# An Empirical Study of Adjustable Rate Mortgage Indexes with Reference to US Economy

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## ABSTRACT

*Two types of financial contracts are prevailing in the market between lender and borrower, confusing the customers to opt either of them for their advances. Choice of low initial rate is preferred by the borrower who want to match their low cash inflow in initial years to cash outflow in the form of payment of interest and principal. Whereas customer is sure about fix interest rates because installments are known to him and he makes cash arrangements accordingly. Situation is opposite in the case of variable rate mortgages as financial institutions change the rate to interest according to market conditions and mitigate interest rate risk. This paper analyses adjustable rate mortgage with treasury bill, inflation and GDP growth.*

*Keywords: Adjustable Rate Mortgages(ARMs), T-Bill, 1-year constant-maturity Treasury (CMT) securities, 12-month Treasury Average Index (MTA)*

## Introduction

Adjustable-rate mortgages (ARMs) have an interest rate that may change periodically depending on changes in a corresponding financial index that's associated with the loan. When the rate changes, generally, your monthly payment will increase if rates go up and decrease if rates fall.

Most lenders today offer a "hybrid ARM," or "fixed-period ARM," which features an initial fixed interest rate period, typically of 3, 5, 7 or 10 years. After the introductory fixed-rate period expires, the interest rate becomes adjustable for the remainder of the term loan. The overall term for Bank of America hybrid ARM loans is 30 years. These loans are named by the length of time the interest rate remains fixed and how often the interest rate is subject to adjustment thereafter.

For example, in a 5/1 ARM, the "5" stands for a 5-year introductory period in which the interest rate remains fixed. The "1" shows the interest rate is subject to adjustment once per year after the introductory period expires.

## Literature Review-

**Brent W. Ambrose et al.(2005)** extended previous research on traditional 1-year adjustable-rate mortgages by analyzing the performance of 3/27 hybrid instruments. Under this contract innovation, which first appeared in the mid-1990s, note rates are fixed for three years after which they convert to a traditional 1-year adjustment schedule with periodic and lifetime caps. This paper finds that more people pay when the rate is low and default rate increased when payment shifted to adjustable-rate loans.

**Kathleen W. Johnson(2011)** find that demographic and financial characteristics of ARM and FRM(fixed rate mortgage) borrowers are identical but there is difference in use of advances and attitude towards it. find the consumption growth of households with an ARM is more sensitive to past income than the consumption growth of other households, suggesting the ARM borrowers are more likely subject to borrowing constraint that hinder their ability to smooth consumption.

**Jean Goggin of Central Bank Of Ireland(2012)** studied that movement in interest rate charged by financial institutions from the borrower closely followed changes in the ECB's(European Central Bank) policy rate, tracker rate mortgages and short-term wholesale rates until the end of 2008. Then bank's market funding cost increased and this relationship breaks apart. It appears that some lenders with higher mortgage arrears rates and a greater proportion of tracker rate loans on their books exhibit higher variable rates. After controlling for these additional factors, most of the divergence between banks variable rates is explained, but there are some exceptions. There is also some evidence of asymmetric adjustment in rate setting behaviour: that is, rates tend to adjust slowly when they are above the long-run predicted level but more quickly when they are below this level. This asymmetric adjustment behavior appears to increase in the post-2008 period.

**Jonathan Berk of Yale University and Richard Roll of Anderson Graduate School of Management(1988)** made an empirical research to price two typical instruments: an ARM linked to a Treasury interest rate and an ARM linked to a "Cost of Funds" Index. Contractual provisions such as the margin over the index, caps and floors on the ARM's rate or on the monthly prepayment, reset frequency, and the "teaser" rate are examined for their influence on value. The effects of interest rate trend and volatility are also analysed.

