



# COLBY ECONOMIC OUTLOOK

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## ECONOMIC PROJECTIONS FOR THE U.S. & MAINE ECONOMIES

This year's CEO was produced during a time of economic and political uncertainty unparalleled in this century. The nation's longest period of economic expansion seems to be at a crucial turning point, the outcome of last November's election is still uncertain, and the financial markets are still reeling from a dramatic turnabout in the fortunes of "dot.com" companies. In the midst of all this uncertainty the CEO takes a look at several key sectors of the economy and provides our take on the short-term outlook.

The CEO is produced by the senior seminar in economic forecasting at Colby College under the direction of Michael Donihue, Associate Professor of Economics. In this seminar, students learn a variety of forecasting methods and apply their skills to a variety of real-world data series. The CEO represents the culmination of their efforts.

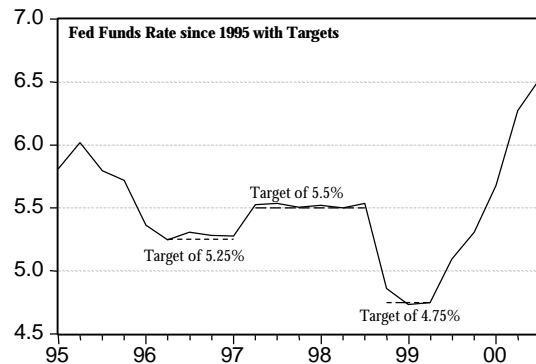
### FED POLICY AT A CRITICAL ECONOMIC JUNCTURE

BY TOM SAVAGE, MICHAEL NATENSHON, &  
JON GONTHIER

Tumbling stock markets, political uncertainty, and a slew of economic indicators heading south are making Fed Chairman Greenspan's job increasingly difficult. For the first time in nearly a decade we are

hearing whispers of recession. Consumer sentiment is down, jobless claims are up, and GDP growth for the third quarter is 2.4%, nearly one point lower than its level the previous year. The question now is whether or not Mr. Greenspan can fend off a recession and bring our economy down with a soft landing?

His greatest weapon against slow growth and inflation are interest rates. Through open market



operations the Fed Chairman and the FOMC can indirectly control interest rates. If the economy is growing too fast the Fed can raise interest rates to control inflation. On the other hand, the Fed can jumpstart a stalling economy by lowering rates and stimulating investment. The current target for the Fed Funds Rate, the inter-bank rate charged for overnight loans, is 6.5%. This has been the target since June of 2000. Prior to that, interest rates have been steadily increasing since January 1999. The increases were in response to extremely high GDP growth and inflationary fears. Rates have remained the same for the last four months because of uncertainty about future growth and because we are feeling the lagged effects of prior rate hikes.

The Fed Funds reaction model we used to determine our forecast is dependent on a few different variables. We included a lagged value of the Fed Funds Rate to show momentum in

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Edited by Melinda Mraz

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monetary policy. The discount rate, the rate the Federal Reserve charges banks for overnight loans, is also included as a monetary policy lever. There are two reasons behind this: first, the discount rate is a tool that the FOMC uses in setting their monetary policy; second, the discount rate is in part determined by the Fed Funds Rate, so it serves as a secondary measure of momentum for the dependent variable. In forecasting this variable for our baseline forecast, we assumed a constant rate of 6%. The next variable we used is the non-farm GDP price deflator, which is a measure of inflation. Recent data have shown a sizeable pickup in prices, raising the possibility of future interest rate hikes. The forecast for this variable comes from Ben Schreiner's model of inflation, which calls for a moderate increase in inflation over the next two years. Finally, our measure of economic growth is determined by a lagged ratio of the change in real GDP to potential GDP. Over the previous 6 quarters we have seen growth in this variable, indicating that we are currently operating above potential. This trend however, may end as we are beginning to see more and more signs of a slowing economy. Our forecast calls for a decrease in this ratio, which indicates that the rate of growth of GDP will move closer to the rate of growth in potential GDP.

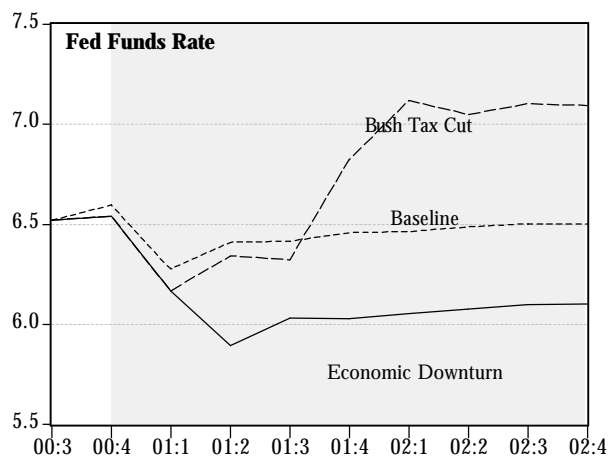
#### BASELINE FORECAST

Because we are at a critical economic juncture, our forecast has three different scenarios that the Fed might have to respond to when conducting its open market operations. First, our baseline

