determination of the federal budget deficit. First, an overview of aggregate supply and demand is presented. In the section that follows I discuss an important theory that helps explain the sources of federal budget deficits, the IS/LM model. This section will cover the basics and history of the model, as well as the formation and shift factors. Lastly, based on theory, the conclusion predicts, the expected relationship between the federal budget deficit and changes in aggregate supply and demand as well as shifts in the IS/LM model.

2.1 The Budget Deficit and the Components of Aggregate Spending; Overview

When we look at the federal deficit we must start by focusing on the aggregate spending for all the goods and services provided within the economy. In addition to expenditures, there is production of goods and services. Eisner states that aggregate supply is the total amount of goods and services that U.S. residents are ready to offer at different price levels. This depends on many factors, such as the quantity of the population who wish to work and how many hours and how hard they wish to work. It also depends on land, natural resources, buildings, infrastructure, inventories and other macroeconomic factors. (Eisner, 1986)

It takes more than just supply to produce goods in modern day economies. Firms produce to make profits, and they can't make any profits if they can't sell their output. For firms to produce they must also see demand for their product. For the economy as a whole, there must be an aggregate demand to match what can be supplied. (Eisner, 1986) A simplified version of the relationship between GDP and spending can be seen with the following equation

$$Y = C + I + G + X \ ,$$

where Y equals gross domestic product, C equals aggregate consumption, I equals aggregate gross domestic investment, G equals aggregate government spending and outlays, and X equals net exports of goods and services. This equation also shows all the contributing factors of GDP

Hall & Papell state that *consumption* is defined as spending by households. It includes purchases of durable goods, such as cars and computers; non-durable goods, such as food and gasoline; and services like medical care and education. To be counted in the consumption portion of GDP, the good must be a new purchase. Items purchases used such as resold stereo or a used car do not count for consumption.

Hall & Papell also state that *gross domestic investment* can be defined as the spending by firms on goods such as equipment and inventories and by spending by households on housing. The total investment can be separated into two categories, fixed investment and inventory investment. Fixed investment is classified as the purchase of new factories, machines, and houses. Inventory investment can be classified as the change in inventories at business firms from one year to another. (Hall & Papell, 2005)

Government spending is the expenditure category of key concern in this study. According to Hall & Papell, government spending is the sum of all federal, state, and local government purchases of goods and services. These purchases can include schools, road

construction, and military hardware. However, government purchases are not the only part of the total government outlays included in the government budget. Transfer payments are the other portion. When calculating government purchases, economists exclude transfer payment from government to individuals; these transfer payments include items such as welfare, social security, unemployment benefits and interest payments on public debt. Transfer payments add to household disposable income, the income that is used for consumption expenditures.

Net Exports of goods and services make up the last variable of the equation. The value of the country's net exports is found by taking the countries net exports and subtracting the net imports. Exports are goods and services produced in the United States and purchased by foreign consumers, governments, or businesses. Imports are goods and services produced in other countries that are purchased by United States consumers, government, and businesses. (Hall & Papell, 2005)

2.2 IS/LM Curve

Having explained some basics concerning the components of GDP, we can explore the main theory behind the federal budget deficit. In the macro economy, the spending balance involves finding the level of GDP that makes the spending plans of government, consumers and others consistent with their actual levels of income. Spending depends on the interest rate because of the sensitivity of investment and net exports to the interest rate. The IS-LM model is used to better explain this relationship.

2.2.1 Basics & History of the IS/LM Model

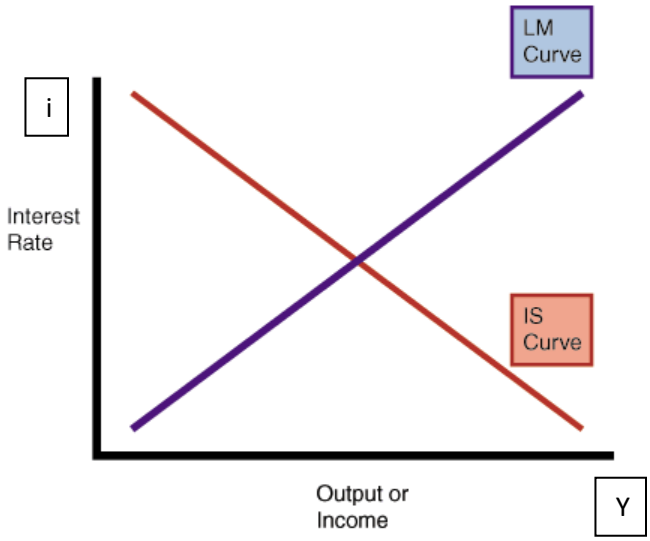
The IS/LM model (Investment—Saving / Liquidity preference—Money supply) is a macroeconomic framework that demonstrates the relationship between interest rates and real

output in the goods and services market and the money market. The intersection of the IS and LM curves is the economy's general equilibrium where there is simultaneous equilibrium in both markets.

The IS/LM model was created at the Econometric Conference held in September 1936 in Oxford England. Three economists, John R. Hicks, Roy Harrod, and James Meade presented papers that described mathematical models in an attempt to summarize John Maynard Keynes's book *The General Theory of Employment, Interest, and Money*. Hicks saw a draft of Harrod's paper and invented the IS/LM Model. (Hicks, 1937)

The model is presented as a graph of two intersecting lines in the first quadrant. The horizontal axis represents national income or real gross domestic product and is labeled Y. The vertical axis represents the real interest rate and is labeled I or R. The IS curve summarizes equilibrium in the goods market. It is downward sloping, as we can see in Figure 2.1. This downward slope occurs because as the interest rate falls, investment and net exports increase, thus increasing output. Specifically, a decline in the interest rate below the rate of return on investment causes investors not to invest. A decrease in the interest rate increases investment and net exports. (Casler, n.d.) The LM curve describes equilibrium in the money market. It is upward sloping because higher income results in a higher demand for money, thus resulting in higher interest rates. (Robini & Backus, 1998) Since the determination of GDP depends on the interest rate through investments and since the interest rate depends on GDP through the demand for money, there is a simultaneous relation between the two as reflected in the IS-LM equilibrium.

Figure 2.1: The IS LM Curve



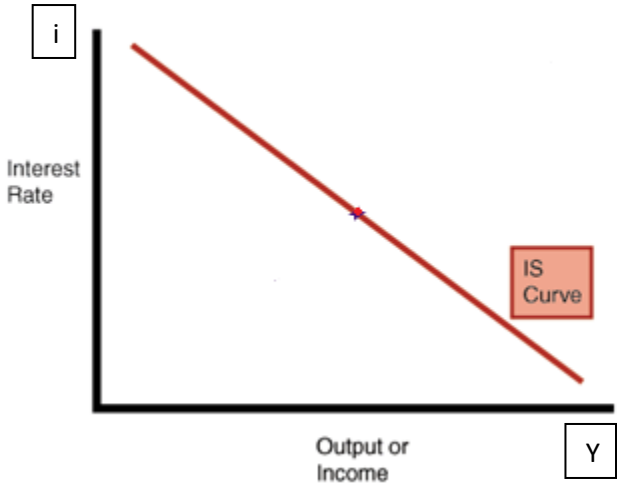
The basic idea of the IS/LM model is that prices are not flexible in the short-run. According to Robini and Backus, prices do not necessarily clear markets in the short-run. In other words, there is inertia in the setting of prices, especially when the economy is operating below full capacity. The rationale of assuming that prices are sticky is that firms and businesses do not change the prices of the goods they sell on a continuous basis. Producers and sellers of many goods change the price at which the goods are sold infrequently. (Robini & Backus, 1998)

2.2.2 IS Curve Formation & Shifts

Hall & Papell state that the IS curve shows all combinations of the interest rate R and income Y that satisfy the income identity, the consumption function, the investment function, and the net export function. It is the set of points in which spending balance occurs. Graphically the IS curve represents the behavior of the commodity market. As seen in Figure 2.2, the IS curve is negatively sloped. When looking at the curve, higher levels of the interest rate coincide

with lower levels of GDP along the curve. As noted previously this downward slope is because an increase in the interest rate reduces investments and net exports. The reduction of investments and net exports causes GDP to fall through the multiplier process. (Hall & Papell, 2005)

Figure 2.2 Negatively Sloped IS Curve



In order to find a specific point on the IS curve, choose an interest rate and calculate the levels of investment and net exports that result. The higher the interest rate is, the lower the level of investments and net exports will be. Once passed through the multiplier one can find out how much GDP is affected.