**Masaki et al.(2009)** explained the positive psychological factor of acquiring a home behind the choice of adjustable rate mortgages (ARMs) over fixed rate mortgages (FRMs) even when interest rates are historically very low. Prospect theory's

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reflection hypothesis is tested on business professionals to know the other psychological factors responsible for the choice of ARMs.
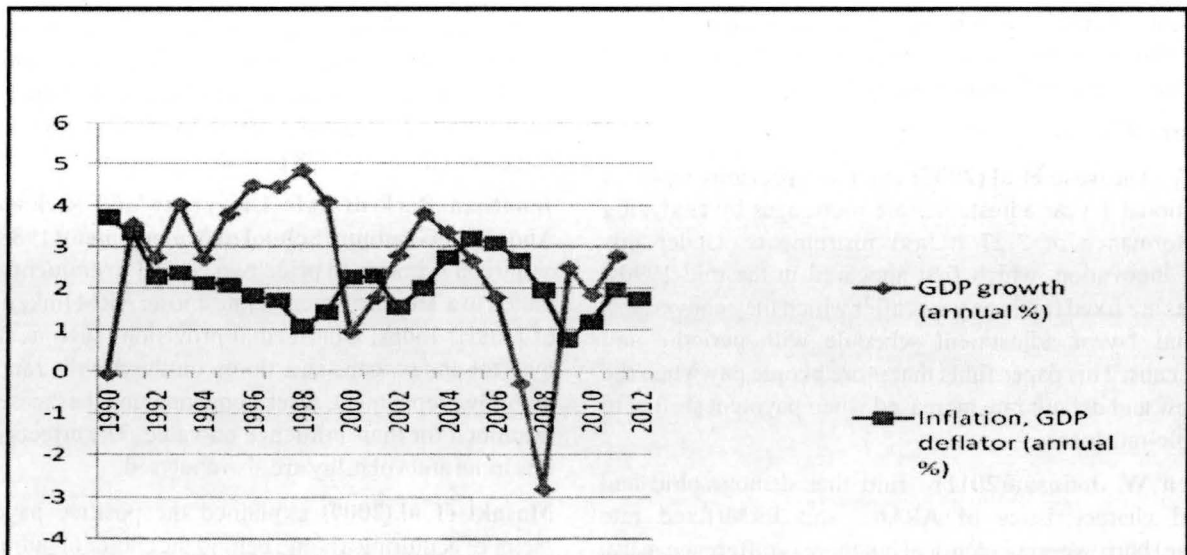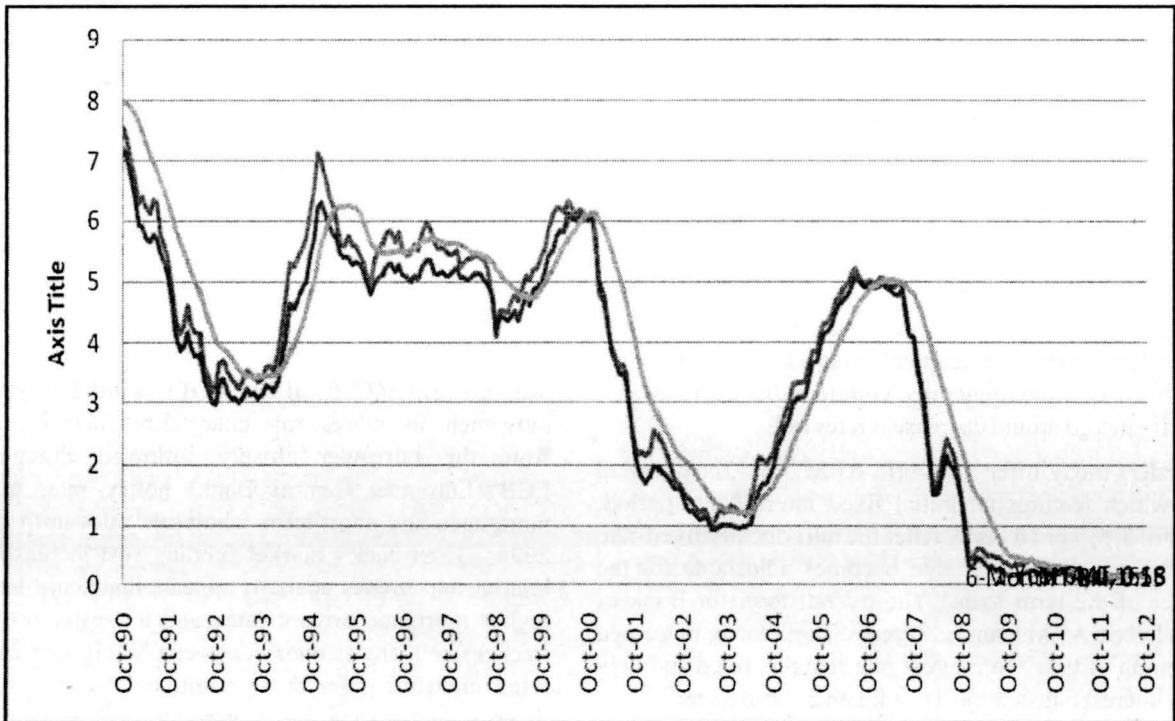
## Hypothesis of the study