Quarter	Fed Funds Rate
2000:4	6.60
2001:1	6.28
2001:2	6.41
2001:3	6.42
2001:4	6.46
2002:1	6.46
2002:2	6.49
2002:3	6.50
2002:4	6.50

forecast takes into account Mr. Greenspan's statements on December 5, 2000, where he hinted the Fed may have to cut rates next quarter in order to avert an economic slowdown. Inflation does not seem to be as big of a worry for Mr. Greenspan anymore, and Ben Schreiner's forecast (see "A Reincarnation of the Phillips Curve") only predicts slight increases in inflation over the next two years. Our Fed Funds model builds Mr. Greenspan's

assumptions into the model by cutting the discount rate in the first quarter of 2001. As a result, the Fed Funds rate falls from its 4<sup>th</sup> quarter 2000 level of 6.6% to 6.28%. After this cut in the Fed Funds rate, our model predicts that the Fed will have to slowly tighten interest rates again over the remaining seven quarters back to our current Fed Funds Rate of 6.5%. However, our forecast contains two other possible scenarios that may be played out.



#### ECONOMIC DOWNTURN

If Greenspan is unable to softly land the economy and it instead "crashes", he may have to decrease rates even further than we are predicting in our baseline forecast. Thus, should the economy crash within the next two quarters, we forecast that the Fed Funds rate will fall from 6.54% in 4<sup>th</sup> quarter 2000 to 5.89% by 2<sup>nd</sup> quarter 2001 in order to foster increased investment and economic growth.

The Economic downturn is built into our model by decreasing the Discount Rate by 25 basis points in each of the first two quarters of 2001. After the initial decrease in the Fed Funds Rate, we feel that the Fed may have to pull the economy back slightly and raise the Fed Funds Rate so that it is at 6.10% in 4<sup>th</sup> quarter 2002.

Quarter	FF Rate w/ Downturn
2000:4	6.54
2001:1	6.17
2001:2	5.89
2001:3	6.03
2002:4	6.10

#### BUSH TAX CUT

In our final scenario, we suppose that George W. Bush becomes President in January. We also assume that he is able to pass through Congress this

summer one of the major proposals in his campaign, an across-the-board tax cut for all Americans. If this were to occur, the tax cut would go into effect next fall. The Fed, knowing that this tax cut may fuel another economic expansion, will want to take steps to curb inflation fears in a booming economy. In order to do this the Fed will have to raise interest rates. Because the tax cut would not occur until fall 2001 and the Fed will presumably want to be proactive and curb inflation before it occurs, we modify our baseline forecast to include a rise in the Discount Rate in the 4<sup>th</sup> quarter of 2001 by 25 basis points. Thus, our model including a Bush Tax cut shows a decrease in the Fed Funds Rate to 6.17% in the 1<sup>st</sup> quarter of 2001, and then an increase in the Fed Funds Rate to 6.82 % in the 4<sup>th</sup> quarter of next year. Then, over 2002, the model predicts that further tightening of approximately 25 basis points will occur so that the Fed Funds rate will be 7.09% at year-end.

Quarter	FF Rate w/Bush Tax Cut
2000:4	6.54
2001:1	6.17
2001:2	6.34
2001:4	6.82
2002:4	7.09

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## THE REINCARNATION OF THE PHILLIPS CURVE

BY BENJAMIN SCHREINER

### THEORY BEHIND THE CURVE

In 1958 A.W. Phillips found that a relationship existed between unemployment and inflation; his findings formed what is today known as the Phillips Curve. The theory on which this curve is based states that lower levels of unemployment give employees higher bargaining power over their employers due to the fact that finding an acceptable replacement is more difficult. In response to this higher bargaining power, employees tend to obtain raises, and thus nominal wages increase. For firms to pay these higher wages they must increase the nominal price of their goods, and so general prices in the economy must increase. This sustained rise in the general price level is defined as inflation; therefore lower rates of unemployment lead to increased inflation. In addition, it is believed that there is a certain level of unemployment: the natural rate of unemployment, at which actual prices equal expected prices, and thus inflation remains constant. Any point of unemployment below this causes for

increased inflation, and any point above it causes for decreased inflation.

### WHAT HAS HAPPENED TO THE CURVE?

For several years a debate has been raging over the current justification of the curve. At the beginning of the 1990s the natural rate was thought to be 6%. Between 1992 and 2000 levels of unemployment in our country dropped to historical lows of about 4% and inflation fluctuated with an average of 1.7% instead of increasing, as we would expect with such a low level of unemployment. The Phillips relationship no longer seemed to exist. So what could have contributed to this discrepancy? Some say that our economy has changed in such a way that high growth is no longer synonymous with inflation. A few economists at the Federal Reserve have said otherwise. Robert Rich and Donald Rissmiller believe that the Phillips Curve still exists, only certain supply side shocks have caused it to shift, and thus the natural rate of unemployment must now be much lower than 6%.

In order to test this theory and to form a forecast for future levels of inflation, I developed a model to explain the factors associated with inflation. The model's foundation is based on the underlying theory of the Phillips Curve. Therefore if the variables included in the model explain inflation, it can be assumed that the Phillips Curve still exists. This model uses lagged values of inflation because the Phillips Curve is based on the fact that expected prices cause inflation, and expected prices are based on past prices.