According to Hall & Papell, the IS curve will shift out given an increase in government spending *G*. Therefore, changes in fiscal policy may affect the IS curve. An increase in government spending increases GDP through the multiplier. As government spending increases, the IS shifts to the right. We can see this shift in Figure 2.3 as the IS curve shifts from IS1 to IS2. If there is a decrease in government spending the opposite can be expected, the IS curve will shift to the left. An increase in autonomous consumption expenditure, net exports and

consumer confidence will also shift the IS curve outward as well as a decrease in taxes. (Hall & Papell, 2005)

2.2.2.1 The Effects of IS Shifts on the Budget Deficit

The government deficit can be defined as

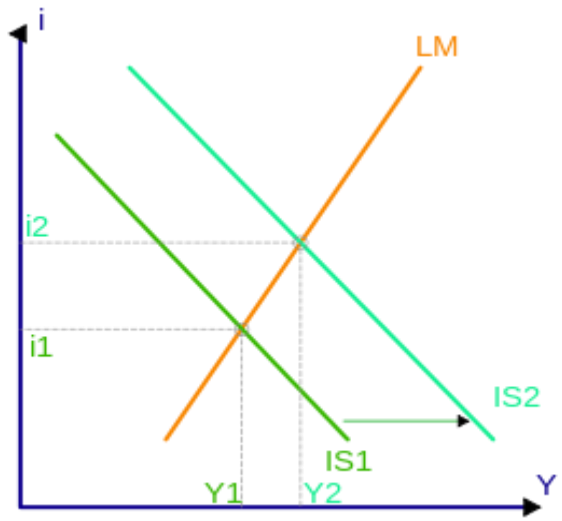
$$Government\ Deficit = G - T - ty$$

Where G is government spending, T is autonomous taxes, t is the proportional tax rate, and y is GDP. Casler states that when government spending, autonomous taxes and the proportional tax rate are held constant, the deficit will decrease when GDP increases. This is the case because the government collects more tax revenues through the proportional income tax, ty. (Casler, n.d.)

According to theory, it is expected that an increase in the government spending will cause the IS curve to shift outward, therefore increasing the interest rate and output. This will cause the federal deficit to decrease if the amount of government spending is less than the additional revenue generated by the proportional tax. If the government's spending is more than the additional revenue created through the proportional tax the federal deficit will increase. Similarly a rise in GDP caused by any other factor that affects the commodity market is expected to cause the federal deficit to decrease.

Specifically, an increase in autonomous consumption due to a rise in consumer wealth or increased confidence is expected to shift the IS curve outward and, in turn, reduce the federal budget deficit. With a rise in consumption we can also expect a rise in GDP, which based on theory is expected to lower the federal budget deficit because tax revenues increase. Similarly an increase in investment due to an increase in investor confidence or a decrease in the price of capital is expected to increase GDP which, based on theory, is expected to lower the federal budget deficit.

Figure 2.3 Shifts in IS Curve



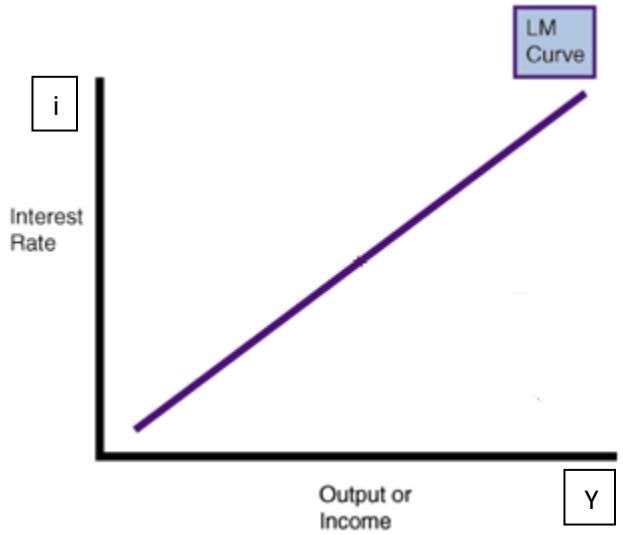
Hall & Papell state that when calculating how much the IS curve shifts, choose an interest rate and find the corresponding value of investment and net exports. After an increase in government spending output increases by the multiplier times the increase in government spending. With the interest rate being held constant the IS curve shifts to the right. (Hall & Papell, 2005)

Depending on its characteristics of behavioral patterns in the economy, the IS curve can be horizontally or positively sloped. Cebula states that for the IS curve to be positively sloped the marginal propensity to invest must be less than the marginal propensity to save and for the IS curve to be horizontal both propensities must be the same. (Cebula, 1987) The slope of the IS curve depends on the tax rate, the marginal propensity to consume, and the marginal propensity to import. The slope can also depend on the sensitivity of investment and net exports to changes in the interest rate.

2.2.3 LM Curve Formation & Shifts

Now that we have discussed the formation and shift factors of the IS curve we move to the LM curve. As Hall and Papell state, the LM curve shows all combinations of the interest rate and income that satisfy the money demand relationship for a fixed level of the money supply and a predetermined value of the price level. That is, all interest rate and output combinations that keeps the money market in equilibrium. As shown in Figure 2.4, higher levels of the interest rate are associated with higher levels of GDP along the curve. (Hall & Papell, 2005)

Figure 2.4 Upward sloping LM Curve



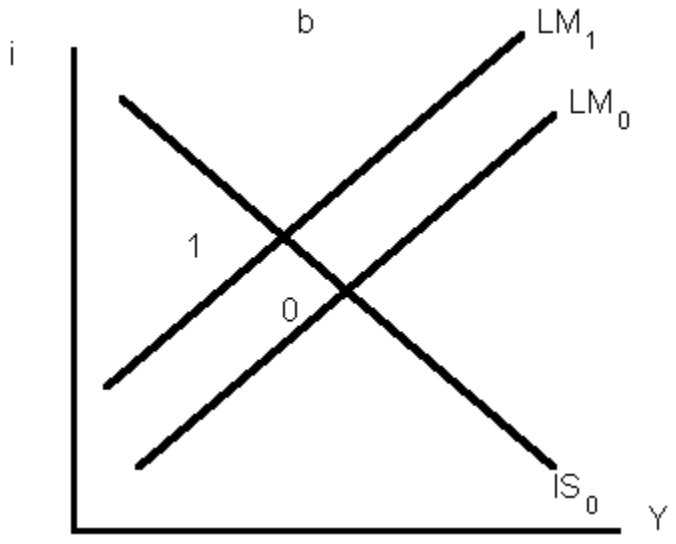
The LM curve has an upward slope because increases in the income are associated with an increase in the interest rate. An increase in the income will increase the demand for money. With the money supply fixed in deriving the LM curve, the interest rate must be adjusted to bring money demand and supply into alignment. A rise in income then increases the demand for money and offsets the any decline in money demand. (Hall & Papell, 2005)

The LM curve shifts to the right with an increase in the money supply. When thinking of the shifts in the LM curve, Hall & Papell state that it is helpful to look back at the concept of real money. Real money can be defined as the money supply *M* divided by the price level *P*. The money demand function can be written in terms of real money by dividing by the price level as seen below.

$$\frac{M = (kY - hR)P}{P} \quad \text{or} \quad M/P = kY - hR$$

M/P represents real money, *R* is the interest rate, and *Y* is output or GDP. The letters *k* and *h* are positive coefficients. The parameter *k* represents how much money demand increases when income increases and *h* measures how much money demand declines when the interest rate increases. (Hall & Papell, 2005) An increase in the money supply will increase the real money supply, *M*/*P*. For the quantity of money demanded to remain equal to the money supply output *Y* must rise or the interest rate *R* must fall.

Figure 2.5 Shifts in LM Curve



A decrease in the money supply will do the opposite and shift the LM curve to the left. Changes in the price level can also shift the LM curve. An increase in the price level reduces the real money supply and will shift the LM curve to the left. A decrease in the interest rate *R* or a decrease in GDP *Y* will also cause the LM curve to shift outwards. We can see these shifts in Figure 2.5.

As stated earlier, an increase in the money supply will cause the LM curve to shift to the right. With this increase we can predict that the federal budget deficit will increase because of this. Similarly a decrease in the money supply will cause the LM curve to shift left and in turn we can predict that the federal budget deficit will decrease due to this decrease.

2.3 Theoretical Expectations

This chapter has presented the basic theoretical foundation for my study of budget deficits and how they are affected by GDP, Government spending, tax policies and other factors throughout the business cycle. It has covered the basics of aggregate supply and demand as well as the IS/LM model. Based on this theory, I can make some predictions about the key variables that affect the budget deficit. I can conclude whether there will be a positive or negative relationship between some independent variables and my dependent variable.

The dependent variable is the federal budget deficit. The main independent variables that make up the IS/LM curve are the interest rate and output/GDP. GDP is comprised of consumption, investment, government spending, and net exports. In turn, all of these variables have an effect on the federal budget deficit.

