

Th. Jefferson

***Remaining
Competitive***

June 2007

**The Thomas Jefferson Institute
for Public Policy**

**Virginia Economic Forecast
2007-08**



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Foreword

The Thomas Jefferson Institute for Public Policy is proud to present its eighth annual report on the economy of the United States and Virginia. It is part of the foundation's efforts to offer well-researched studies for our state leaders to assist them in better preparing for the future.

This year's annual *Virginia Economic Forecast* was again researched and written by Dr. Christine Chmura and her team of top economists at Chmura Economics & Analytics (Chmura) headquartered in Richmond. Dr. Chmura founded Chmura Economics & Analytics in 1999 after serving as Chief Economist at Crestar Bank (purchased by SunTrust) for seven years. Chmura has since grown into a leading member of its industry. Over forty years of experience is housed in this economic consulting firm specializing in quantitative research, traditional economics and workforce and economic development.

"*Virginia Economic Forecast: 2007 – 2008*" is made available to our state's elected leaders, business leaders, and the media in order to assist them in better understanding the economic reality facing our state. This year's edition, titled *Remaining Competitive*, illustrates how the education and skills of the workforce interact with regional economies to create opportunities for growth or setbacks. The *Economic Forecast* details expectations of a slowing economy over the short-term. Uncertainty about inflation, especially as influenced by gas prices, is a risk to growth expectations.

Last year's *Virginia Economic Forecast* anticipated little change in the pace of economic growth compared to the prior year. In 2006, the real gross domestic product expanded at a 3.3% pace compared with Chmura's forecast of 3.5%. Chmura's forecast last year called for consumer spending to slow to a 2.9% growth rate in 2006, and it actually did better by slowing to a 3.2% growth rate. Residential investment, however, performed worse than forecast in 2006. Chmura anticipated residential investment to increase 1.6% while it actually decreased 4.2% for the year. A combination of higher interest rates and unsustainable home price increases combined to tip the market into a correction. In Virginia, building permits plummeted 24.7% for the year instead of a predicted expansion of 1.7%. Employment growth at the state level still performed close to expectations, however, being forecast to slow to 2.1% and actually slowing to 1.9%.

We once again thank SunTrust for sponsoring this year's "*Virginia Economic Forecast: 2007 – 2008*." Nothing in this report should be construed as supporting or opposing any legislation. The opinions are those of the authors and not necessarily those of the Thomas Jefferson Institute, its Board of Directors, or SunTrust as the sponsor of this report.

Michael W. Thompson

Chairman and President

Thomas Jefferson Institute for Public Policy

June 2007



In the Nation...

✦ After robust growth in the first quarter of 2006, economic activity slowed in the nation over the remainder of the year. A struggling housing market contributed to the slowdown as well as Federal Reserve rate hikes that were meant to curb inflation. Nevertheless, the unemployment rate remained relatively low. The 4.4% unemployment rate in March 2007 matched the lowest rate in the nation since the last recession.

✦ Two years of double-digit growth in home prices helped drive home affordability to a low point in 2006. The rate of homeownership was 68.4% in the first quarter of 2007, off the peak of 69.2% reached in 2004. Housing starts hit a nine-year low in January 2007 just one year after reaching a 33-year high.

✦ Slower growth in real gross domestic product (GDP) is expected in 2007, 2.2% for the year compared to 3.3% in 2006. Inflation is expected to moderate over the year, though higher than expected oil prices would impact this forecast. The unemployment rate is projected to average 4.6% in 2007 as employers react cautiously to a slowing economy.

Remaining Competitive...

✦ A shortage of skilled workers in the United States along with an excess of non-skilled workers has contributed to increasing the wage gap between the two groups. From 1975 to 2005, inflation-adjusted wages for workers with college degrees increased 18% while wages for workers without a high school degree decreased 14%.

✦ Regional industry mix is crucially important for alleviating job losses. In the Danville MSA, over 5,000 textile workers lost jobs from 1990 to 2006, yet the job skills many workers possessed did not transfer to other existing occupations in the region. In contrast, 4,900 communications equipment manufacturing jobs

were lost in the Northern Virginia MSA over the same period, yet for many of these workers sufficient alternative positions were available in the region that used the same or similar job skills.

In Virginia...

✦ In 2006, the pace of employment growth in Virginia slowed more markedly than in the nation partially due to growing much faster than the nation in 2004 and 2005. For the twelve months ending March 2007, employment expanded 1.2% in Virginia while growing 1.4% nationally. Despite the slowing employment growth, Virginia's unemployment rate fell to 3.0% in March 2007 ranking it the 7th lowest among the states.

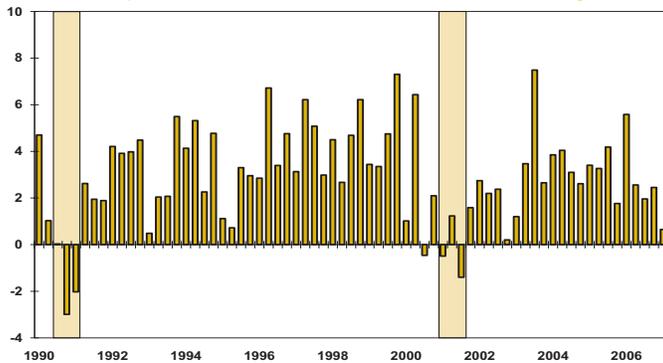
✦ Over the twelve months ending March 2007, employment in both the construction and manufacturing sectors contracted 1.4% in Virginia. Over the same period, the high-paying professional and business services sector expanded 2.5%, responsible for more than one-third of the jobs created in the state. Among the metros, the quickest paces of employment growth were posted in Charlottesville (+5.0%) and Harrisonburg (+4.5%). The 1.9% job growth in Northern Virginia accounted for more than half the jobs added in the state.