The model also includes the rate of unemployment to show the Phillips relationship and two variables that are used to explain supply shocks. The first of these is the rate of growth of productivity, if the productivity of a worker is to increase, then a firm will not necessarily need to increase prices to offset the increased wages caused by decreased unemployment. The second supply shock variable considers the change of import prices relative to the change of domestic prices. The use of this variable is based on the idea that a decrease in foreign prices could cause domestic producers to lower their prices to remain competitive.

### PROOF OF THE RETURN

All of these variables were found to be statistically significant in explaining inflation, thus changes in these variables would cause for a change in inflation. Interestingly enough, from 1992 to

2000 import prices were extremely low relative to domestic prices; as a result no incentive existed for domestic producers to raise prices. These extremely low prices would be considered a supply shock because they are seen as an increase in overall supply in the economy. In addition to this, during the same period the rate of growth of productivity was extremely high, this mainly being a result of changes in technology. This increase in productivity also acted as a supply side shock. What this means is that the Phillips Curve has not died, the natural rate of unemployment has decreased simply as a result of supply side shocks.

#### **FORECAST OF INFLATION**

In order to forecast the levels of inflation it was necessary to forecast the variables being used to explain inflation. A slight increase for unemployment has been forecasted over the next two years, but unemployment rates should still hover around 4%. The forecast for productivity is based on the idea that the rate of growth of productivity will continue to buffer against inflation, but that this growth will not be as high as it has been for the past two years. The difference between domestic and import prices will shrink based on the idea that import prices will remain constant over the next few years, but domestic prices will increase at a quarterly rate of 2%. Taking these variables into account, an increase from an actual inflation rate of 1.7% in third quarter 2000 to 3.4% in fourth quarter 2002 has been forecasted.

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## **THE MAINE OUTLOOK**

BY SCOTT BIXBY & BETH MOLONEY

#### **RIDING THE WAVE OF ECONOMIC PROSPERITY**

In a state inhabited by just over 1.2 million people and occupying a space nearly the size of the other five New England states combined, the state of Maine has entered an era of opportunity and challenge. Historically, Maine's economic vitality relied heavily on the use of its rich and bountiful natural resources. The state's fishing, farming, forestry and tourism industries spearheaded employment opportunities, leaving a significant portion of Mainers' seasonal and overall earnings lagging behind national averages. However, the transition away from an agricultural and manufacturing based-economy to a service, information and technology-driven economy

introduced an unprecedented growth opportunity for the U.S. and for the state of Maine.

Growing at or near full capacity, Maine's economy benefited significantly in the late 1990's from the expanding U.S. economy. Recent data from the Maine State Planning Office reveals that Maine's unemployment rate dropped to 3.2% in August of this year, reaching its lowest level in the past twenty years. The Labor Force participation rate is currently at an all time high. Maine's consumer retail sales have also seen strong growth, as Maine's citizens reaped solid income gains and continued to increase consumer spending. Yes, Maine has been riding the wave of a booming U.S. economy, but what is in store for the state as the economy begins to cool down.

#### **EXPANDING TURNPIKE WIDENS EXPECTATIONS**

Work began earlier this spring, on the long awaited project to widen Maine's Turnpike. This project brings new hope to businesses and retailers, who for years have suffered from this major artery being clogged by congestion. It is projected that the positive impact of this expansion will be felt throughout the state as nearly \$230 million worth of additional spending is expected. The project will add two new lanes along a 30-mile stretch through the southern counties of our state, providing much-needed relief for tourists, vacationers, and residents. The tourism sector, including retail and lodging sales, is expected to be the major beneficiary of the expansion. Studies have concluded that had the turnpike not been widened, the state would have lost as many as 4.6 million tourist visitor days by the year 2015. The slackened demand in the tourism sector would surely negatively impact the rest of the state's economy as tourist-dependent businesses would have to cut-back on goods and services to reflect the lack of demand.

#### **RETAILERS LOOK FOR BOOST**

The positive impact of the widened Maine Turnpike could not have come at a better time. As the U.S. economy begins to cool down after an unprecedented economic boom, Maine's commercial and retail businesses are looking for new ways to increase sales and revenues. For the retail sector, we are predicting a continued positive trend, with growth rates that will be modest as compared to those posted in the late 1990's. This sector will be negatively affected by changes in national consumption patterns, as individuals react to the

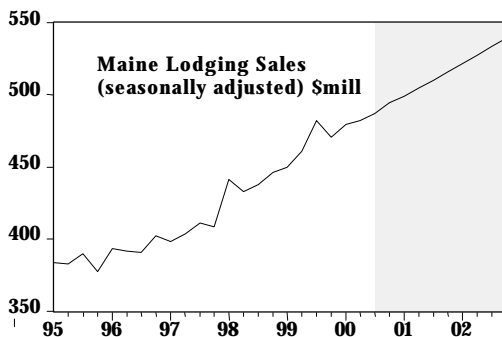
slowing economy. On the other hand, we predict that fading inflationary fears will be a slight boost to sales. We expect slight improvements as personal income is expected to continue to grow through year-end 2000.