**Ho** 1-year CMT, 6 month T-Bill & MTA have positive correlation

**H1** 1-year CMT, 6 month T-Bill & MTA have negative correlation

## ARMs and US Economy

## 1990-1995:

USA's GDP growth was below 2% in 1990 and financial management required lowering of interest rate to boost the world no. 1 economy to sustain competitive advantage. 1-year CMT, 6 month T-Bill & MTA were below 8% with a spread of 0.77%. Level of treasury rates is result of financial environment of any country and indicates the perception & tool of higher authorities to take best out of growth and inflation tradeoff. These ARM(adjustable rate mortgage) indexes reached a low point in April, 1993 along with decrease in inflation and US economy registered growth with a difference of 100 basis points in very next year. So, it show a negative correlation in ARM levels, inflation and growth. In 1995, ARMs started to increase but growth and inflation declined.

## 1996-2000:

US economy experienced a golden period from 1996 to 2000 when growth rate was above 4% was maintained after thirty years( it was only in 1962-1966 when growth above four percent was maintained continuously four years). There were no high fluctuations in ARMs and this kind of constancy helps to stabilize financial environment by boosting the investor's confidence who feel more comfortable in a low ebb and flow phase that help them to manage their own funds better. A moderate inflation is considered good and it was below 2.5% throughout the period and even touches approximately 1% in 1993. 6 month T-Bill rates were below 5% but soon they crossed this level and ended above 6% level in year 2000. 1-year CMT and MTA were close to five percent and showing a correlation with T-Bill as they also augmented.

## 2001-2005:

GDP was only 2.7% in 2003 and T-Bill were around 1% in that year resulting more growth in next two years. GDP was showing zigzag as its growth was more than one percent, then two percent and finally crossed three percent upto 2005. 1-year CMT, 6 month T-Bill & MTA show a positive correlation as these were decreasing and then increased. Inflation also decline and then increased. George W. Bush administration was in favour of reducing the role of government paving the way for more importance to private sector by cutting taxes and promoting free market ideology. Many laws i.e Job Creation and Worker Assistance Act of 2002, the Economic Growth and Tax Relief Reconciliation Act of 2001, and Jobs and Growth Tax Relief Reconciliation Act of 2003 were passed to keep the world no. 1 economy progressing. The extra dose of financial stimuli proved decisive as excess of everything is bad. No one can control an open economy like USA in a uncomplicated manner as financial world has its own dimensions which are tobe managed in phased manner monitoring environmental factors.

## 2006-2012:

Western countries feel one of the worst period in recent times which saw risk of bankruptcy by countries which fail to honour huge external debt. even bigger then some economies, and downgrading of government bonds to junk status by credit rating agencies. US economy started positive growth in 2006, remaining positive and decreasing due to subprime crisis that caused by heavy financing by some of the largest financial institutions without any security to the people having no job, no income and no home, resulting heavy default rate. 6 month T-Bill decrease intermittently along with 1-year CMT & MTA and reached underneath 2% in August, 2008 and 1% in November, 2008. Cricket, indexes and interest rates are said to be unpredictable and there are many occasions to prove it. In the 22-year history 6 month T-Bill touched a new low of 0.05% in December,2011 , a level no one can even imagine five years back, to boost the customer confidence which was lowest in 2008-2009 since 1998 (Federal Reserve Bank of Dallas). Due to financial unstability, demand of goods and service came down en route for softening inflation below 1% in 2009. It was only after 2009 that it recovered remaining between 1% to 2%, upto 2013. All the three indexes under this study were below .02% in October, 2012.