✦ The pace of employment growth in the state is expected to continue its slowing trend through 2007. Average employment growth fell from 2.3% in 2005 to 1.9% in 2006 and is expected to recede to 1.6% in 2007. Single-family building permits plummeted 24.7% in 2006 and permits are expected to be an average 8.1% lower in 2007 compared with a year earlier. Among the metros in 2007, the fastest employment growth is expected in Northern Virginia (+2.7%) while the only decline is expected in Danville (-1.7%).

Growth amid Worries in 2006

The national economy delivered a solid performance in 2006 despite a declining housing market and record-setting oil prices. Real gross domestic product (GDP) grew 3.3% for the year, faster than the 3.2% pace of 2005. Nevertheless, growth in 2006 was uneven as the economy continued to feel the effects of the Federal Reserve's inflation-targeting rate hikes and the struggling housing market. Following fast growth of 5.6% in the first quarter (seasonally adjusted annual rate), real GDP slowed substantially, ranging between 2.0% and 2.6% for the remaining three quarters. A similar or slower pace of growth will likely continue for the first half of 2007; advanced real GDP for the first quarter of 2007 increased at a quarterly annualized 1.3%.

Real Gross Domestic Product Quarterly Annualized Percent Change



Source: Bureau of Labor Statistics.

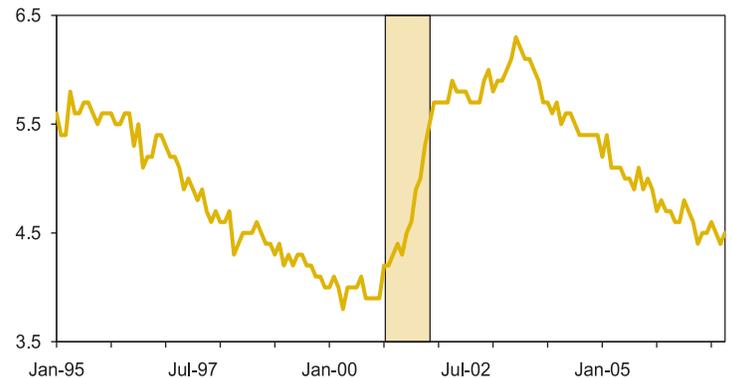
Among all components that make up GDP, consumer spending was the largest contributor to growth in 2006. Real personal consumption increased 3.2% from the previous year, contributing 68% of the overall GDP growth (see National Forecast Summary on page 8). This pace, however, was slightly slower than the 3.5% increase in 2005. After growing 5.4% in 2005, real private investment¹ slowed to

¹Real private investment is made up of residential investment and nonresidential investment (structures, equipment and software, and inventories).

4.2% growth in 2006 as residential investment reversed from an 8.6% expansion in 2005 to a 4.2% contraction in 2006. However, business investment (nonresidential investment in structures, equipment, and software) accelerated in 2006, growing 7.2% compared with 6.8% in 2005 as businesses expanded their ability to meet growing demand in a sign of optimism about future economic growth.

The pace of growth in the national labor market slowed in the middle of 2006. After experiencing a 5 ½-year high of 2.1% year-over-year growth in March 2006, a steady deceleration began—for March 2007, labor market growth slowed to 1.5%. Nevertheless, nonfarm employment added 2.0 million jobs over the year ending March 2007. The education and health services sector accounted for nearly a quarter of the growth, adding 481,000 jobs for the period. Other sectors with notable growth included leisure (+427,000); professional and business services (+398,000); and transportation, trade, and utilities (+221,000). Manufacturing continued to struggle from off-shoring operations and international competition, shedding 109,000 jobs over the 12 months ending March 2007. Both the durable (-61,000) and non-durable (-48,000) manufacturing sectors experienced job losses for the year. Despite the slowing pace of employment growth, the labor market continued to tighten as the national unemployment rate declined from 4.7% in March 2006 to 4.4% in March 2007—tying the lowest unemployment rate since May 2001.

Unemployment Rate



Source: Bureau of Labor Statistics.

The pace of inflation, as measured by the consumer price index (CPI), hovered around 4% for the first half of 2006 due to soaring oil prices but has since slowed to a pace that is more in line with the Federal Reserve's goal for low inflation. In July 2006, the average monthly price of oil reached an all-time high of \$74.41 per barrel as investors speculated in

response to forecasts of a record-setting hurricane season and escalating tension between Israel and Lebanon. As the speculation proved misguided, oil prices fell and the pace of inflation declined from 4.3% in June 2006 to 1.3% in October—the lowest since June 2002. The lower pace of inflation was short-lived. Oil prices again increased as U.S. oil supplies declined and geopolitical tensions developed in Iran and Nigeria. Additionally, fast-growing economies such as China and India continue to place a major strain on global oil supplies while growth in supply remains somewhat flat. Even so, the 2.4% rate of inflation in February 2007 was substantially lower than the 3.4% rate in February 2006. However, for February 2007, the annual growth rate of core inflation (which excludes food and energy) was 2.7%, up from 2.1% in February 2006.

The struggling housing market remains a major topic of discussion for policy makers and analysts alike. Housing activity is typically strong during times when employment is rising and unemployment and mortgage rates are low. However, the rapid rise in home prices over the last few years has priced many potential buyers out of the market.