<b>Retail Sales Year-Over Year Growth</b>		
	(\$ Billions)	
<b>Year</b>	<b>Total Sales</b>	<b>% Change</b>
1999	\$13.45	9.35%
2000*	14.41	7.13%
2001*	15.15	5.13%
2002*	15.77	4.09%

\* Forecast Period

#### MAINE: VACATIONLAND

Lodging sales, an industry driven by tourist demand, will surely benefit as individuals find it more convenient to reach Maine's vacation spots.



We are expecting growth rates to slightly increase through 2002, up 0.5% to 4.5%. Lodging sales will continue to ride the wave of recent economic prosperity, in addition to enjoying increased demand by our Canadian neighbors as the Canadian dollar is expected to slightly appreciate relative to the U.S. dollar for the next two years.

#### MAINE EMPLOYMENT: NOT MUCH ROOM FOR GROWTH

Recent demographic trends are hindering growth in Maine's Employment sector. Weak population growth coupled with an increasing number of elderly in the state is causing the size of the labor force, not unemployment, to be the problem. As Charles Colgan, of the Colby Class of '71 and Professor at the University of Southern Maine, notes in a recent article, "The labor shortage is here to stay ... putting a competitive price on labor and compensation. That's a challenge for any business looking to grow." We expect the recent

population trend to have a negative effect on employment growth over the forecast horizon.

The Maine economy, much like the rest of the nation, is currently in a state of transition, moving away from a manufacturing based economy. For example, in the fall of 1999, shoe manufacturer Cole-Haan shut down its factory in Livermore Falls causing 250 employees to lose their jobs. Many other factories around the state have recently ceased production. However, lost jobs in the suffering Manufacturing sector are beginning to be replaced by new opportunities in the Service Sector. Western Maine alone now has over 1,700 telemarketing jobs, due to the arrival of large national companies such as credit card issuer MBNA.

<b>Maine Employment</b>		
Historical and Forecasted Growth Rates		
<b>Year</b>	<b>Total</b>	<b>Non-Manuf.</b>
1999	2.90%	3.65%
2000*	2.20%	3.05%
2001*	1.26%	1.97%
2002*	1.60%	1.89%

\*Forecast period

We are predicting that these recent trends will cause growth in Total Employment in Maine will slow to 1.6% by 2002. That's down from the 2.9% growth witnessed by the state in 1999. We expect similar growth in the Non-Manufacturing sector; the forecast expects growth to decline to 1.89% by 2002.

#### PERSONAL INCOME

If the trend towards a more service- and technology-sector based economy continues in the next few years, strong growth in personal income should continue. An article published by the Maine Center for Economic Policy in 1999 includes high paying service sector jobs, such as those with non-depository credit institutions and engineering, accounting, and management services, in their "top ten growing industries" list. In 1999, these sectors had an average annual wage of \$35,190 and \$34,872, respectively; far above Maine's per capita Income. Included in the other side of the list, "top ten declining industries", were manufacturing jobs in industries, such as textile, food, and leather products. These manufacturing jobs had an average annual wage of under \$27,000. If the transition to

higher paying service sector jobs continue, personal income will increase.

Certainly the high level of employment and abundance of job opportunities in the State has also had a positive effect on personal income growth. The number of help-wanted advertisements in Maine newspapers has increased significantly in the past few years, and projections suggest that this trend will continue. Our forecast calls for personal income to grow steadily to around 4.6% for the next two years.

<b>Personal Income (\$Billions)</b>		
Year	Total	Growth
1999	31.24	4.17%
2000*	32.94	5.44%
2001*	34.47	4.64%
2002*	36.04	4.55%

*\*Forecast period*

Should Governor Bush take seat in the Oval Office come January, his proposed tax plan may have a significant effect on Maine's personal income levels. Governor Bush has proposed a \$460 Billion tax cut over a five-year period. Because the majority of this cut is aimed at low- and mid-income families, Mainers would see a significant increase in their after-tax incomes if the plan were successfully implemented. The forecast numbers provided would then have to be revised upwards.

#### **NEW CHALLENGES FACING THE MAINE ECONOMY**

While the overall economic outlook is generally positive, characteristics of Maine's population and development capacity will inevitably challenge growth. The fact is, Maine's population is barely growing. In the last 6 years, population growth has not exceeded 0.5%. Another trend that will certainly pose a challenge to Maine's economy in the coming year lies in the fact that Maine's population is growing older. Currently 14% of Maine's population is over 65. The projection for 2020 suggests that almost 21% of the population will be seniors. This trend will have a large effect on which types of housing, goods, and services will be demanded. Ignoring this effect could pose serious problems for the economy.

Furthermore, as more and more of the population enter into retirement, the labor force will shrink. The resulting tightened labor market will be

among the biggest brakes on the Maine economy. As the labor market tightens, highly educated, highly skilled labor will become a scarcity as Maine has one of the worst track records for post-secondary attainment. Certainly this will pose a problem if Maine hopes to become a player in the up and coming service and technology industries.