## Conclusion:

Banking regulators pay close attention to asset-liability mismatches to avoid such problems, and place tight restrictions on the amount of long-term fixed-rate mortgages that banks may hold (in relation to their other assets). To reduce this risk, many mortgage originators will sell many of their mortgages, particularly the mortgages with fixed rates.

For the borrower, adjustable rate mortgages may be less expensive, but at the price of bearing higher risk. Many ARMs have "teaser periods", which are relatively short initial fixed-rate periods (typically one month to one year) when the ARM bears an interest rate that is substantially below the "fully indexed" rate. The teaser period may induce some borrowers to view an ARM as more of a bargain than it really represents. A low teaser rate predisposes an ARM to sustain above-average payment increases. Financial products are complex to understand by common person dealing when lending and borrowing funds with financial institutions specially with variable or adjustable interest rates. A few schemes offer interest above the inflation hedging the inflation risk ensuing affirmative real interest rates. Different adjustable rate mortgage index has their own pros and cons. There is positive correlation among 1-year CMT, 6 month T-Bill & MTA but no one directional correlation with GDP growth and inflation. Though inflation and GDP growth show negative correlation

during the study period.

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## Appendix:- 1. Performance of Indexes

| Date | 1-Year CMT | 6 Month T-BILL | MTA | Date | 1-Year CMT | 6 Month T-BILL | MTA |
|------|-----------|----------------|-----|------|-----------|----------------|-----|
| Oct-90 | 7.55 | 7.2 | 7.9767 | Sep-92 | 3.18 | 3.01 | 4.215 |
| Nov-90 | 7.31 | 7.04 | 7.9383 | Oct-92 | 3.3 | 2.98 | 4.0458 |
| Dec-90 | 7.05 | 6.76 | 7.8825 | Nov-92 | 3.68 | 3.35 | 3.945 |
| Jan-91 | 6.64 | 6.34 | 7.7758 | Dec-92 | 3.71 | 3.39 | 3.8892 |
| Feb-91 | 6.27 | 5.93 | 7.6225 | Jan-93 | 3.5 | 3.17 | 3.835 |
| Mar-91 | 6.4 | 5.91 | 7.46 | Feb-93 | 3.39 | 3.08 | 3.76 |
| Apr-91 | 6.24 | 5.73 | 7.28 | Mar-93 | 3.33 | 3.08 | 3.6517 |
| May-91 | 6.13 | 5.65 | 7.0975 | Apr-93 | 3.24 | 3 | 3.5633 |
| Jun-91 | 6.36 | 5.76 | 6.9525 | May-93 | 3.36 | 3.07 | 3.4942 |
| Jul-91 | 6.31 | 5.71 | 6.8167 | Jun-93 | 3.54 | 3.23 | 3.4417 |
| Aug-91 | 5.78 | 5.47 | 6.65 | Jul-93 | 3.47 | 3.15 | 3.4308 |
| Sep-91 | 5.57 | 5.29 | 6.4675 | Aug-93 | 3.44 | 3.17 | 3.4283 |
| Oct-91 | 5.33 | 5.08 | 6.2825 | Sep-93 | 3.36 | 3.06 | 3.4433 |
| Nov-91 | 4.89 | 4.66 | 6.0808 | Oct-93 | 3.39 | 3.13 | 3.4508 |
| Dec-91 | 4.38 | 4.16 | 5.8583 | Nov-93 | 3.58 | 3.27 | 3.4425 |
| Jan-92 | 4.15 | 3.88 | 5.6508 | Dec-93 | 3.61 | 3.25 | 3.4342 |
| Feb-92 | 4.29 | 3.94 | 5.4858 | Jan-94 | 3.54 | 3.19 | 3.4375 |
| Mar-92 | 4.63 | 4.19 | 5.3383 | Feb-94 | 3.87 | 3.38 | 3.4775 |
| Apr-92 | 4.3 | 3.93 | 5.1767 | Mar-94 | 4.32 | 3.79 | 3.56 |
| May-92 | 4.19 | 3.78 | 5.015 | Apr-94 | 4.82 | 4.13 | 3.6917 |
| Jun-92 | 4.17 | 3.81 | 4.8325 | May-94 | 5.31 | 4.64 | 3.8542 |
| Jul-92 | 3.6 | 3.36 | 4.6067 | Jun-94 | 5.27 | 4.58 | 3.9983 |
| Aug-92 | 3.47 | 3.23 | 4.4142 | Jul-94 | 5.48 | 4.81 | 4.1658 |