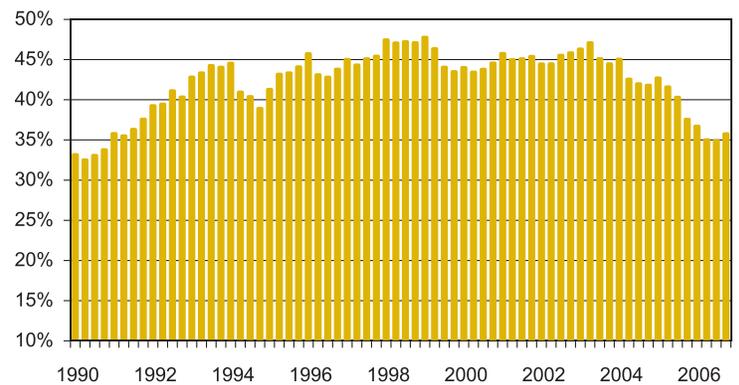
Home affordability has declined substantially since the second quarter of 2003. According to the Chmura Economics & Analytics (Chmura) home affordability index,² 35.8% of households could afford to purchase a median-priced home in the fourth quarter of 2006—just off the sixteen-year low of 34.9% experienced one quarter prior. A median-priced home in the fourth quarter of 2006 was \$193,014—up 5.9% from a year earlier. This increase in home prices was accompanied by only a 1.8% increase in the median income for the same period.

Declining home affordability is also evident in the percentage of people who own homes. Homeownership rates reached an all-time high in the second and fourth quarters of 2004 at 69.2% as mortgage rates fell to their lowest levels. After a two-year span of double-digit growth in home prices that began in the third quarter of 2004, the rate of home ownership fell to 68.4% in the first quarter of 2007.

The weakness in the housing market is further illustrated by falling housing starts, which hit a nine-year low of 1.40 million units at an annualized rate (MUAR) in January 2007. This low occurred after a 33-year high of 2.27 MUAR just one year earlier. After this drastic 38% decline over the year ending January 2007, housing starts increased in February partially because of warmer-than-usual weather.

The continued drop in new homes sales, however, suggests that housing starts will fall further. After reaching a high of 1.37 MUAR in July 2005, new home sales fell to 0.85 MUAR in February 2007. As a result, the unsold inventories-to-sales ratio reached a sixteen-year high of 8.1 months in February 2007.³ Existing homes sales also weakened, hitting a two-year low of 6.23 MUAR in September 2006. As of February 2007, existing home sales were 3.7% lower than a year earlier.

Home Affordability in the United States (Percent of Households That Can Afford a Median-Priced Home)



Source: Chmura Economics & Analytics.

Monetary Policy

August 2006 appears to have been the end of the Federal Reserve’s tightening cycle of seventeen consecutive 25-basis-point increases in the federal funds rate target. Since then, the Federal Reserve has continued to hold the target rate at 5.25% due to the belief that the prior year and a half of rate tightening slowed economic growth to a sustainable pace and inflation could soon reach a comfortable level. According to Federal Reserve Chairman Ben Bernanke’s testimony before Congress in February 2007, “So far, the incoming data have supported the view that the current stance of policy is likely to foster sustainable economic growth and a gradual ebbing of core inflation.”

² The index is based on mortgage rates, median income, and expected insurance costs. It also assumes that individual makes no down payment.

³ Unsold inventories are the number of homes for sale relative to the current sales pace. For example, an 8.1 ratio indicates that the supply of homes for sale would be depleted in a little more than eight months at the current sales pace.

Looking ahead, it is likely that the Federal Reserve will begin reducing the federal funds rate by the fourth quarter of 2007. As inflation continues to moderate and economic growth remains slower than its potential or maximum sustainable growth rate, the Federal Reserve will lower rates to encourage growth that is closer to the economy's potential pace.⁴

The federal funds rate target is the only interest rate that the Federal Reserve can directly affect. When the Federal Reserve raises the funds rate, however, longer-term rates typically rise as well, though not by the same magnitude. That has not been the case over the recent series of rate increases because international demand for U.S. Treasuries has kept yields from rising as much as usual. During the first half of 2006, the 10-year Treasury yield rose from 4.4% to a four-year high of 5.2% in June 2006 as the rate of inflation accelerated due to high oil prices. Since then,

long-term rates declined before the 10-year Treasury yield surged over 5.0% in late spring of 2007.

Economic Forecast

Chmura Economics & Analytics forecasts that real GDP will grow 2.0% in 2007. Consumer spending is forecast to grow 3.3% in 2007, slightly more than its 3.2% growth in 2006. A decrease of 4.4% is expected in private investment for 2007, driven by a 12.3% decline in residential investment with the housing market hitting a trough in the third quarter. Growth in nonresidential investment is forecast to slow substantially to 3.6% in 2007 from 7.2% in 2006 as businesses become more conservative in light of the slower overall economic growth.

The growth of the economy is forecast to speed up in 2008 with the pace of real GDP averaging 2.6%. With an end in the correction of the housing market, growth in residential investment in 2008 is expected to reverse its negative trend. The pace of growth in nonresidential investment is expected to be unchanged in 2008 while consumer spending is forecast to slow.

With real GDP growing at a pace slower than its maximum sustainable rate and the pace of inflation slowing, Chmura expects the Federal Reserve to start lowering the federal funds target in the fourth quarter of 2007. The easing is forecast to continue until the federal funds rate reaches about 4.5%—a “neutral”⁵ rate that neither accommodates nor discourages economic growth. Long-term Treasury yields⁶ are forecast to increase in 2007, partially due to a softening in demand in the international sector.