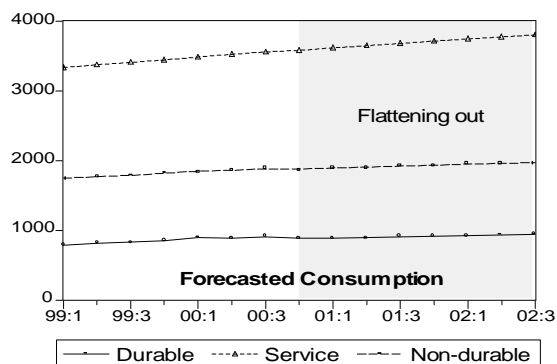
In a recent report a Washington D.C.-based think tank posted concern for Maine's future economic vitality. The basis for their concern was Maine's low national ranking in commercial bank deposits and commercial and industrial loans, suggesting Maine's investment in the future needs some revamping. Despite these challenges, Maine's state of the art telecommunications infrastructure is continuing to prosper, connecting every school and library in the state to the Internet. While growth rates will not reach the levels seen in the last few years, the Maine economy should continue to benefit from positive growth in sales, employment, and income. Maine's future economic prosperity will depend heavily on its ability meet the increasing need for highly educated and skilled workers demanded by the "new" economy.

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### **CONSUMPTION: WHAT TO EXPECT**

BY MARIA G.GONZALES, ELIZABETH HANSON,  
& ANDREW QUALE

How do consumers behave? What will their consumption patterns be in the next 2 years? These are questions all businessmen and women would like to figure out. In attempting to discover some answers, we have studied and forecasted the different sectors of consumption. Initially,



consumption was divided into three major types of goods: durable, non-durable and services. Then theory, logic and statistics provide insight to determine what affects consumption.

We expect the following factors to influence consumer's behavior: personal disposable income, wealth, and consumer sentiment. In the case of durable and non-durable goods, a price index of those goods will also act upon sales. The relation between these factors and the explained sectors is positive with all except the price indexes. In other words, consumers respond favorably to increases in disposable income, wealth and consumer sentiment; and unfavorably to increases in the price of the respective goods.

One key factor in determining the behavior of consumers is how they feel about the present state of the economy. We call this consumer sentiment. Our forecast predicts that consumer sentiment will decrease in the next years. It is forecasted to change from a 1.8% increase over the past 4 quarters (ending at the second quarter of 2000), decreasing to a negative growth of 11.98 % for 4 subsequent quarters, and continuing to drop by another 2.72 % for 4 quarters following that. This is the result of expected decreases in government surplus, an increase in inflation and a slowdown in the growth of personal disposable income. This yields a moderate slowdown for all consumption sectors.

Lately, Americans have enjoyed new levels of personal wealth due to the boom in the macro-economy; it is interesting to look at the history of net worth and the factors that affect its level in America. Since 1995 net worth increased in an exponential fashion, and has continued this positive growth trend to the present day. The forecast for net worth for the fourth quarter of 2000 until the fourth quarter of 2002 shows continued growth due to growth in the Standard and Poor's 500, as well as the increase in personal disposable income. It will continue to grow at a level of approximately 7% for the forecasted period. Although high, it is still markedly less than the growth of 9-15% characteristic of the past few years.

Additionally, consumers have been well at ease with the present economic boom and its endurance. Yet uncertainties have been rising. Will the economy slow down? Is the stock market trying to tell us something? Should we be concerned with historically low unemployment rates and low inflation? All of these questions have occupied our minds. This has caused consumers to adjust their expectations and consequently show their distress about the future.

These forecasts do account for our baseline scenario. We expect a slowdown in upcoming years,

and it is accompanied by a steady growth in all prices. This occurs in each sector and therefore in the overall market of goods. A slowdown in personal disposable income, a lessening of surplus growth and, in turn, worried consumers are the results.

Still, there are no expectations of a recession in the near future. What will really happen? Time will have to tell, but we are confident that these adjustments are just the natural course of the economy to correct itself. The boom Americans have been enjoying cannot be sustained for life, and hence some slowdown has to take place.

#### **THE FUTURE OF HOUSEHOLD CREDIT MARKET DEBT**

As the last holiday season of the second millennium rolls around the American people will again turn to their credit cards to finance a significant portion of their shopping lists. This is but one portion of the year-round decision making process that the public engages in while trying to balance their needs and the associated liabilities generated, with their resources and the associated assets. Around this time of year the normal decision is to spend now and save later. Interestingly however, it seems the public is making this same decision more often. Indeed, Americans seem to be making the decision to spend before saving at a rate unseen in decades and not only during the holiday season.

This behavior is especially significant when looking at the future of the asset versus liability mixture in the United States. The high growth of the US economy in the past years has created quite an upward trend in both income and the value of investment assets. This impressive run the US economy has enjoyed has created significant expectations in the American population in terms of spending power. This begs the question as to implications of the recent, at least partial, downturn in the economy as manifested in recently less impressive income numbers and a significantly depressed stock market.

While the implication to the assets side of the household net worth equation is relatively clear, it is interesting to examine the effect of this particular set of events on the liabilities side. The past few years seem to have made the American people reluctant to change their spending habits in the short term as manifested in the recent negative savings rates. This may not be a new behavior and seems to be in

agreement with the following forecast of the credit market debt of the household sector.

Analysis of the trend in household credit market debt has shown that one of the better methods of prediction consists of an approach from the demand side. An examination including observations of the consumption of durable and non-durable goods, the civilian labor force, and the aggregate price level has demonstrated historical accuracy in this regard. While these characteristics do not necessarily exhibit causal relationships with our variable of interest, these observations have shown high degrees of correlation and measurable relationships appear to exist.