| Date | 1-Year CMT | 6 Month T-BILL | MTA | Date | 1-Year CMT | 6 Month T-BILL | MTA |
|---|---|---|---|---|---|---|---|
| Aug-94 | 5.56 | 4.91 | 4.3425 | Sep-97 | 5.52 | 5.11 | 5.6292 |
| Sep-94 | 5.76 | 5.02 | 4.5425 | Oct-97 | 5.46 | 5.09 | 5.6217 |
| Oct-94 | 6.11 | 5.39 | 4.7692 | Nov-97 | 5.46 | 5.17 | 5.625 |
| Nov-94 | 6.54 | 5.69 | 5.0158 | Dec-97 | 5.53 | 5.24 | 5.63 |
| Dec-94 | 7.14 | 6.21 | 5.31 | Jan-98 | 5.24 | 5.07 | 5.5992 |
| Jan-95 | 7.05 | 6.31 | 5.6025 | Feb-98 | 5.31 | 5.07 | 5.5808 |
| Feb-95 | 6.7 | 6.1 | 5.8383 | Mar-98 | 5.39 | 5.04 | 5.5467 |
| Mar-95 | 6.43 | 5.91 | 6.0142 | Apr-98 | 5.38 | 5.08 | 5.4958 |
| Apr-95 | 6.27 | 5.8 | 6.135 | May-98 | 5.44 | 5.15 | 5.46 |
| May-95 | 6 | 5.73 | 6.1925 | Jun-98 | 5.41 | 5.12 | 5.4367 |
| Jun-95 | 5.64 | 5.46 | 6.2233 | Jul-98 | 5.36 | 5.03 | 5.4217 |
| Jul-95 | 5.59 | 5.41 | 6.2325 | Aug-98 | 5.21 | 4.97 | 5.3925 |
| Aug-95 | 5.75 | 5.4 | 6.2483 | Sep-98 | 4.71 | 4.75 | 5.325 |
| Sep-95 | 5.62 | 5.28 | 6.2367 | Oct-98 | 4.12 | 4.15 | 5.2133 |
| Oct-95 | 5.59 | 5.34 | 6.1933 | Nov-98 | 4.53 | 4.43 | 5.1358 |
| Nov-95 | 5.43 | 5.29 | 6.1008 | Dec-98 | 4.52 | 4.43 | 5.0517 |
| Dec-95 | 5.31 | 5.15 | 5.9483 | Jan-99 | 4.51 | 4.36 | 4.9908 |
| Jan-96 | 5.09 | 4.97 | 5.785 | Feb-99 | 4.7 | 4.43 | 4.94 |
| Feb-96 | 4.94 | 4.79 | 5.6383 | Mar-99 | 4.78 | 4.52 | 4.8892 |
| Mar-96 | 5.34 | 4.96 | 5.5475 | Apr-99 | 4.69 | 4.36 | 4.8317 |
| Apr-96 | 5.54 | 5.08 | 5.4867 | May-99 | 4.85 | 4.55 | 4.7825 |
| May-96 | 5.64 | 5.12 | 5.4567 | Jun-99 | 5.1 | 4.81 | 4.7567 |
| Jun-96 | 5.81 | 5.26 | 5.4708 | Jul-99 | 5.03 | 4.62 | 4.7292 |
| Jul-96 | 5.85 | 5.32 | 5.4925 | Aug-99 | 5.2 | 4.88 | 4.7283 |
| Aug-96 | 5.67 | 5.17 | 5.4858 | Sep-99 | 5.25 | 4.91 | 4.7733 |
| Sep-96 | 5.83 | 5.29 | 5.5033 | Oct-99 | 5.43 | 4.98 | 4.8825 |
| Oct-96 | 5.55 | 5.12 | 5.5 | Nov-99 | 5.55 | 5.17 | 4.9675 |
| Nov-96 | 5.42 | 5.07 | 5.4992 | Dec-99 | 5.84 | 5.43 | 5.0775 |
| Dec-96 | 5.47 | 5.02 | 5.5125 | Jan-00 | 6.12 | 5.52 | 5.2117 |
| Jan-97 | 5.61 | 5.11 | 5.5558 | Feb-00 | 6.22 | 5.75 | 5.3383 |
| Feb-97 | 5.53 | 5.05 | 5.605 | Mar-00 | 6.22 | 5.85 | 5.4583 |
| Mar-97 | 5.8 | 5.24 | 5.6433 | Apr-00 | 6.15 | 5.82 | 5.58 |
| Apr-97 | 5.99 | 5.35 | 5.6808 | May-00 | 6.33 | 6.12 | 5.7033 |
| May-97 | 5.87 | 5.35 | 5.7 | Jun-00 | 6.17 | 6.02 | 5.7925 |
| Jun-97 | 5.69 | 5.14 | 5.69 | Jul-00 | 6.08 | 5.9 | 5.88 |
| Jul-97 | 5.54 | 5.12 | 5.6642 | Aug-00 | 6.18 | 6.09 | 5.9617 |
| Aug-97 | 5.56 | 5.17 | 5.655 | Sep-00 | 6.13 | 69 | 6.035 |