Conditions in the labor market are expected to be slightly worse in the latter half of 2007 compared with the first

National Forecast Summary

	Actual		Forecast		
	2005	2006	2007	2008	2009
	Percent Change				
Gross Domestic Product	3.2	3.3	2.0	2.6	2.7
Consumption Expenditures	3.5	3.2	3.3	2.5	2.3
Gross Private Domestic Investment	5.4	4.2	-4.4	2.6	3.6
Residential	8.6	-4.2	-12.3	0.9	4.3
Nonresidential	6.8	7.2	3.6	3.6	3.3
E & S*	8.9	6.5	2.2	3.6	3.6
Government Expenditures	0.9	2.1	1.6	0.9	0.8
	Trade Deficit (Billions of 2000 Dollars)				
Net Exports, Goods & Services	-618.9	-617.8	-609.1	-589.4	-550.6
	Percent Change				
Consumer Price Index	3.4	3.2	2.4	2.7	2.5
	Yields (%)				
Federal Funds Rate	3.2	5.0	5.1	4.5	4.5
Prime Rate	6.2	8.0	8.1	7.5	7.5
10-Year Treasury	4.3	4.8	4.9	4.9	4.9
30-Year Fixed Mortgage	5.9	6.4	6.3	6.4	6.4

* Equipment & Software

Source: Chmura Economics & Analytics.

Note: Yields reported for the average of the year.

⁴The Federal Reserve's monetary policy revolves around two goals: 1) encourage maximum sustainable output and employment growth in the nation and 2) promote stable prices. Maximum sustainable output and employment varies over time and is dependent on factors such as productivity and labor force growth. Many economists believe that the maximum sustainable growth rate is currently consistent with 3.0% to 3.5% real GDP. Accelerating inflation hinders economic growth in several ways, including increasing uncertainty and distorting economic decisions. When general inflation is rising, for example, businesses have a harder time determining whether increases in products are due to greater demand or general price increases. In addition, the uncertainty of how much inflation will rise causes investors to require a larger risk premium in investments which increases the cost of borrowing. And, since the U.S. tax system is not totally indexed to inflation, it can cause investors to shift investments into products that have a higher after-tax return that is not necessarily consistent with the underlying demand of the product or services provided by the investment.

⁵The neutral rate varies over time. Over recent years, economists have argued that the neutral federal funds rate is between 3.5% and 5.5%.

⁶Long-term Treasuries are those with 10- or 30-year maturities.

half. The unemployment rate is forecast to average 4.6% for the year as employers become cautious in hiring as the economy slows. The unemployment rate is expected to continue its upward trend through 2008 before conditions start to improve.

Chmura's forecasts are based on the assumptions that the price of crude oil maintains a level around \$60 for the year and the current geopolitical tensions do not become extremely hostile. Because of uncertainties in places such as Iran and Nigeria, oil prices may rise more than expected. Prolonged levels of high oil prices that are greater than \$90 a barrel can reduce overall consumer spending, increase inflation, and dampen growth of the economy.

A rapid decline in foreign investment in the U.S. Treasury market is another risk to the forecast. A decline in foreign investments would cause long-term interest rates to rise more than anticipated. Mortgage rates would also rise, leading to a more widespread decline in home sales than is forecast. In addition, a considerable rise in mortgage rates would lead to increased stress in the sub-prime mortgage market which could also hamper consumer spending and reduce bank lending activities.

A few economists have indicated that there is an increased probability of recession by year end. According to Chmura's probability of recession index, there is a 23% probability that the nation will be in recession in October 2007. Historically, the nation has been in recession when the index registers a value greater than 50%. Although the probability of recession is currently elevated, it is not high enough to warrant concerns that a recession is likely to occur in the next six months.

Remaining Competitive

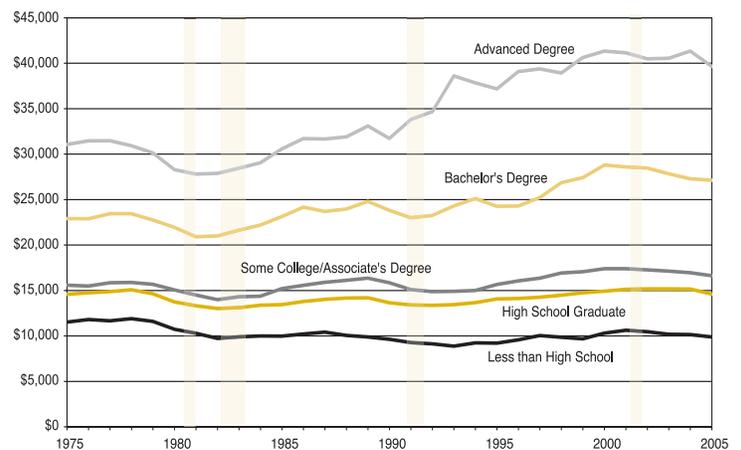
The knowledge base embodied in the American worker has long been the United States' sustained competitive advantage relative to many other nations. The higher education levels of U.S. workers has led to more innovations and greater productivity that has allowed many U.S. firms to compete against firms producing products with lower wages in other countries. In fact, many American firms that have gone offshore or closed due to international competition

previously employed lower-skilled workers in the United States. In 1950, 20% of all U.S. workers were skilled and 60% unskilled.⁷ By 1997, 65% were skilled and 15% unskilled.