While there are interesting implications of this predictive model, the real story this model provides is its insight into the future household debt situation. By extending observations of both the civilian labor force and the aggregate price level through the use of an exponential smoothing technique and drawing the expected levels of durable and non-durable goods consumption from the article on the consumption sector, one is able to predict movement of total household liabilities. The following is a prediction of growth in total household liabilities through the end of the year 2003 (Billions US\$).

<b>Year-over-Year Growth Rates</b>					
1998	1999	2000	2001	2002	2003
8.85%	9.19%	9.72%	9.95%	9.56%	9.09%

Perhaps the most interesting implication of this forecast is it exhibits a robustly increasing level of total household liabilities. Even with the slightly decreasing rate of growth this is interesting especially in the context of the recent stock market volatility. As many Americans opening their 401K packets at the end of this month will discover, securities can be a fickle vehicle for asset storage. It would seem however that the degree to which the same Americans are willing to dip into the credit market to satisfy their consumer demands is quite a bit more stable. And so, although the forecast of net wealth shows a continued increase (implying an increase in assets greater than this forecast's increase in liabilities), the prospect of a consumer debt crisis precipitated by a shock to household assets and/or disposable income is non-trivial.

While the historically measured predictive ability of this model is reasonably good, errors approximately 2% off from actual, this does not

mean that we should be gravely concerned about a consumer debt crisis. Not only should one remember that although this model is highly correlative, it is trivially, if at all, causal and so any implications of the predictions should be taken with a degree of caution.

All of this analysis does however explain a few observable trends in society. Everyone who watches television these days has noticed a marked increase in the number of credit card, home mortgage, and other consumer liability related commercials over the past few years. It seems that these companies have something right. Americans decide what they want and if they can't afford it out of their income it seems they simply take a different method of payment out of their wallets.

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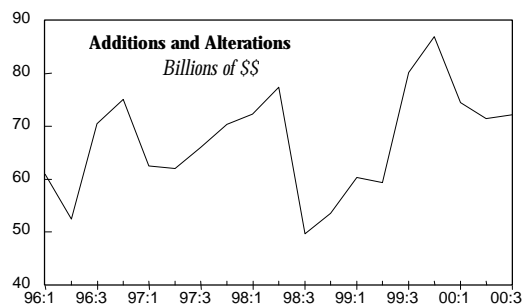
## **MODELING REMODELING**

BY JUSTIN AMIRAULT, JAKE DAVIE,  
& JASON FREEDMAN

### **HISTORY & INTRODUCTION**

More than ever, Americans are remodeling and building additions to their current homes. Whether it be a need for more space for children or simply to have that exercise room that was always wanted, we have seen record amounts spent on remodeling and additions. Quite intuitively, the booming economy of the late 1990s has attributed greatly to this large increase in this type of residential construction. This article looks to reveal a forecast of the amount that will be spent on residential improvements, specifically additions and alterations (AA) into the fourth quarter of 2002.

The residential home additions and alterations statistic is a significant economic component of the United States economy. Not only does money



spent on residential improvements have a significant direct impact on the economy, but it is also a good indication of consumer confidence regarding the future. For example, if an individual expects to have excess disposable income in the future they may opt



to improve their residence. However, if an individual has bleak economic expectations they will most likely opt away from making significant improvements to their home. Although AA is a useful economic indicator, it is a very difficult one to forecast because of the volatile nature of residential additions and alterations. In fact, during the 1990's the average absolute percent change from quarter to quarter was 13.1%, and there are no apparent patterns that dictate these changes. The values of the home additions and alterations are shown. The volatility of this statistic is most likely due to the fact that additions and alterations decisions are based heavily on expectations of future economic conditions. Since individuals' future expectations are not always rational, future residential additions and alterations are not easy to predict using a theoretical model. To make matters more difficult, the government reports this statistic with a nine-month lag, prompting at least one other group to construct a new measure of this type of indicator. Thus, a forecaster is forced to predict events that have already occurred, but have not yet been reported. Although future AA to residential homes are a relatively difficult series to predict, we have developed an forecast model that accurately predicts the data.

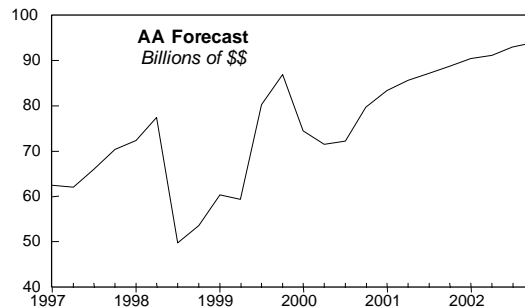
#### COLBY MODEL

Figuring into the model that dictates the levels of spending on AA are real disposable income, a construction cost index, consumer sentiment, and the number of new single-family houses sold. Quite obviously, as we see consumer sentiment and disposable income increase we see the number of AA increase. This makes intuitive sense as homeowners have more money in their pockets and are confident about the state of the economy and are willing to spend on this type of endeavor. Additions and alterations can be considered an inferior good. With increases in new homes sold, we see decreases in spending on additions and alterations. Intuitively, newer homes generally are not added to or altered. Also, generally speaking, the financial burden of buying a new home often does not make adding on to or altering the new home financially feasible. What is not as obvious, is that increases in construction costs actually have demonstrated to increase spending on AA. The best way to understand this is that as construction costs increase, certain consumers are incapable of

affording to buy new homes and in turn resort to adding to or altering their already existing home.