| Date | 1-Year CMT | 6 Month T-BILL | MTA | Date | 1-Year CMT | 6 Month T-BILL | MTA |
|---|---|---|---|---|---|---|---|
| Oct-00 | 6.01 | 6.04 | 6.0833 | Nov-03 | 1.34 | 1.02 | 1.2558 |
| Nov-00 | 6.09 | 6.08 | 6.1283 | Dec-03 | 1.31 | 1 | 1.2442 |
| Dec-00 | 5.6 | 5.77 | 6.1083 | Jan-04 | 1.24 | 0.98 | 1.2342 |
| Jan-01 | 4.81 | 5 | 5.9992 | Feb-04 | 1.24 | 0.99 | 1.2292 |
| Feb-01 | 4.68 | 4.78 | 5.8708 | Mar-04 | 1.19 | 0.99 | 1.225 |
| Mar-01 | 4.3 | 4.36 | 5.7108 | Apr-04 | 1.43 | 1.06 | 1.2383 |
| Apr-01 | 3.98 | 3.89 | 5.53 | May-04 | 1.78 | 1.31 | 1.2883 |
| May-01 | 3.78 | 3.69 | 5.3175 | Jun-04 | 2.12 | 1.58 | 1.3808 |
| Jun-01 | 3.58 | 3.46 | 5.1017 | Jul-04 | 2.1 | 1.69 | 1.4625 |
| Jul-01 | 3.62 | 3.48 | 4.8967 | Aug-04 | 2.02 | 1.72 | 1.5217 |
| Aug-01 | 3.47 | 3.31 | 4.6708 | Sep-04 | 2.12 | 1.84 | 1.595 |
| Sep-01 | 2.82 | 2.84 | 4.395 | Oct-04 | 2.23 | 1.99 | 1.6767 |
| Oct-01 | 2.33 | 2.19 | 4.0883 | Nov-04 | 2.5 | 2.28 | 1.7733 |
| Nov-01 | 2.18 | 1.94 | 3.7625 | Dec-04 | 2.67 | 2.45 | 1.8867 |
| Dec-01 | 2.22 | 1.81 | 3.4808 | Jan-05 | 2.86 | 2.6 | 2.0217 |
| Jan-02 | 2.16 | 1.72 | 3.26 | Feb-05 | 3.03 | 2.76 | 2.1708 |
| Feb-02 | 2.23 | 1.83 | 3.0558 | Mar-05 | 3.3 | 2.98 | 2.3467 |
| Mar-02 | 2.57 | 1.99 | 2.9117 | Apr-05 | 3.32 | 3.07 | 2.5042 |
| Apr-02 | 2.48 | 1.97 | 2.7867 | May-05 | 3.33 | 3.1 | 2.6333 |
| May-02 | 2.35 | 1.88 | 2.6675 | Jun-05 | 3.36 | 3.11 | 2.7367 |
| Jun-02 | 2.2 | 1.83 | 2.5525 | Jul-05 | 3.64 | 3.37 | 2.865 |
| Jul-02 | 1.96 | 1.71 | 2.4142 | Aug-05 | 3.87 | 3.67 | 3.0192 |
| Aug-02 | 1.76 | 1.62 | 2.2717 | Sep-05 | 3.85 | 3.68 | 3.1633 |
| Sep-02 | 1.72 | 1.61 | 2.18 | Oct-05 | 4.18 | 3.98 | 3.3258 |
| Oct-02 | 1.65 | 1.58 | 2.1233 | Nov-05 | 4.33 | 4.16 | 3.4783 |
| Nov-02 | 1.49 | 1.33 | 2.0658 | Dec-05 | 4.35 | 4.19 | 3.6183 |
| Dec-02 | 1.45 | 1.26 | 2.0017 | Jan-06 | 4.45 | 4.3 | 3.7508 |
| Jan-03 | 1.36 | 1.26 | 1.935 | Feb-06 | 4.68 | 4.51 | 3.8883 |
| Feb-03 | 1.3 | 1.18 | 1.8575 | Mar-06 | 4.77 | 4.61 | 4.0108 |
| Mar-03 | 1.24 | 1.12 | 1.7467 | Apr-06 | 4.9 | 4.72 | 4.1425 |
| Apr-03 | 1.27 | 1.15 | 1.6458 | May-06 | 5 | 4.81 | 4.2817 |
| May-03 | 1.18 | 1.09 | 1.5483 | Jun-06 | 5.16 | 4.95 | 4.4317 |
| Jun-03 | 1.01 | 0.94 | 1.4492 | Jul-06 | 5.22 | 5.09 | 4.5633 |
| Jul-03 | 1.12 | 0.94 | 1.3792 | Aug-06 | 5.08 | 5 | 4.6642 |
| Aug-03 | 1.31 | 1.02 | 1.3417 | Sep-06 | 4.97 | 4.91 | 4.7575 |
| Sep-03 | 1.24 | 1.02 | 1.3017 | Oct-06 | 5.01 | 4.91 | 4.8267 |
| Oct-03 | 1.25 | 1.01 | 1.2683 | Nov-06 | 5.01 | 4.96 | 4.8833 |