According to theory and increase in government spending will cause the IS curve to shift outwards. Due to this outward shift output and the interest rate will increase, in turn, this increase in output and the interest rate will cause the federal budget deficit to decrease.

If we look at the theory for net exports we can expect a rise in net exports to cause a decrease in the federal budget deficit. A decrease in the real money supply can be expected to cause the LM curve to shift to the left and in turn increase the federal deficit. Its impact can be captured by the interest rate. This is all consistent with theory. An increase in GDP caused by any factor discussed earlier in the chapter can be expected to decrease the federal deficit.

According to theory, an increase in the interest rate will cause the IS curve to shift out, thus increasing GDP and, in turn, will decrease the federal deficit. An increase in the interest rate can also shift the LM curve to the left, thus decreasing GDP and, in turn, will increase the federal deficit. The interest rate can go either way. If the interest rate is increased, we can expect the deficit to increase due to the shift in the LM curve. Also if there is an increase in the interest rate, in turn, we can expect the deficit to decrease due to the outward shift of the IS curve.

Looking at investment and consumption, we can use the price of housing to determine some of the effects that these variables should have on the federal budget deficit. With an increase in the price of housing we can expect a decrease in the real money supply. With a decrease in the real money supply we can expect the LM curve to shift to the left, in turn, this will cause a decrease in the federal budget deficit. This is all consistent with theory.

The government today is in a very difficult situation with another fiscal cliff quickly approaching. No one is sure if it will be beneficial to keep President Bush's tax cuts or increase taxes overall. According to theory, if taxes are increased we can expect the federal budget deficit

to decrease. Similarly if taxes are decreased we can expect the federal budget deficit to increase. This is only the case if taxes are only increased enough that it will not affect consumer spending. If the increase in taxes is too high, consumers will not purchase goods and that will cause an increase in the federal budget deficit. An increase in taxes can create a decrease in disposable income which leads to a decrease in consumption which in turn decreases GDP. That decrease in GDP could increase the budget deficit. Similarly if price levels increase we can expect the LM curve to shift to the left, and this will increase the federal budget deficit.

All of these variables have an economic relationship with the federal budget deficit. The theory discussed in the chapter allows us to see whether there is a positive or negative relationship. In the next chapter these theories will be tested with an empirical analysis.

Chapter III:
The Federal Budget Deficit: Empirical Analysis

3.0 Introduction

Having discussed the main economic theory behind budget deficits, we can move on to the empirical analysis. The purpose of this study is to examine the federal budget deficit and its determinants. Towards this ends, this chapter presents a regression model that shows the effects of various independent variables on the federal budget deficit. In the sections that follow, a brief overview of regression analysis is provided, along with an explanation of some key statistics that will be useful in the model and how the annual data was gathered. Towards the end of the chapter, an empirical analysis is presented along with interpretations for all variables and statistics. Finally, a conclusion that brings all of the information presented ends the chapter.

3.1 Regression Analysis: An Overview

According to Keller, regression analysis is a statistical technique for estimating and evaluating the average linear relationship between two or more variables. The technique involves developing a mathematical equation for modeling and analyzing several variables. The variable to be forecasted is called the dependent variable and is denoted *D*. Any related variables are called independent variables and are denoted $X_1, X_2, \ldots, X_k$,where the letter *k* is the number of variables. More specifically, regression analysis helps one understand how the typical value of

the dependent variable changes when any one of the independent variables is varied holding all other variables fixed. (Keller, 2011)

Based on the theoretical model from chapter 2, the fundamental form for the regression model in this study appears as.

$$D = a + b_1 rgspendgro + b_2 rtaxgro + b_3 rgdpgrol1 + b_4 rrate + b_5 wealth + b6 dumrec + b_7 strucdum + b_8 presdum + e$$

Where *D* is the dependent variable, the federal deficit as a share of GDP; *a* is the model's intercept, the value of the federal deficit as a share of GDP when all other independent variables are equal to zero. *rgspendgro* is the real government spending growth rate; *rtaxgro* is the real tax growth rate. *rgdpgrol1* is real GDP growth for the previous year. *rrate* is the real interest rate. *wealth* is the growth rate in the real price of housing. *dumrec* is a dummy variable that takes into account whether the economy is in a recession; *strucdum* is a dummy value that takes into account if the economy was in the great moderation; finally, *presdum* is a dummy variable for the presidential party in office at the time. Capturing the effects of factors not explained by the independent variables is the error term, *e*.

3.1.1 Coefficients

The coefficient on *rgspendgro* measures how much the federal budget deficit as a share of GDP is expected to change given a one percentage point increase in the rate of growth in government spending. The coefficient on *rtaxgro* measures how much the federal budget deficit as a share of GDP is expected to change given a one percentage point increase in the rate of growth in real taxes. The coefficient preceding *rgdpgrol1*shows how much the federal budget deficit as a share of GDP is expected to change given a one percent increase in real GDP for the

previous year. The coefficient on *rrate* shows how much the federal budget deficit as a share of GDP is expected to change given a one percentage point increase in the real interest rate. The coefficient on *wealth* shows how the federal budget deficit as a share of GDP is expected to change given a one percentage point increase in the growth rate of the real price of housing. The coefficient *dumrec* shows whether our economy is in a recession, the value of this dummy variable is 1 during a recession and 0 otherwise. *strucdum* shows when we are in the great moderation; the value of this dummy variable is 1 during the great moderation and 0 otherwise. Finally, *presdum* tells us which political party is in the White House, the value of this dummy variable is 1 when a Republican is President and 0 when a Democratic is President.

3.1.2 T-statistics & R^2 values

In regression analysis there are many statistics that can inform us about the statistical significance of a coefficient or the model as a whole. A major one is the t-statistic. According to Keller the t-statistic is a ratio the departure of an estimated parameter from its notional value and its standard error. It measures how many standard deviations from zero the estimated coefficient is. In simpler terms the t-statistic allows researchers to use sample data to test hypotheses about an unknown population mean. It is calculated by dividing the estimated coefficient by its own standard error. The particular advantage of the t-statistic is that the t-statistic does not require any knowledge of the population standard deviation, since it is based on the sample standard deviation. Thus, the t-statistic can be used to test hypotheses about a population in which the population standard deviation is unknown. The t-statistic is used when someone wants to determine the explanatory power of a single variable in the regression model. As a rule of thumb any t-statistic value in a regression that is greater than 2.0 has explanatory power in the

regression and is significant. If it is less than 2.0 the variable is not statistically significant. (Keller, 2011)

Another useful statistic is the R^2 value. The measure R^2 in regression analysis is called the coefficient of determination. Keller states that this coefficient measures the amount of variation in the dependent variable that is explained by the variation in the independent variable. In simpler terms it is used to describe how well a regression line fits in a set of data. R^2 is a number between zero and one. When R^2= 1 there is a perfect relationship between the dependent and independent variables, when R^2 = 0 there is no relation between the dependent and independent variables. An R^2 value that is close to 1 means that there is a good fit of the model. (Keller, 2011)

3.1.3 Gathering Annual Data

According to the theoretical model presented in Chapter 2, the federal budget deficit is a function of GDP growth, the real interest rate, federal receipts and outlays and consumer and investor confidence and consumer wealth which can be based on housing prices. Rising consumer and investor confidence and net exports affect GDP; due to this they are not included explicitly as explanatory variables. Data for real GDP growth, a measure of total revenue, were taken from Table B4 of the *Economic Report of the President*. Data for the nominal interest rate was taken from Table B73 of the *Economic Report of the President* and made real. Data for the real government spending and receipts and the real taxes were taken from Table B78 of the *Economic Report of the President*. Data for housing prices was taken from Table B61 of the *Economic Report of the President.* All dollar-based data have been transformed into real values.

3.2 Empirical Results & Analysis

After establishing the dependent and independent variables and gathering data for them a regression was ran using the variables. I made the federal budget deficit into the federal budget deficit as a share of GDP and took the real GDP growth rate from the previous year because people do not pay their current years taxes until next year. I also created a real government spending growth rate, a real tax growth rate and a wealth variable based on the price of housing. These decisions were made to strengthen the model as a whole. Table 3.0 below shows my results.