A shortage of skilled workers relative to the surplus of non-skilled workers in the United States has resulted in a skills gap that has driven inflation-adjusted wages for workers with college degrees up from \$22,911 in 1975 to \$27,129 in 2005. Over the same period, inflation-adjusted wages for workers without a high school degree have fallen from \$11,515 to \$9,871. Consequently, the standard of living for these low-skilled workers in the nation has actually declined over the last 25 years.

The demand for skilled workers is expected to continue to grow and that of non-skilled workers to continue to contract over the next ten years. In Virginia, for example, the ten industries that are expected to add jobs at the fastest rate use occupations that are associated with an average skill level of 2.5 where 5 is the highest skill level.⁸ The ten fastest declining industries possess a lower average skill level of 2.1.

Real Mean Earnings of Workers 18 Years and Over by Education Attainment 1982 - 1984 = 100



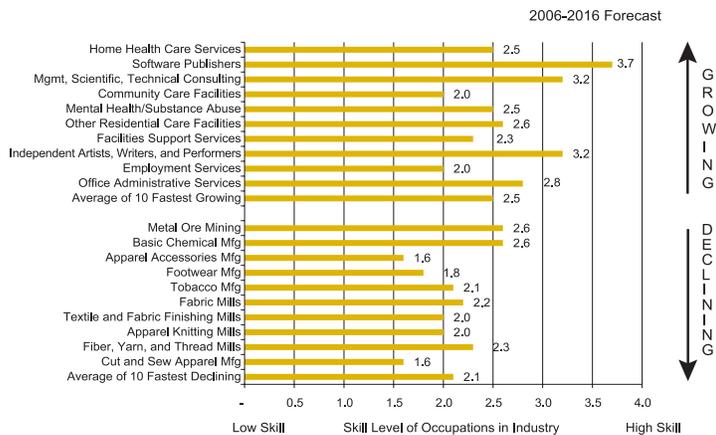
Source: U.S. Census Bureau, Current Population Survey.

⁷ According to the National Summit on 21st Century Skills for 21st Century Jobs. The remaining percentage of workers were considered professional.

⁸ Occupational skill levels are obtained from O*NET (occupational information network) supported by the U.S. Department of Labor.

These disparate growth rates can cause gaps in occupations that hamstring regions. Regions especially at risk are those with a shallow depth of industries that does not allow enough opportunities for displaced workers or regions in which the skills of occupations in declining industries are not easily transferred to occupations in demand.

Growing Industries Have Higher Skills



Source: Chmura Economics & Analytics

A comparison of the metropolitan areas of Danville and Northern Virginia illustrate this point. In 1990, almost 42,000 people were employed in the Danville metropolitan area. By the third quarter of 2006, total employment dropped by about 3,000 to less than 39,000 workers. The manufacturing industry shed about 8,000 jobs during this period as textile mill contractions accounted for 5,127 of the lost manufacturing jobs. The former dependence of the region on textiles and apparel is evidenced by the change in its largest employers. In 1990, Dan River was the largest private sector employer and accounted for more than 15% of the workers in the region. Goodyear Tire & Rubber was second with over 5% of the employment. Four other textile or apparel firms were among the top 20 private sector employers and collectively employed another 6.0% of the region's workers. By 2006, Goodyear had become the largest employer and Dan River, the only remaining textile or apparel firm on the top 20 list, slipped to 14th, employing less than 2% of the region's workers. Economists typically do not go any further in their analysis.

This is where Chmura's proprietary JobsEQ® is useful in micro analysis for Virginia's regional economies. JobsEQ®

is an extensive database and analysis program designed and developed by Chmura Economics & Analytics. Among its many capabilities, it not only determines what new jobs will be needed on a regional basis, but it also shows what job skills are transferable to other jobs more suitable for the economic changes taking place in particular areas of the state.

Using JobsEQ®, the typical occupations employed by an industry in a region are identified as well as the alternative industries that use the skills of the occupation.⁹ Considering the 5,127 workers who lost their jobs in the textile industry in Danville as an example, it is estimated that 564 of the displaced workers possessed the skills of a "Textile Knitting and Weaving Machine Setters, Operators, and Tenders" occupation. The next three largest textile occupations are shown in the table below. JobsEQ® identifies alternative industries in which these top four occupations of 1,898 people can find jobs after leaving the textile industry. The analysis indicates that rubber, plastics, and other textile and apparel manufacturing firms need these workers, but the demand is small. In fact, the demand for all four occupations is an estimated 32 positions¹⁰ over the

Top Four Occupations with Job Losses in Danville Metro Area Textile Mill Industry Based on 5,127 Lost Jobs

Occupations	Lost Employment	Alternative Positions in Other Regional Industries Over Ten Years
Textile Knitting and Weaving Machine Setters, Operators, and Tenders	564	0
Textile Winding, Twisting, and Drawing Out Machine Setters, Operators, and Tenders	534	0
Extruding and Forming Machine Setters, Operators, and Tenders, Synthetic and Glass Fibers	423	0
Inspectors, Testers, Sorters, Samplers, and Weighers	377	32
Total of Top 4 Occupations	1,898	32

Source: JobsEQ®.

⁹ The U.S. Department of Labor has classified over 800 occupations.

¹⁰ The available jobs are based on net increases related to expected growth of the industry as well as retirement and turnover.

next ten years—based on the firms that currently exist in the Danville metro area. In other words, a large number of workers that have lost their jobs in the Danville metro area over the last decade do not possess easily transferrable skills.

Clearly in this instance, Danville lacks the depth of industries that enables displaced workers to find suitable employment in alternative industries. Even though the region has boasted many economic development successes in the last decade, the number of jobs as well as the skills required by the incoming firms has not been sufficient to stem the losses from the manufacturing industries.