| Date | 1-Year CMT | 6 Month T-BILL | MTA | Date | 1-Year CMT | 6 Month T-BILL | MTA |
|------|------------|----------------|-----|------|------------|----------------|-----|
| Dec-06 | 4.94 | 4.89 | 4.9325 | Dec-09 | 0.37 | 0.16 | 0.4708 |
| Jan-07 | 5.06 | 4.94 | 4.9833 | Jan-10 | 0.35 | 0.16 | 0.4633 |
| Feb-07 | 5.05 | 4.97 | 5.0142 | Feb-10 | 0.35 | 0.18 | 0.4408 |
| Mar-07 | 4.92 | 4.9 | 5.0267 | Mar-10 | 0.4 | 0.22 | 0.4208 |
| Apr-07 | 4.93 | 4.87 | 5.0292 | Apr-10 | 0.45 | 0.24 | 0.4125 |
| May-07 | 4.91 | 4.8 | 5.0217 | May-10 | 0.37 | 0.23 | 0.4017 |
| Jun-07 | 4.96 | 4.78 | 5.005 | Jun-10 | 0.32 | 0.19 | 0.3858 |
| Jul-07 | 4.96 | 4.86 | 4.9833 | Jul-10 | 0.29 | 0.21 | 0.37 |
| Aug-07 | 4.47 | 4.56 | 4.9325 | Aug-10 | 0.26 | 0.19 | 0.3533 |
| Sep-07 | 4.14 | 4.13 | 4.8633 | Sep-10 | 0.26 | 0.19 | 0.3417 |
| Oct-07 | 4.1 | 4.08 | 4.7875 | Oct-10 | 0.23 | 0.18 | 0.33 |
| Nov-07 | 3.5 | 3.63 | 4.6617 | Nov-10 | 0.25 | 0.18 | 0.325 |
| Dec-07 | 3.26 | 3.29 | 4.5217 | Dec-10 | 0.29 | 0.2 | 0.3183 |
| Jan-08 | 2.71 | 2.98 | 4.3258 | Jan-11 | 0.27 | 0.19 | 0.3117 |
| Feb-08 | 2.05 | 2.13 | 4.0758 | Feb-11 | 0.29 | 0.17 | 0.3067 |
| Mar-08 | 1.54 | 1.53 | 3.7942 | Mar-11 | 0.26 | 0.16 | 0.295 |
| Apr-08 | 1.74 | 1.54 | 3.5283 | Apr-11 | 0.25 | 0.13 | 0.2783 |
| May-08 | 2.06 | 1.82 | 3.2908 | May-11 | 0.19 | 0.09 | 0.2633 |
| Jun-08 | 2.42 | 2.15 | 3.0792 | Jun-11 | 0.18 | 0.11 | 0.2517 |
| Jul-08 | 2.28 | 2.02 | 2.8558 | Jul-11 | 0.19 | 0.08 | 0.2433 |
| Aug-08 | 2.18 | 1.95 | 2.665 | Aug-11 | 0.11 | 0.09 | 0.2308 |
| Sep-08 | 1.91 | 1.78 | 2.4792 | Sep-11 | 0.1 | 0.05 | 0.2175 |
| Oct-08 | 1.42 | 1.39 | 2.2558 | Oct-11 | 0.11 | 0.06 | 0.2075 |