Now that the framework of our model has been revealed we can look at the forecast of AA. As mentioned before, there is a 9 month lag on AA data that is released, resulting in lack of "official" AA numbers for the 2<sup>nd</sup> and 3<sup>rd</sup> quarters of 2000. The Joint Center for Housing Studies at Harvard University has created a "Remodeling Activity Indicator (RAI)", which was specifically created to replace the Census Bureau's AA data. The RAI is made up of four components: manufacturers' shipments of floor and wall tile products; retail sales at building materials and supply stores; sales of existing one-family homes; and the bank prime loan rate. Intuitively, this RAI follows the same fluctuations as the AA data, thus the percentage changes in the RAI in the 2<sup>nd</sup> and 3<sup>rd</sup> quarters of 2000 were used to calculate the changes in the AA data. This calculation is consistent with our theoretical model that a downswing in AA would occur in these quarters. The forecast then goes on from the 4<sup>th</sup> quarter of 2000 to the 4<sup>th</sup> quarter of 2002. Future Growth

The forecast calls for 3% annual growth in 2000, 12% annual growth in 2001 and 5% annual growth in 2002, consistent with what the Harvard group is calling for. These results seem to make sense with what has happened historically the current state of the economy and how we expect the economy to move in the next few years. We would expect the annual growth rate of 2000 to be



quite low, as we have seen low values in the first three quarters of the year, the reason for a lower rate of growth this year can be attributed to the falling stock market. This has led to a decrease in consumer sentiment, as individuals will not expect to have as much disposable income in the future. We can expect the annual growth rate to increase close to the historical average next year. At this point in time it appears as though George W. Bush will be the next president of the United States. He

has promised tax cuts, which are going to increase the disposable income of citizens that will initially cause individuals to spend more on residential additions and alterations. However, after the initial effects of George W. Bush's tax cuts have taken effect, the annual growth rate will fall in 2002 since the stock market is currently overvalued. It will continue to decline through 2002, and with less investment in the economy we would expect to see fewer dollars spent on residential additions and alteration.

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## THE FOREIGN SECTOR

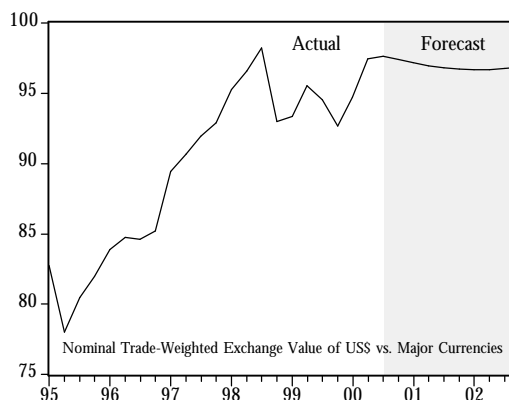
BY ERIC KOSTROWSKI & MELINDA MRAZ

### TRADE-WEIGHTED DOLLAR EXCHANGE RATE

With the introduction of a common currency among 11 sovereign countries now known as the European Monetary Union, and increased speculation regarding the future of sustained economic growth, exchange rates and their predicted values are becoming an increased area of focus for many multinational organizations and investors. Following the 10-year tendency of the dollar to depreciate, 1995 saw the beginning of a three-year appreciation period, probably due to the continued economic growth in the United States relative to the more gloomy experiences abroad. Most recently, the dollar has failed to make significant moves against foreign currencies, marked by minor fluctuations with no apparent trend. In attempting to forecast future values of a trade-weighted dollar exchange rate, we developed a model based on the theories of interest-rate parity and purchasing power parity, while also accounting for changes in the national accounts and the exchange rate's prior performance.

Interest rate parity refers to the theory that returns on investments should be equal whether made domestically or overseas. In essence, if the domestic interest rate is higher than an interest rate abroad, it is expected that there will be exchange gains in holding foreign currency, thus making up the difference and equalizing returns between the two investments. The critical assumption here is that all profit opportunities are immediately exploited, thus rendering the possibility of realizing greater-than-normal rates of return impossible. Purchasing power parity relies on similar intuition, and suggests that by using the price for a common set of goods in both domestic and foreign

economies, we can determine the effects on the exchange rate. For example, if the foreign goods priced in US dollars are relatively more expensive, we would expect our exchange rate to appreciate as a result of increased demand for dollars to purchase our relatively cheaper commodities.