As one would expect, the Northern Virginia metropolitan area is a stark contrast to Danville. In 1990, about 820,000 people were employed in the Northern Virginia metropolitan area. By the third quarter of 2006, 425,000 additional jobs were added and employment swelled to 1.2 million workers. During the same period, the manufacturing industry shed 12,400 jobs with communication equipment manufacturing accounting for 4,900 of the lost jobs. However, for every one job lost in the manufacturing sector, more than ten were added in the professional, scientific, and technical services sector (which grew by 134,000 jobs from 1990 through the third quarter of 2006). Also in contrast to Danville, the diversity of Northern Virginia is apparent in its 20 largest private sector employers. In 1990, U.S. Air was the largest private sector employer but employed less than 1.5% of the region’s workers. In 2006, U.S. Air was no longer among the top 20 employers and INOVA Health System moved to the number one spot, employing less than 1.2% of all workers in the region. Clearly, Northern Virginia has a depth of expanding industries that provides many alternatives for displaced workers and emerging workers. But, do these opportunities exist for a declining manufacturing sector as well?

If communications equipment manufacturing would contract further in Northern Virginia, almost 75% of the workers in the four largest occupations in this sector would likely find jobs in alternative industries. The table below shows that electrical and electronic equipment assemblers would have the hardest

time finding new employment in Northern Virginia, but all the displaced inspectors, testers, sorters, samplers, and weighers should be able to find employment in the region in industries such as computer systems design, architectural and engineering services, and automotive repair.

Top Four Occupations with Job Losses in Northern Virginia Metro Area Communications Equipment Manufacturing Based on 4,900 Lost Jobs

Occupations	Lost Employment	Alternative Positions in Other Regional Industries Over Ten Years
Electrical and Electronic Equipment Assemblers	698	276
Team Assemblers	465	1,325
Electrical and Electronic Engineering Technicians	207	1,214
Inspectors, Testers, Sorters, Samplers, and Weighers	149	581
Total of Top 4 Occupations	1,519	3,396

Source: JobsEQ®.

Based on this analysis, it is clear why the unemployment rate in the Northern Virginia metro area was 2.3% in February 2007 compared with 6.9% in the Danville metro area. Moreover, the participation rate¹¹ of 58% in Danville is probably much lower than the 73% in Northern Virginia because individuals in Danville who are unable to find suitable alternative employment in the region may choose to drop out of the labor force. This mismatch of available jobs and skills also leads to more underemployment in Danville—a situation where individuals are in jobs that require less than their skill level. Based on JobsEQ® analytics, which estimate the percentage of high-skilled residents in a region relative to the percentage of high-skilled workers demanded, the supply of high-skilled workers outstrips the demand for high-skilled workers by six percentage points in the City of Danville. By contrast, a fifteen percentage point surplus of high-skilled jobs exists in Fairfax County relative to the skills of its residents.

¹¹ The participation rates are based on the labor force divided by the population aged 16 or greater. A higher participation rate generally reflects a healthier, more flexible workforce that translates into a more vibrant economy. Participation rates may be low because a large number of individuals are on disability or a large number of displaced workers are unable to find alternative employment. Low-skilled workers generally have a harder time finding alternative employment than high-skilled workers.

Adjusted Occupation Gaps Northern Virginia MSA

Occupation Title	Largest Positive and Negative Average Annual Gaps Over 10 Years
Waiters and Waitresses	983
Retail Salespersons	862
Computer Software Engineers, Applications	742
Combined Food Preparation and Serving Workers, Including Fast Food	572
Computer Software Engineers, Systems Software	411
Janitors and Cleaners, Except Maids and Housekeeping Cleaners	336
Cashiers	292
Network Systems and Data Communications Analysts	248
Registered Nurses	234
Home Health Aides	225
Construction Laborers	-155
Stock Clerks and Order Fillers	-186
Management Analysts	-189
First-Line Supervisors/Managers of Office and Administrative Support Workers	-200
Telemarketers	-201
First-Line Supervisors/Managers of Retail Sales Workers	-286
Bookkeeping, Accounting, and Auditing Clerks	-311
Office Clerks, General	-374
Computer Programmers	-508
Secretaries, Except Legal, Medical, and Executive	-614

Source: JobsEQ®.

Mismatches in jobs and skills are not limited to metropolitan areas such as Danville that are shedding manufacturing jobs. Based on the current trends of supply and demand for occupations, Northern Virginia firms are forecast to be short an average 742 computer software engineers a year over the next ten years and 234 registered nurses a year over the same period of time (shown as the positive gaps in the chart below). Due to contracting industries or offshoring of labor, however, some occupations will not be in demand (shown as the negative bars in the chart). From this perspective, an average of 201 telemarketers and 508 computer programmers per year over the next ten years in Northern Virginia will likely lose their jobs and have to find alternative employment.

Why do occupation mismatches occur? Some of the gaps exist because of the dynamics that are always present in

the economy. That is, industries are growing or contracting because of technological advances and changes in consumer taste and in competition. Some of the mismatches occur because of a lack of information.

Take the occupation of forensics technician as an example. It has become a popular choice among students. As a result, many higher education institutions have added forensics to their curriculum. According to the National Center for Education Research, 1,933 students graduated in the United States in the 2004/2005 school year with degrees in forensics ranging from a 2-year certificate to an advanced degree. According to Bureau of Labor Statistic forecasts, an average of 600 forensic science technicians are needed in the United States each year from 2004 through 2014. The forecast is based on net new growth in the occupation as well as retirements and replacements. It seems that the CSI¹² media factor is much more compelling than the credible data.