Table 3.0 Regression Results

Source	SS	df	MS		
Model	95.9262553	8	11.9907819	Number of obs =	43
Residual	179.383624	34	5.27598895	F(8, 34) =	2.27
				Prob > F =	0.0457
Total	275.30988	42	6.55499714	R-squared =	0.3484
				Adj R-squared =	0.1951
				Root MSE =	2.297

defshare1	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
rgspendgro	.1738862	.1130513	1.54	0.133	-.0558616	.403634
rtaxgro	-.0335143	.0854308	-0.39	0.697	-.2071305	.1401019
rgdpgrol1	-.4053195	.2120904	-1.91	0.064	-.8363391	.0257
rrate	-.00552	.116841	-0.05	0.963	-.2429694	.2319294
wealth	-.3233062	.3105094	-1.04	0.305	-.9543373	.3077248
dumrec	-.3038807	1.072632	-0.28	0.779	-2.483731	1.875969
strucdum	-.2421297	.7885414	-0.31	0.761	-1.844639	1.360379
presdum	-.5088314	.7749799	-0.66	0.516	-2.08378	1.066117
_cons	4.308682	1.046104	4.12	0.000	2.182743	6.434622

```
. reg defshare1 rgspendgro rtaxgro rgdpgrol1 rrate wealth dumrec strucdum presd
> um
```

The dependent and independent variables presented in the regression are as follows; "*defshare1*" represents the variable *D*, the federal budget deficit as a share of GDP; "_cons" represents the variable *a*, the intercept term; "*rgspendgro*" represents the real government spending growth rate; "*rtaxgro"* represents the real tax growth rate. "*rgdpgroL1*" represents real

GDP growth for the previous year; "*rrate*" represents the the real interest rate and "*wealth"* represents the growth rate in the real price of housing.

3.2.1 Interpreting the Coefficients

After running a regression we can see that my intercept term, *a,* is 4.30. This means that the federal budget deficit as a share of GDP is expected to be 4.30 percent with all other explanatory variables equal to zero.

Looking at the independent variables, we can see that they all follow the theoretical expectations in Chapter 2. While interpreting these results, we can conclude that for every one percent increase in the real government spending rate we can expect the federal budget deficit as a share of GDP to increase by .17 percent, holding all other independent variables constant. For every one percentage point increase in real tax growth we can expect the federal budget deficit as a share of GDP to decrease by .033 percent, holding all other independent variables constant. Similarly we can conclude that for every one percent increase in real GDP in the previous year we can expect the federal budget deficit as a share of GDP to decrease by .40 percent, holding all other independent variables constant. We can also conclude that for every one percentage point increase in the real interest rate we expect the federal budget deficit as a share of GDP to increase by .005 percent, holding all other independent variables constant. Finally we can conclude that for every one percent increase in the real price of housing we can expect the federal budget deficit as a share of GDP to decrease by .32 percent, holding all other independent variables constant.

When we look at the dummy variables in my regression we can see different effects. The first dummy variable is represented by "dumrec" in the regression. This shows the effects of a

recession on the federal budget deficit. From the data we can conclude that during recessions the federal budget deficit as a share of GDP will decrease by .30 percent, regardless of the levels of all other variables.

The second dummy variable presented in the regression captures the effects of the structural change of the Great Moderation. The Great Moderation refers to the reduction in volatility of business cycle fluctuations starting in the mid 1980's. This dummy variable is represented by "strucdum" in the regression. We can conclude from the data that during the great moderation the federal budget deficit as a share of GDP is expected to decrease by .024 percent regardless of the levels of all other explanatory variables.

The last dummy variable presented in the regression takes into consideration the political party that is in office at the time. This dummy variable is represented by "presdum" in the regression. Historically the federal budget deficit has been lower under Republican presidents. We can conclude from the data that during times when Republicans are in office the federal budget deficit as a share of GDP is expected to fall by .508 regardless of the level of all other explanatory variables.

3.2.2 Interpreting t-statistics & R^2

The t-statistic for each variable allows us to determine whether it is statistically significant or not. A formal t test for the real interest rate is as follows.

From theory we know the null and alternative hypotheses are

$$H_0: \beta_i = 0$$
$$H_1: \beta_i \neq 0$$

The sign for the alternative hypothesis is not equal to zero because from a theoretical perspective the impact of the real interest rate can go either way (LM shifts out). If the Fed increases the money supply and decreases the interest rate, the economy is stimulated and the deficit will decrease. Also if there is an increase in autonomous consumption or investment, GDP and the interest rate will rise and, in turn, the deficit will decrease (IS shifts out).

The appropriate test statistic is as follows.

$$t = \frac{b_i - \beta_i}{Sb_i} \quad = \quad t = \frac{-.0052}{.1168} \quad = -0.05$$

Since the value of the test statistic is greater than 0, we reject the null hypothesis that the interest rate has no effect on the federal budget deficit.

When looking at the independent variables we can see their t-statistics as follows; *rgspendgro* = 1.54; *rtaxgro* = -0.39; *rgdpgrol1* = -1.91; *rrate* = -0.05; *wealth* = -1.04 *dumrec* = -0.28; *strucdum* = -0.31; *presdum* = -0.66.

The dummy variable for recessions, *dumrec*, is not statistically significant and does not have explanatory power in the model due to the fact that its t-statistic is -0.28 which is below 2.0. The other two dummy variables in the model, *strucdum*, the great moderation dummy variable and *presdum*, the presidential dummy variable both are not statistically significant and do not have explanatory power in the model because there t-statistic values are -0.31 and -0.66 respectively.

The overall models value for R^2 is .3484. This means that 34 percent of the variance in the federal budget deficit as a share of GDP from its mean is explained by all the explanatory variables. Overall the fit of the model could be much better. There is no absolute standard for what is a "good" value. With an R^2 value of almost 40 percent and no independent variables t-

statistics being greater than 2.0 we can conclude that the model has some explanatory power but is not the greatest. Based on the coefficient values alone, if they were all statistically significant the model shows how to evaluate the impact of the explanatory variables on the deficit and the best way to reduce the federal budget deficit.

3.3 Empirical Conclusion

This chapter has explored an overview of regression analysis, some key statistics, and the gathering of data. It also presented an empirical analysis of the federal budget deficit as a share of GDP and its relationship to government spending, taxes, real GDP growth rate for the previous year, the real interest rate and housing price levels. Finally, this chapter analyzed and interpreted the variables and key statistics in the regression model. Looking at the regression results we can see that all of the findings match up with the theoretical analysis presented in Chapter 2.

Chapter IV:
Conclusion and Recommendation

4.1 Conclusion

This study set out to examine the determinants of the federal budget deficit. The goal of the study is to explore how different variables including GDP, government spending, and tax policies over the business cycle affect the federal budget deficit. Over the past three chapters we have explored budget deficits, their importance, some theoretical considerations, and presented an empirical analysis.

The federal budget deficit has been a growing concern for U.S. citizens and poses possible economic problems in the future. With an astronomical national debt, it is necessary for our government to reduce the deficit and balance the budget. If we are not able to reduce or eliminate the deficit our national debt will continue to increase. With President Obama's recent taxpayer relief act we can expect a slight increase in tax revenues and cuts in spending, which, in turn, should lower the deficit. This is a good start to manage the deficit but more still needs to be done.

Throughout the business cycle the U.S. has experienced deficits and surpluses. During times of recession the deficit has historically increased. The most recent recession of 2007 assisted in creating our large deficits of recent times. With record amounts of government spending on defense and healthcare, as well as a decrease in tax revenues due to tax cuts, the U.S. now faces one of the largest budget deficits in history.

To correctly predict the best way to reduce the federal budget deficit we must recall the economic theory behind budget deficits. Many variables come into play when determining the

federal budget deficit. In this study I specifically focus on government spending, taxes, GDP, the interest rate, and investment and consumption. Through the IS LM model presented in Chapter 2 predictions about how changes in the variables would affect the federal budget deficit.

According to theory, the federal budget deficit is expected to increase with an increase in government spending. An increase in GDP is expected to cause the deficit to decrease. Similarly an increase in investment and consumption will cause the deficit to decrease. An increase in the interest rate can cause the federal deficit to both increase and decrease because it shifts both the IS and LM curves simultaneously. Increasing taxes is similar to increasing the interest rate in the sense that it can both increase and decrease the deficit. The increase in taxes can create more government revenues but it can also decrease disposable income and consumption, which, in turn, will lower GDP.

All of these variables have an economic relationship with the federal budget deficit. Some have a positive relationship and others have a negative relationship. Through my empirical analysis I expected the results to show exactly how much a change in each variable will affect the federal budget deficit. Unfortunately the explanatory power of the regression is rather weak and the explanatory variables are not significant. Although the variables in the regression are not significant, the coefficients can still be used to hypothetically evaluate the impact of the explanatory variables on the federal budget deficit.

From the empirical analysis presented in Chapter 3 we are able to hypothetically predict the best way to decrease the deficit. Looking at the results, a one percent increase in real GDP will reduce the deficit as a share of GDP by .40 percent, holding all other independent variables constant. Similarly a one percentage point increase in the real price of housing is expected to decrease the federal budget deficit as a share of GDP by.32 percent, holding all other

independent variables constant. These two independent variables have the greatest effect on the federal budget deficit. The study shows that increasing real GDP is to be the best way to decrease the federal budget deficit. It also shows that more government spending will increase the deficit and an increase in taxes and the interest rate will slightly decrease the federal budget deficit.