| Nov-08 | 1.07 | 0.78 | 2.0533 | Nov-11 | 0.11 | 0.05 | 0.1958 |
| Dec-08 | 0.49 | 0.32 | 1.8225 | Dec-11 | 0.12 | 0.05 | 0.1817 |
| Jan-09 | 0.44 | 0.31 | 1.6333 | Jan-12 | 0.12 | 0.06 | 0.1692 |
| Feb-09 | 0.62 | 0.46 | 1.5142 | Jan-12 | 0.12 | 0.06 | 0.1692 |
| Mar-09 | 0.64 | 0.44 | 1.4392 | Feb-12 | 0.16 | 0.11 | 0.1583 |
| Apr-09 | 0.55 | 0.38 | 1.34 | Mar-12 | 0.19 | 0.15 | 0.1525 |
| May-09 | 0.5 | 0.31 | 1.21 | Apr-12 | 0.18 | 0.14 | 0.1467 |
| Jun-09 | 0.51 | 0.32 | 1.0508 | May-12 | 0.19 | 0.15 | 0.1467 |
| Jul-09 | 0.48 | 0.23 | 0.9008 | Jun-12 | 0.19 | 0.14 | 0.1475 |
| Aug-09 | 0.46 | 0.28 | 0.7575 | Jul-12 | 0.19 | 0.15 | 0.1475 |
| Sep-09 | 0.4 | 0.22 | 0.6317 | Aug-12 | 0.18 | 0.15 | 0.1533 |
| Oct-09 | 0.37 | 0.17 | 0.5442 | Sep-12 | 0.18 | 0.14 | 0.16 |
| Nov-09 | 0.31 | 0.16 | 0.4808 | Oct-12 | 0.18 | 0.15 | 0.1658 |

## 2. GDP & Inflation

| Country Name | Indicator Name | Indicator Code | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| United States | GDP growth (annual %) | NY.GDP.MKTP.KD.ZG | 1.92 | -0.1 | 3.56 | 2.75 | 4.04 | 2.72 | 3.8 | 4.49 | 4.45 | 4.85 | 4.09 |
| United States | Inflation, GDP deflator (annual %) | NY.GDP.DEFL.KD.ZG | 3.7 | 3.33 | 2.28 | 2.38 | 2.13 | 2.09 | 1.83 | 1.71 | 1.08 | 1.43 | 2.27 |

| Country Name | Indicator Name | Indicator Code | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| United States | GDP growth (annual %) | NY.GDP.MKTP.KD.ZG | 1.78 | 2.79 | 3.8 | 3.35 | 2.67 | 1.79 | -0.3 | -2.8 | 2.51 | 1.85 | 2.78 |
| United States | Inflation, GDP deflator (annual %) | NY.GDP.DEFL.KD.ZG | 1.54 | 2 | 2.74 | 3.21 | 3.07 | 2.65 | 1.95 | 0.77 | 1.21 | 1.96 | 1.75 |