A basic tenant of a well-functioning free market is the free flow of information. Successful investors don't invest large sums of money based on rumors. Rather, they make informed decisions based on reasonable conclusions from solid research and analysis.

Why don't college students do the same research and analysis when considering a career that will impact their lifetime earnings? The information exists. However, it has not been linked together in a manner that supports decision-making. JobsEQ® fills this void by pulling together many disparate sources of data, mining the data to produce analytics that enable decision-making, and presenting the information in a way that is user-friendly and easy to understand.

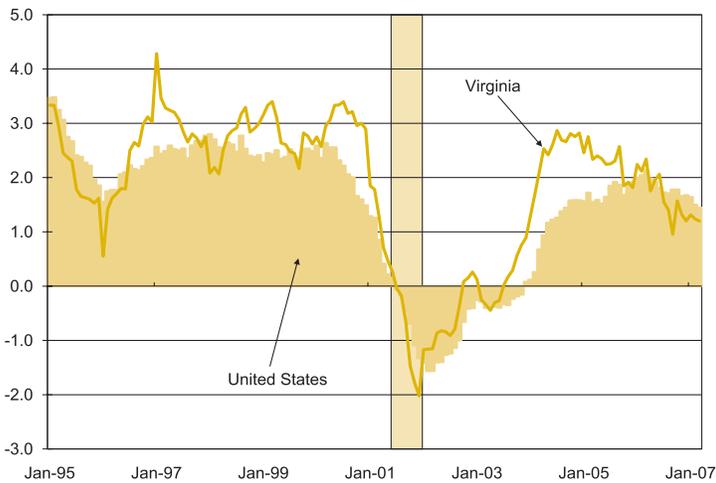
As more citizens, educators, economic developers, and policy reformers adopt JobsEQ® into their decision-making processes, the gap between an unprepared and a highly- and properly-skilled workforce will close. Some Virginia localities and state agencies are taking a lead role in the nation in adopting JobsEQ® as the next generation of decision-support information technology tools for making strategic policy decisions that impact workforce readiness. As the 'best managed state in the nation' and the 'best state for business,' Virginia is striving to remain a pioneer in this nation's economy.

¹² CSI: *Crime Scene Investigation* is a popular prime time television series credited with inspiring the increase in forensics programs.

Virginia Economy

While the pace of employment growth in the nation has slowed, employment in Virginia has experienced a more drastic decrease partially because it was growing much faster than the nation in 2004 and 2005. For the twelve months ending March 2007, employment expanded 1.2% in Virginia while growing 1.4% nationally. Employment in the state has grown at a slower pace than the nation since June 2006. Despite a more severe slowing of employment growth, Virginia has experienced a steady decline in its unemployment rate. As of March 2007, Virginia's 3.0% unemployment rate ranked 7th lowest among the states.

Employment Growth Percentage Change from a Year Ago



Source: Bureau of Labor Statistics.

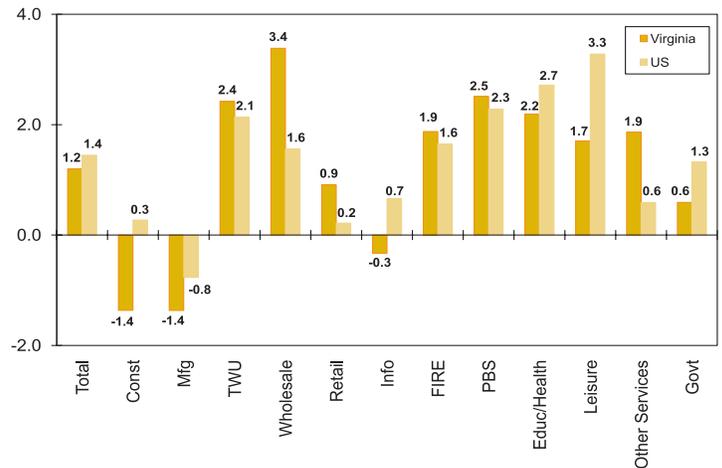
The state's economy is expected to continue the trend of slowing growth in 2007 before accelerating slightly in 2008. After advancing 1.9% in 2006, employment growth is forecast to slow to 1.6% in 2007 before increasing to 1.7% in 2008. Wages and salaries growth was 6.2% in 2006 and is expected to slow to 5.1% in 2007 and then increase to 5.6% in 2008. Building permit activity in Virginia fell 24.7% in 2006 and a further decline of 8.1% is forecast for 2007 along with modest 0.1% growth in 2008. Finally, growth in real retail sales is expected to improve, expanding 3.2% in 2007 after 2.5% growth in 2006.

Recent Growth

Since June 2006, state employment has grown at a slower pace than the national average. For the twelve months ending March 2007, employment in Virginia grew 1.2% (+45,000 jobs) as the nation experienced growth of 1.5%. Virginia was the 30th fastest growing state over this period.

Employment grew in nine of the twelve major industry sectors in Virginia over the twelve months ending March 2007. Due to the declining housing market, the construction industry experienced a drop in employment of 1.4%—though a loss was not experienced nationally where the construction industry advanced 0.3%. The manufacturing industry also shed jobs in Virginia, with employment declining 1.4% over the year ending in March with the closing of the Ford plant in Hampton Roads and its impact on local suppliers contributing to the decline. Manufacturing declined 0.8% nationally over the same period due in part to the outsourcing of manufacturing-related jobs.

Employment Growth by Sector Percentage Change, Year-Over-Year



Source: Bureau of Labor Statistics.