4.2 Recommendation

Concluding my research I will recommend that to decrease the federal budget deficit the United States should do everything they can to increase GDP. This can be done by giving incentives and tax breaks to increase investment and consumption. It can also be done by increasing net exports. I will also recommend a decrease in government spending and an increase in taxes. A decrease in government spending will lower the deficit in two ways; it will reduce federal outlays and increase GDP at the same time. An increase in taxes will also decrease the deficit by generating tax revenue. The government must make sure that the tax revenues earned are greater than the disposable income lost by citizens so that consumption is not negatively affected.

The next ten years will test the United States to see whether we can balance the budget and make strides to lower our national debt or whether we will let this severe problem intensify, creating problems that will become harder and harder to solve.

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Appendix A: Table B4, *Economic Report of the President*

TABLE B–4. Percent changes in real gross domestic product, 1963–2011

[Percent change from preceding period; quarterly data at seasonally adjusted annual rates]

Year or quarter	Gross domestic product	Personal consumption expenditures			Gross private domestic investment				Exports and imports of goods and services		Government consumption expenditures and gross investment		
					Nonresidential fixed			Residential fixed					
		Total	Goods	Services	Total	Structures	Equipment and software		Exports	Imports	Total	Federal	State and local
1963	4.4	4.1	4.0	4.2	5.6	1.2	8.4	11.8	7.2	2.7	2.6	0.1	6.0
1964	5.8	6.0	6.0	6.0	11.9	10.4	12.8	5.8	11.8	5.3	2.2	–1.3	6.8
1965	6.4	6.3	7.1	5.5	17.4	15.9	18.3	–2.9	2.8	10.6	3.0	.0	6.7
1966	6.5	5.7	6.3	5.0	12.5	6.8	16.0	–8.9	6.9	14.9	8.8	11.1	6.3
1967	2.5	3.0	2.0	4.1	–1.3	–2.5	–.7	–3.1	2.3	7.3	7.7	10.0	5.1
1968	4.8	5.8	6.2	5.3	4.5	1.4	6.2	13.6	7.9	14.9	3.1	.8	5.9
1969	3.1	3.7	3.1	4.5	7.6	5.4	8.8	3.0	4.8	5.7	–.2	–3.4	3.4
1970	.2	2.3	.8	3.9	–.5	.3	–1.0	–6.0	10.7	4.3	–2.4	–7.4	2.8
1971	3.4	3.8	4.2	3.5	.0	–1.6	1.0	27.4	1.7	5.3	–2.2	–7.7	3.1
1972	5.3	6.1	6.5	5.8	9.2	3.1	12.9	17.8	7.5	11.3	–.7	–4.1	2.2
1973	5.8	5.0	5.2	4.7	14.5	8.2	18.3	–.6	18.9	4.6	–.4	–4.2	2.9
1974	–.6	–.8	–3.6	1.9	.8	–2.2	2.6	–20.6	7.9	–2.3	2.5	.9	3.8
1975	–.2	2.3	.7	3.8	–9.9	–10.5	–9.5	–13.0	–.6	–11.1	2.3	.3	3.7
1976	5.4	5.6	7.0	4.3	4.9	2.4	6.3	23.5	4.4	19.6	.4	.0	.7
1977	4.6	4.2	4.3	4.1	11.3	4.1	15.1	21.5	2.4	10.9	1.1	2.1	.4
1978	5.6	4.4	4.1	4.7	15.0	14.4	15.2	6.3	10.5	8.7	2.9	2.5	3.3
1979	3.1	2.4	1.6	3.1	10.1	12.7	8.7	–3.7	9.9	1.7	1.9	2.4	1.5
1980	–.3	–.4	–2.5	1.5	–.3	5.9	–3.6	–21.2	10.8	–6.6	1.9	4.7	–.1
1981	2.5	1.5	1.2	1.8	5.7	8.0	4.3	–8.0	1.2	2.6	.9	4.8	–2.0
1982	–1.9	1.4	.7	1.9	–3.8	–1.6	–5.2	–18.2	–7.6	–1.3	1.8	3.9	.0
1983	4.5	5.7	6.4	5.2	–1.3	–10.8	5.4	41.4	–2.6	12.6	3.7	6.6	1.2
1984	7.2	5.3	7.2	3.9	17.6	13.9	19.8	14.8	8.2	24.3	3.4	3.1	3.6
1985	4.1	5.2	5.3	5.2	6.6	7.1	6.4	1.6	3.0	6.5	7.0	7.8	6.2
1986	3.5	4.1	5.6	3.0	–2.9	–11.0	1.9	12.3	7.7	8.5	6.1	5.7	6.4
1987	3.2	3.1	1.8	4.0	–.1	–2.9	1.4	2.0	10.8	5.9	2.4	3.6	1.4
1988	4.1	4.0	3.7	4.2	5.2	.7	7.5	–1.0	16.0	3.9	1.3	–1.6	3.7
1989	3.6	2.8	2.5	3.0	5.6	2.0	7.3	–3.0	11.5	4.4	2.7	1.6	3.7
1990	1.9	2.0	.6	3.0	.5	1.5	.0	–8.6	9.0	3.6	3.2	2.0	4.1
1991	–.2	.2	–2.0	1.5	–5.4	–11.1	–2.6	–9.6	6.6	–.2	1.1	–.2	2.1
1992	3.4	3.4	3.2	3.6	3.2	–6.0	7.3	13.8	6.9	7.0	.5	–1.8	2.2
1993	2.9	3.6	4.2	3.2	8.7	–.6	12.5	8.2	3.3	8.6	–.8	–3.9	1.5
1994	4.1	3.8	5.3	3.0	9.2	1.8	11.9	9.7	8.7	11.9	.0	–3.8	2.6
1995	2.5	2.7	3.0	2.5	10.5	6.4	12.0	–3.3	10.1	8.0	.6	–2.7	2.7
1996	3.7	3.5	4.5	2.9	9.3	5.7	10.6	8.0	8.3	8.7	1.0	–1.2	2.3
1997	4.5	3.7	4.8	3.1	12.1	7.3	13.8	1.9	11.9	13.5	1.9	–1.0	3.6
1998	4.4	5.2	6.8	4.4	12.0	5.1	14.5	7.7	2.3	11.7	2.1	–1.1	3.9
1999	4.8	5.5	8.0	4.1	10.4	.1	14.1	6.3	4.4	11.5	3.6	1.9	4.5
2000	4.1	5.1	5.3	5.0	9.8	7.8	10.5	1.0	8.6	13.0	2.0	.5	2.8
2001	1.1	2.7	3.1	2.5	–2.8	–1.5	–3.2	.6	–5.6	–2.8	3.8	4.1	3.7
2002	1.8	2.7	4.1	1.9	–7.9	–17.7	–4.2	5.2	–2.0	3.4	4.7	7.3	3.3
2003	2.5	2.8	4.6	1.9	1.4	–3.8	3.1	8.2	1.6	4.4	2.2	6.6	–.1
2004	3.5	3.3	4.5	2.7	6.2	1.1	7.9	9.8	9.5	11.1	1.4	4.1	–.2
2005	3.1	3.4	4.2	3.0	6.7	1.4	8.5	6.2	6.7	6.1	.3	1.3	–.2
2006	2.7	2.9	3.3	2.6	8.0	9.2	7.6	–7.3	9.0	6.1	1.4	2.1	.9
2007	1.9	2.3	3.0	1.9	6.5	14.1	3.3	–18.7	9.3	2.4	1.3	1.2	1.4
2008	–.3	–.6	–2.5	.4	–.8	6.4	–4.3	–23.9	6.1	–2.7	2.6	7.2	.0
2009	–3.5	–1.9	–3.0	–1.4	–17.8	–21.2	–16.0	–22.2	–9.4	–13.6	1.7	6.0	–.9
2010	3.0	2.0	4.3	.9	4.4	–15.8	14.6	–4.3	11.3	12.5	.7	4.5	–1.8
2011 *p*	1.7	2.2	3.8	1.4	8.6	4.1	10.3	–1.4	6.8	5.0	–2.1	–2.0	–2.3

Appendix B: Table B73, *Economic Report of the President*

TABLE B–73. Bond yields and interest rates, 1940–2011

[Percent per annum]