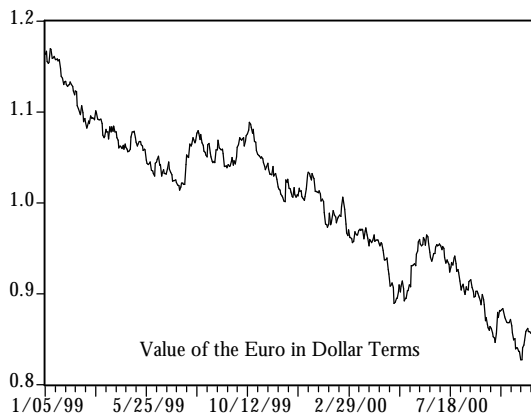
The trade-weighted exchange rate that we forecast includes 16 major U.S. trading partners. Our forecast calls for a 0.8% depreciation of the dollar over the next two years relative to these major trading partners. This is in line with expectations of economic slowdown in the U.S. This may prove to be an under-forecast, based upon the many recent worldwide opinions regarding expectations for the U.S. economy's halted growth, which would serve to make the dollar even less attractive. Other implications of our forecast equation are that interest rate parity does not necessarily hold vis-à-vis our major trading partners. Our equation would suggest that a 1% increase in domestic interest would only cause a change in the exchange rate of about .3%. This is not surprising due to the existence of transaction costs and other factors that may arise in the international market.

Recent speculation, as noted in a recent *Wall Street Journal*, suggests that the United States may, by 2010, begin to register a trade surplus. Although the merchandise trade balance this year is a deficit slated to be nearly \$450 billion, some economists note that services exports may be undercounted and expect that in the long run these exports could result in a net trade surplus. The implications of this would include an appreciation of the dollar in the long run.

### WILL THE EURO'S LONG SLIDE CONTINUE?

Following its introduction in January 1999, the European Economic and Monetary Union has watched the value of its currency, the euro, plummet from its introductory high of \$1.18 to just 82 cents

this fall. The euro has many advantages, which include the removal of exchange rate barriers among the countries of the euro area, effectively increasing the size of the economic market, and consequently promoting competition and transparent prices across borders. So why the decline? According to the "Father of the Euro," Robert Mundell, this increased liquidity has actually weakened the euro, and a sedentary central bank has done little to intervene to tighten the market. In addition, the



absence of an actual paper-and-coin currency has been a cause for poor public sentiment.

What next? We forecast the value of the euro to begin to increase at an average rate of about 3 to 4% per year and continue a basic upward trend, eventually trading around parity with the dollar. Expectations of robust growth in the euro area combined with weaker U.S. growth should work in tandem to increase the euro's value, as well as hints toward a more active European Central Bank in acknowledging the importance of maintaining a healthy range for its currency. Furthermore, as the actual tangible currency is introduced, it is likely that public sentiment will improve.

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## YOU CAN'T BEAT A RANDOM WALK

BY KATHERINE HILLY

### BACKGROUND

There is a long-held, tried and true rule to predicting the stock market: you can't. The best investors can do is estimate future values based on present values and a random error term. This method of investing is called a random walk down Wall Street, because investors have no way of predicting future values except by using past values

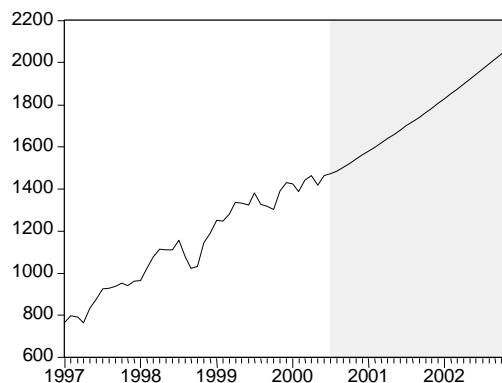
of the stock market. It is still the best way to predict the stock market today.

I tried to beat the random walk using variables that explain in theory the level of the Standard and Poor's 500 Composite (S&P 500), a measure of the price index for the stocks of the 500 largest companies in America. I also tried an equation based on the equation from the Class of 1997 at Colby College. The random walk beat all of my equations by at least 1% in an *ex post* forecast. The random walk had a 2.91% mean absolute percentage error, which means that the equations differed on average with recorded levels by 2.91%. The random walk equation tended to overpredict actual levels somewhat, but it was a good indicator of the trend in the S&P 500.

I attempted to explain the S&P 500 using measures of wealth, because as wealth increases, the price index of the S&P 500 should increase as well. I tried other price indices, because as other prices rise, so too should the price of the S&P 500. I also tried variables such as corporate profits, which related to larger companies. I even tried cyclical elements to link increases in the S&P 500 with economic trends. In the end, none of these were significant explanatory variables for the S&P 500.

### FORECAST

If the current state of the economy remains constant, then it is possible to make a prediction of the level of S&P 500 over the next two years using the random walk equation. I predict a steady growth



in the S&P 500 price level through the end of 2002. Again, my forecast historically overshoots the actual values, but it does show a positive growth trend over the next two years.

Using the random walk forecast, it is clear that the S&P 500 price index will increase over the next

two years, if no shocks occur in the stock market or the economy in general. This should make investors happy, but the forecast also calls for a smaller

<u>YEAR</u>	<u>% INCREASE</u>
2000	9.42
2001	14.39
2002	14.39

growth rate than those seen in recent years. According to my forecast, the stocks of the S&P 500 as a group will be a stable investment for the next two years. However, the price of the stocks will not increase by more than the S&P 500 has seen in the past several years.

The conclusions expressed in the *Colby Economic Outlook* represent the views of the authors and do not necessarily represent the opinions or recommendations of the faculty and staff at Colby College.