Year and month	U.S. Treasury securities					Corporate bonds (Moody's)		High-grade municipal bonds (Standard & Poor's)	New-home mortgage yields [4]	Prime rate charged by banks [5]	Discount window (Federal Reserve Bank of New York) [5, 6]		Federal funds rate [7]
	Bills (at auction) [1]		Constant maturities [2]										
	3-month	6-month	3-year	10-year	30-year	Aaa [3]	Baa				Primary credit	Adjustment credit	
1940	0.014	.....	.....	.....	.....	2.84	4.75	2.50	.....	1.50	.....	1.00	.....
1941	.103	.....	.....	.....	.....	2.77	4.33	2.10	.....	1.50	.....	1.00	.....
1942	.326	.....	.....	.....	.....	2.83	4.28	2.36	.....	1.50	.....	[8] 1.00	.....
1943	.373	.....	.....	.....	.....	2.73	3.91	2.06	.....	1.50	.....	[8] 1.00	.....
1944	.375	.....	.....	.....	.....	2.72	3.61	1.86	.....	1.50	.....	[8] 1.00	.....
1945	.375	.....	.....	.....	.....	2.62	3.29	1.67	.....	1.50	.....	[8] 1.00	.....
1946	.375	.....	.....	.....	.....	2.53	3.05	1.64	.....	1.50	.....	[8] 1.00	.....
1947	.594	.....	.....	.....	.....	2.61	3.24	2.01	.....	1.50–1.75	.....	1.00	.....
1948	1.040	.....	.....	.....	.....	2.82	3.47	2.40	.....	1.75–2.00	.....	1.34	.....
1949	1.102	.....	.....	.....	.....	2.66	3.42	2.21	.....	2.00	.....	1.50	.....
1950	1.218	.....	.....	.....	.....	2.62	3.24	1.98	.....	2.07	.....	1.59	.....
1951	1.552	.....	.....	.....	.....	2.86	3.41	2.00	.....	2.56	.....	1.75	.....
1952	1.766	.....	.....	.....	.....	2.96	3.52	2.19	.....	3.00	.....	1.75	.....
1953	1.931	.....	2.47	2.85	.....	3.20	3.74	2.72	.....	3.17	.....	1.99	.....
1954	.953	.....	1.63	2.40	.....	2.90	3.51	2.37	.....	3.05	.....	1.60	.....
1955	1.753	.....	2.47	2.82	.....	3.06	3.53	2.53	.....	3.16	.....	1.89	1.79
1956	2.658	.....	3.19	3.18	.....	3.36	3.88	2.93	.....	3.77	.....	2.77	2.73
1957	3.267	.....	3.98	3.65	.....	3.89	4.71	3.60	.....	4.20	.....	3.12	3.11
1958	1.839	.....	2.84	3.32	.....	3.79	4.73	3.56	.....	3.83	.....	2.15	1.57
1959	3.405	3.832	4.46	4.33	.....	4.38	5.05	3.95	.....	4.48	.....	3.36	3.31
1960	2.93	3.25	3.98	4.12	.....	4.41	5.19	3.73	.....	4.82	.....	3.53	3.21
1961	2.38	2.61	3.54	3.88	.....	4.35	5.08	3.46	.....	4.50	.....	3.00	1.95
1962	2.78	2.91	3.47	3.95	.....	4.33	5.02	3.18	.....	4.50	.....	3.00	2.71
1963	3.16	3.25	3.67	4.00	.....	4.26	4.86	3.23	5.89	4.50	.....	3.23	3.18
1964	3.56	3.69	4.03	4.19	.....	4.40	4.83	3.22	5.83	4.50	.....	3.55	3.50
1965	3.95	4.05	4.22	4.28	.....	4.49	4.87	3.27	5.81	4.54	.....	4.04	4.07
1966	4.88	5.08	5.23	4.93	.....	5.13	5.67	3.82	6.25	5.63	.....	4.50	5.11
1967	4.32	4.63	5.03	5.07	.....	5.51	6.23	3.98	6.46	5.63	.....	4.19	4.22
1968	5.34	5.47	5.68	5.64	.....	6.18	6.94	4.51	6.97	6.31	.....	5.17	5.66
1969	6.68	6.85	7.02	6.67	.....	7.03	7.81	5.81	7.81	7.96	.....	5.87	8.21
1970	6.43	6.53	7.29	7.35	.....	8.04	9.11	6.51	8.45	7.91	.....	5.95	7.17
1971	4.35	4.51	5.66	6.16	.....	7.39	8.56	5.70	7.74	5.73	.....	4.88	4.67
1972	4.07	4.47	5.72	6.21	.....	7.21	8.16	5.27	7.60	5.25	.....	4.50	4.44
1973	7.04	7.18	6.96	6.85	.....	7.44	8.24	5.18	7.96	8.03	.....	6.45	8.74
1974	7.89	7.93	7.84	7.56	.....	8.57	9.50	6.09	8.92	10.81	.....	7.83	10.51
1975	5.84	6.12	7.50	7.99	.....	8.83	10.61	6.89	9.00	7.86	.....	6.25	5.82
1976	4.99	5.27	6.77	7.61	.....	8.43	9.75	6.49	9.00	6.84	.....	5.50	5.05
1977	5.27	5.52	6.68	7.42	7.75	8.02	8.97	5.56	9.02	6.83	.....	5.46	5.54
1978	7.22	7.58	8.29	8.41	8.49	8.73	9.49	5.90	9.56	9.06	.....	7.46	7.94
1979	10.05	10.02	9.70	9.43	9.28	9.63	10.69	6.39	10.78	12.67	.....	10.29	11.20
1980	11.51	11.37	11.51	11.43	11.27	11.94	13.67	8.51	12.66	15.26	.....	11.77	13.35
1981	14.03	13.78	14.46	13.92	13.45	14.17	16.04	11.23	14.70	18.87	.....	13.42	16.39
1982	10.69	11.08	12.93	13.01	12.76	13.79	16.11	11.57	15.14	14.85	.....	11.01	12.24
1983	8.63	8.75	10.45	11.10	11.18	12.04	13.55	9.47	12.57	10.79	.....	8.50	9.09
1984	9.53	9.77	11.92	12.46	12.41	12.71	14.19	10.15	12.38	12.04	.....	8.80	10.23
1985	7.47	7.64	9.64	10.62	10.79	11.37	12.72	9.18	11.55	9.93	.....	7.69	8.10
1986	5.98	6.03	7.06	7.67	7.78	9.02	10.39	7.38	10.17	8.33	.....	6.32	6.80
1987	5.82	6.05	7.68	8.39	8.59	9.38	10.58	7.73	9.31	8.21	.....	5.66	6.66
1988	6.69	6.92	8.26	8.85	8.96	9.71	10.83	7.76	9.19	9.32	.....	6.20	7.57
1989	8.12	8.04	8.55	8.49	8.45	9.26	10.18	7.24	10.13	10.87	.....	6.93	9.21
1990	7.51	7.47	8.26	8.55	8.61	9.32	10.36	7.25	10.05	10.01	.....	6.98	8.10
1991	5.42	5.49	6.82	7.86	8.14	8.77	9.80	6.89	9.32	8.46	.....	5.45	5.69
1992	3.45	3.57	5.30	7.01	7.67	8.14	8.98	6.41	8.24	6.25	.....	3.25	3.52
1993	3.02	3.14	4.44	5.87	6.59	7.22	7.93	5.63	7.20	6.00	.....	3.00	3.02
1994	4.29	4.66	6.27	7.09	7.37	7.96	8.62	6.19	7.49	7.15	.....	3.60	4.21
1995	5.51	5.59	6.25	6.57	6.88	7.59	8.20	5.95	7.87	8.83	.....	5.21	5.83
1996	5.02	5.09	5.99	6.44	6.71	7.37	8.05	5.75	7.80	8.27	.....	5.02	5.30
1997	5.07	5.18	6.10	6.35	6.61	7.26	7.86	5.55	7.71	8.44	.....	5.00	5.46
1998	4.81	4.85	5.14	5.26	5.58	6.53	7.22	5.12	7.07	8.35	.....	4.92	5.35
1999	4.66	4.76	5.49	5.65	5.87	7.04	7.87	5.43	7.04	8.00	.....	4.62	4.97
2000	5.85	5.92	6.22	6.03	5.94	7.62	8.36	5.77	7.52	9.23	.....	5.73	6.24
2001	3.44	3.39	4.09	5.02	5.49	7.08	7.95	5.19	7.00	6.91	.....	3.40	3.88
2002	1.62	1.69	3.10	4.61	5.43	6.49	7.80	5.05	6.43	4.67	.....	1.17	1.67
2003	1.01	1.06	2.10	4.01	.....	5.67	6.77	4.73	5.80	4.12	2.12	.....	1.13
2004	1.38	1.57	2.78	4.27	.....	5.63	6.39	4.63	5.77	4.34	2.34	.....	1.35
2005	3.16	3.40	3.93	4.29	.....	5.24	6.06	4.29	5.94	6.19	4.19	.....	3.22
2006	4.73	4.80	4.77	4.80	4.91	5.59	6.48	4.42	6.63	7.96	5.96	.....	4.97
2007	4.41	4.48	4.35	4.63	4.84	5.56	6.48	4.42	6.41	8.05	5.86	.....	5.02
2008	1.48	1.71	2.24	3.66	4.28	5.63	7.45	4.80	6.05	5.09	2.39	.....	1.92
2009	.16	.29	1.43	3.26	4.08	5.31	7.30	4.64	5.14	3.25	.50	.....	.16
2010	.14	.20	1.11	3.22	4.25	4.94	6.04	4.16	4.80	3.25	.72	.....	.18
2011	.06	.10	.75	2.78	3.91	4.64	5.66	4.29	4.56	3.25	.75	.....	.10

[1] High bill rate at auction, issue date within period, bank-discount basis. On or after October 28, 1998, data are stop yields from uniform-price auctions. Before that date, they are weighted average yields from multiple-price auctions.

Appendix C: Table B78, *Economic Report of the President*

GOVERNMENT FINANCE

TABLE B–78. Federal receipts, outlays, surplus or deficit, and debt, fiscal years, 1945–2013

[Billions of dollars; fiscal years]

Fiscal year or period	Total			On-budget			Off-budget			Federal debt (end of period)		Addendum: Gross domestic product
	Receipts	Outlays	Surplus or deficit (–)	Receipts	Outlays	Surplus or deficit (–)	Receipts	Outlays	Surplus or deficit (–)	Gross Federal	Held by the public	
1945	45.2	92.7	–47.6	43.8	92.6	–48.7	1.3	0.1	1.2	260.1	235.2	221.4
1946	39.3	55.2	–15.9	38.1	55.0	–17.0	1.2	.2	1.0	271.0	241.9	222.6
1947	38.5	34.5	4.0	37.1	34.2	2.9	1.5	.3	1.2	257.1	224.3	233.2
1948	41.6	29.8	11.8	39.9	29.4	10.5	1.6	.4	1.2	252.0	216.3	256.6
1949	39.4	38.8	.6	37.7	38.4	–.7	1.7	.4	1.3	252.6	214.3	271.3
1950	39.4	42.6	–3.1	37.3	42.0	–4.7	2.1	.5	1.6	256.9	219.0	273.1
1951	51.6	45.5	6.1	48.5	44.2	4.3	3.1	1.3	1.8	255.3	214.3	320.2
1952	66.2	67.7	–1.5	62.6	66.0	–3.4	3.6	1.7	1.9	259.1	214.8	348.7
1953	69.6	76.1	–6.5	65.5	73.8	–8.3	4.1	2.3	1.8	266.0	218.4	372.5
1954	69.7	70.9	–1.2	65.1	67.9	–2.8	4.6	2.9	1.7	270.8	224.5	377.0
1955	65.5	68.4	–3.0	60.4	64.5	–4.1	5.1	4.0	1.1	274.4	226.6	395.9
1956	74.6	70.6	3.9	68.2	65.7	2.5	6.4	5.0	1.5	272.7	222.2	427.0
1957	80.0	76.6	3.4	73.2	70.6	2.6	6.8	6.0	.8	272.3	219.3	450.9
1958	79.6	82.4	–2.8	71.6	74.9	–3.3	8.0	7.5	.5	279.7	226.3	460.0
1959	79.2	92.1	–12.8	71.0	83.1	–12.1	8.3	9.0	–.7	287.5	234.7	490.2
1960	92.5	92.2	.3	81.9	81.3	.5	10.6	10.9	–.2	290.5	236.8	518.9
1961	94.4	97.7	–3.3	82.3	86.0	–3.8	12.1	11.7	.4	292.6	238.4	529.9
1962	99.7	106.8	–7.1	87.4	93.3	–5.9	12.3	13.5	–1.3	302.9	248.0	567.8
1963	106.6	111.3	–4.8	92.4	96.4	–4.0	14.2	15.0	–.8	310.3	254.0	599.2
1964	112.6	118.5	–5.9	96.2	102.8	–6.5	16.4	15.7	.6	316.1	256.8	641.5
1965	116.8	118.2	–1.4	100.1	101.7	–1.6	16.7	16.5	.2	322.3	260.8	687.5
1966	130.8	134.5	–3.7	111.7	114.8	–3.1	19.1	19.7	–.6	328.5	263.7	755.8
1967	148.8	157.5	–8.6	124.4	137.0	–12.6	24.4	20.4	4.0	340.4	266.6	810.0
1968	153.0	178.1	–25.2	128.1	155.8	–27.7	24.9	22.3	2.6	368.7	289.5	868.4
1969	186.9	183.6	3.2	157.9	158.4	–.5	29.0	25.2	3.7	365.8	278.1	948.1
1970	192.8	195.6	–2.8	159.3	168.0	–8.7	33.5	27.6	5.9	380.9	283.2	1,012.7
1971	187.1	210.2	–23.0	151.3	177.3	–26.1	35.8	32.8	3.0	408.2	303.0	1,080.0
1972	207.3	230.7	–23.4	167.4	193.5	–26.1	39.9	37.2	2.7	435.9	322.4	1,176.5
1973	230.8	245.7	–14.9	184.7	200.0	–15.2	46.1	45.7	.3	466.3	340.9	1,310.6
1974	263.2	269.4	–6.1	209.3	216.5	–7.2	53.9	52.9	1.1	483.9	343.7	1,438.5
1975	279.1	332.3	–53.2	216.6	270.8	–54.1	62.5	61.6	.9	541.9	394.7	1,560.2
1976	298.1	371.8	–73.7	231.7	301.1	–69.4	66.4	70.7	–4.3	629.0	477.4	1,738.1
Transition quarter	81.2	96.0	–14.7	63.2	77.3	–14.1	18.0	18.7	–.7	643.6	495.5	459.4
1977	355.6	409.2	–53.7	278.7	328.7	–49.9	76.8	80.5	–3.7	706.4	549.1	1,973.5
1978	399.6	458.7	–59.2	314.2	369.6	–55.4	85.4	89.2	–3.8	776.6	607.1	2,217.5
1979	463.3	504.0	–40.7	365.3	404.9	–39.6	98.0	99.1	–1.1	829.5	640.3	2,501.4
1980	517.1	590.9	–73.8	403.9	477.0	–73.1	113.2	113.9	–.7	909.0	711.9	2,724.2
1981	599.3	678.2	–79.0	469.1	543.0	–73.9	130.2	135.3	–5.1	994.8	789.4	3,057.0
1982	617.8	745.7	–128.0	474.3	594.9	–120.6	143.5	150.9	–7.4	1,137.3	924.6	3,223.7
1983	600.6	808.4	–207.8	453.2	660.9	–207.7	147.3	147.4	–.1	1,371.7	1,137.3	3,440.7
1984	666.4	851.8	–185.4	500.4	685.6	–185.3	166.1	166.2	–.1	1,564.6	1,307.0	3,844.4
1985	734.0	946.3	–212.3	547.9	769.4	–221.5	186.2	176.9	9.2	1,817.4	1,507.3	4,146.3
1986	769.2	990.4	–221.2	568.9	806.8	–237.9	200.2	183.5	16.7	2,120.5	1,740.6	4,403.9
1987	854.3	1,004.0	–149.7	640.9	809.2	–168.4	213.4	194.8	18.6	2,346.0	1,889.8	4,651.4
1988	909.2	1,064.4	–155.2	667.7	860.0	–192.3	241.5	204.4	37.1	2,601.1	2,051.6	5,008.5
1989	991.1	1,143.7	–152.6	727.4	932.8	–205.4	263.7	210.9	52.8	2,867.8	2,190.7	5,399.5
1990	1,032.0	1,253.0	–221.0	750.3	1,027.9	–277.6	281.7	225.1	56.6	3,206.3	2,411.6	5,734.5
1991	1,055.0	1,324.2	–269.2	761.1	1,082.5	–321.4	293.9	241.7	52.2	3,598.2	2,689.0	5,930.5
1992	1,091.2	1,381.5	–290.3	788.8	1,129.2	–340.4	302.4	252.3	50.1	4,001.8	2,999.7	6,242.0
1993	1,154.3	1,409.4	–255.1	842.4	1,142.8	–300.4	311.9	266.6	45.3	4,351.0	3,248.4	6,587.3
1994	1,258.6	1,461.8	–203.2	923.5	1,182.4	–258.8	335.0	279.4	55.7	4,643.3	3,433.1	6,976.6
1995	1,351.8	1,515.7	–164.0	1,000.7	1,227.1	–226.4	351.1	288.7	62.4	4,920.6	3,604.4	7,341.1
1996	1,453.1	1,560.5	–107.4	1,085.6	1,259.6	–174.0	367.5	300.9	66.6	5,181.5	3,734.1	7,718.3
1997	1,579.2	1,601.1	–21.9	1,187.2	1,290.5	–103.2	392.0	310.6	81.4	5,369.2	3,772.3	8,211.7
1998	1,721.7	1,652.5	69.3	1,305.9	1,335.9	–29.9	415.8	316.6	99.2	5,478.2	3,721.1	8,663.0
1999	1,827.5	1,701.8	125.6	1,383.0	1,381.1	1.9	444.5	320.8	123.7	5,605.5	3,632.4	9,208.4
2000	2,025.2	1,789.0	236.2	1,544.6	1,458.2	86.4	480.6	330.8	149.8	5,628.7	3,409.8	9,821.0
2001	1,991.1	1,862.8	128.2	1,483.6	1,516.0	–32.4	507.5	346.8	160.7	5,769.9	3,319.6	10,225.3
2002	1,853.1	2,010.9	–157.8	1,337.8	1,655.2	–317.4	515.3	355.7	159.7	6,198.4	3,540.4	10,543.9
2003	1,782.3	2,159.9	–377.6	1,258.5	1,796.9	–538.4	523.8	363.0	160.8	6,760.0	3,913.4	10,980.2
2004	1,880.1	2,292.8	–412.7	1,345.4	1,913.3	–568.0	534.7	379.5	155.2	7,354.7	4,295.5	11,676.0
2005	2,153.6	2,472.0	–318.3	1,576.1	2,069.7	–493.6	577.5	402.2	175.3	7,905.3	4,592.2	12,428.6
2006	2,406.9	2,655.1	–248.2	1,798.5	2,233.0	–434.5	608.4	422.1	186.3	8,451.4	4,829.0	13,206.5
2007	2,568.0	2,728.7	–160.7	1,932.9	2,275.0	–342.2	635.1	453.6	181.5	8,950.7	5,035.1	13,861.4
2008	2,524.0	2,982.5	–458.6	1,865.9	2,507.8	–641.8	658.0	474.8	183.3	9,986.1	5,803.1	14,334.4
2009	2,105.0	3,517.7	–1,412.7	1,451.0	3,000.7	–1,549.7	654.0	517.0	137.0	11,875.9	7,544.7	13,937.5
2010	2,162.7	3,456.2	–1,293.5	1,531.0	2,901.5	–1,370.5	631.7	554.7	77.0	13,528.8	9,018.9	14,359.7
2011	2,303.5	3,603.1	–1,299.6	1,737.7	3,104.5	–1,366.8	565.8	498.6	67.2	14,764.2	10,128.2	14,958.6
2012 (estimates)	2,468.6	3,795.5	–1,326.9	1,896.5	3,290.4	–1,393.9	572.1	505.2	67.0	16,350.9	11,578.1	15,601.5
2013 (estimates)	2,902.0	3,803.4	–901.4	2,224.5	3,169.3	–944.7	677.4	634.1	43.3	17,547.9	12,636.7	16,335.0

Appendix D: Table B61, *Economic Report of the President*

TABLE B–61. Consumer price indexes for selected expenditure classes, 1968–2011

[For all urban consumers; 1982–84=100, except as noted]

Year or month	Food and beverages				Housing						
		Food				Shelter			Fuels and utilities		
										Household energy	
	Total [1]	Total	At home	Away from home	Total [2]	Total [2]	Rent of primary residence	Owners' equivalent rent of residences [3, 4]	Total [2]	Total [2]	Energy Services
1968	36.2	35.3	36.3	32.9	32.0	30.1	43.3	.....	27.4	21.7	23.9
1969	38.1	37.1	38.0	34.9	34.0	32.6	44.7	.....	28.0	22.1	24.3
1970	40.1	39.2	39.9	37.5	36.4	35.5	46.5	.....	29.1	23.1	25.4
1971	41.4	40.4	40.9	39.4	38.0	37.0	48.7	.....	31.1	24.7	27.1
1972	43.1	42.1	42.7	41.0	39.4	38.7	50.4	.....	32.5	25.7	28.5
1973	48.8	48.2	49.7	44.2	41.2	40.5	52.5	.....	34.3	27.5	29.9
1974	55.5	55.1	57.1	49.8	45.8	44.4	55.2	.....	40.7	34.4	34.5
1975	60.2	59.8	61.8	54.5	50.7	48.8	58.0	.....	45.4	39.4	40.1
1976	62.1	61.6	63.1	58.2	53.8	51.5	61.1	.....	49.4	43.3	44.7
1977	65.8	65.5	66.8	62.6	57.4	54.9	64.8	.....	54.7	49.0	50.5
1978	72.2	72.0	73.8	68.3	62.4	60.5	69.3	.....	58.5	53.0	55.0
1979	79.9	79.9	81.8	75.9	70.1	68.9	74.3	.....	64.8	61.3	61.0
1980	86.7	86.8	88.4	83.4	81.1	81.0	80.9	.....	75.4	74.8	71.4
1981	93.5	93.6	94.8	90.9	90.4	90.5	87.9	.....	86.4	87.2	81.9
1982	97.3	97.4	98.1	95.8	96.9	96.9	94.6	.....	94.9	95.6	93.2
1983	99.5	99.4	99.1	100.0	99.5	99.1	100.1	102.5	100.2	100.5	101.5
1984	103.2	103.2	102.8	104.2	103.6	104.0	105.3	107.3	104.8	104.0	105.4
1985	105.6	105.6	104.3	108.3	107.7	109.8	111.8	113.2	106.5	104.5	107.1
1986	109.1	109.0	107.3	112.5	110.9	115.8	118.3	119.4	104.1	99.2	105.7
1987	113.5	113.5	111.9	117.0	114.2	121.3	123.1	124.8	103.0	97.3	103.8
1988	118.2	118.2	116.6	121.8	118.5	127.1	127.8	131.1	104.4	98.0	104.6
1989	124.9	125.1	124.2	127.4	123.0	132.8	132.8	137.4	107.8	100.9	107.5
1990	132.1	132.4	132.3	133.4	128.5	140.0	138.4	144.8	111.6	104.5	109.3
1991	136.8	136.3	135.8	137.9	133.6	146.3	143.3	150.4	115.3	106.7	112.6
1992	138.7	137.9	136.8	140.7	137.5	151.2	146.9	155.5	117.8	108.1	114.8
1993	141.6	140.9	140.1	143.2	141.2	155.7	150.3	160.5	121.3	111.2	118.5
1994	144.9	144.3	144.1	145.7	144.8	160.5	154.0	165.8	122.8	111.7	119.2
1995	148.9	148.4	148.8	149.0	148.5	165.7	157.8	171.3	123.7	111.5	119.2
1996	153.7	153.3	154.3	152.7	152.8	171.0	162.0	176.8	127.5	115.2	122.1
1997	157.7	157.3	158.1	157.0	156.8	176.3	166.7	181.9	130.8	117.9	125.1
1998	161.1	160.7	161.1	161.1	160.4	182.1	172.1	187.8	128.5	113.7	121.2
1999	164.6	164.1	164.2	165.1	163.9	187.3	177.5	192.9	128.8	113.5	120.9
2000	168.4	167.8	167.9	169.0	169.6	193.4	183.9	198.7	137.9	122.8	128.0
2001	173.6	173.1	173.4	173.9	176.4	200.6	192.1	206.3	150.2	135.4	142.4
2002	176.8	176.2	175.6	178.3	180.3	208.1	199.7	214.7	143.6	127.2	134.4
2003	180.5	180.0	179.4	182.1	184.8	213.1	205.5	219.9	154.5	138.2	145.0
2004	186.6	186.2	186.2	187.5	189.5	218.8	211.0	224.9	161.9	144.4	150.6
2005	191.2	190.7	189.8	193.4	195.7	224.4	217.3	230.2	179.0	161.6	166.5
2006	195.7	195.2	193.1	199.4	203.2	232.1	225.1	238.2	194.7	177.1	182.1
2007	203.300	202.916	201.245	206.659	209.586	240.611	234.679	246.235	200.632	181.744	186.262
2008	214.225	214.106	214.125	215.769	216.264	246.666	243.271	252.426	220.018	200.808	202.212
2009	218.249	217.955	215.124	223.272	217.057	249.354	248.812	256.610	210.696	188.113	193.563
2010	219.984	219.625	215.836	226.114	216.256	248.396	249.385	256.584	214.187	189.286	192.886
2011	227.866	227.842	226.201	231.401	219.102	251.646	253.638	259.570	220.367	193.648	194.386