The wholesale trade sector experienced the fastest pace of growth (+3.4%) in the state for the year, adding over 4,000 jobs. Transportation, warehousing, and utilities (TWU) showed new life in 2007 after posting negative year-over-year growth in each month of 2006. For the twelve months ending March 2007, TWU experienced the third fastest growth in the state (+2.4%), expanding by nearly 3,000 jobs.¹³ The professional and business services (+2.5%), education and health services (+2.2%), and finance, insurance, and

¹³ The gains in TWU were partially due to the transportation and warehousing components recouping employment losses from the previous year.

real estate¹⁴ (+1.9%) sectors also posted notable gains for the year. Firms in the state added more than 15,000 jobs in professional and business services; 8,000 jobs in education and health services; and 3,000 jobs in finance, insurance, and real estate. The employment gain in the professional and business services sector was responsible for more than one-third of the jobs created within the state.

For the year ending March 2007, only the Danville metropolitan area experienced negative employment growth with a 0.7% decline (-300 jobs). In February 2007, Danville ranked 339th out of the 367 metro areas nationwide in terms of employment growth. The shrinking manufacturing sector, which accounts for nearly 20% of the jobs in Danville, has placed major strains on the area and shed more than 800 jobs for the year.

The Charlottesville (+5.0%) and Harrisonburg (+4.5%) metro areas experienced the most impressive pace of growth in the state for the twelve months ending March 2007. Both Harrisonburg and Charlottesville were among the twenty fastest-growing metro areas in the nation over this period.

Northern Virginia experienced the largest increase in payrolls for the year, adding 24,713 jobs. This 1.9% growth in employment accounted for more than half of all jobs added in Virginia. The professional and business services sector accounted for nearly half of Northern Virginia's payroll increase, expanding by 10,957 jobs. Education and health services also experienced a substantial gain of 3.3%, equating to 3,543 additional jobs.

Other areas growing at a more rapid pace than the state average were Winchester (+3.9%), Richmond (+1.9%), Roanoke (+1.9%), Hampton Roads (1.4%), and Lynchburg (+1.3%). Employment growth in Bristol (+0.5%) and Blacksburg (+0.5%) was below the pace of growth in the state.

Technology

Employment in the high-tech industry sector in Virginia continues to grow at a faster pace than total employment. For the year ending with the third quarter 2006 (the latest available data), high-tech employment in the state grew 3.4% (+17,974 jobs) compared to 1.1% in overall employment. Level one high-tech industries—those with the highest

concentration of technology-oriented occupations—grew at a faster pace, 4.1% for the year ending with the third quarter of 2006.

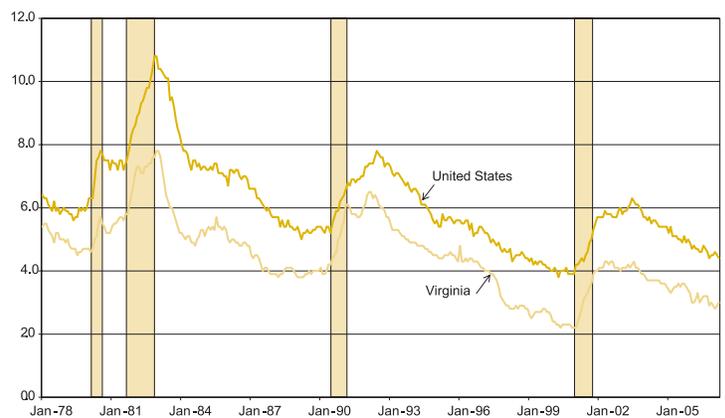
By sector, computer systems design and related services (+10,903 jobs) accounted for payroll gains greater than the net job gain in all level one high-tech industries. The semiconductor and other component manufacturing sector also experienced strong gains for the year, increasing employment by 15.9% or 957 jobs.

At the same time, a number of level one industries shed jobs during the period. The largest job loss came in data processing, hosting, and related services (-761 jobs). Other telecommunications (-12.6%); navigational, measuring, electromedical, and control instruments manufacturing (-11.6%); and computer and peripheral equipment manufacturing (-9.6%) experienced the fastest paces of decline among level one industries.

Labor Market

Despite slowing employment growth, Virginia's unemployment rate has trended downward since July 2003. As of March 2007, the unemployment rate stood at 3.0% in Virginia, just above the 5 ½-year low experienced in January 2007 (2.8%). This low unemployment ranked Virginia 7th among all the states in March. By comparison, the national unemployment rate was 4.4% in March, the lowest in 5 ½ years.

Unemployment Rate



Source: Bureau of Labor Statistics.

¹⁴ Despite the notable decline in the housing market, the real estate industry sector experienced solid growth for the year expanding 1.7%, equating to more than 1,000 jobs. Nearly 900 of these jobs were added in the Hampton Roads region. Finance and insurance showed slightly stronger growth of 1.9%, adding more than 2,500 jobs.

High-Technology Growth in Virginia

NAICS	Industry	Employment				Wages and Salaries Thousands of Dollars*			
		2005-Q3	2006-Q3	Change	% Change	2005-Q3	2006-Q3	Change	% Change
Total Employment		3,587,190	3,627,601	40,410	1.1	38,083,736	38,515,747	432,011	1.1
Total High Technology		525,000	542,974	17,974	3.4	10,459,016	10,522,861	63,845	0.6
Level 1		254,608	265,072	10,464	4.1	5,110,458	5,299,837	189,379	3.7
3254	Pharmaceutical and Medicine Manufacturing	3,597	3,536	-61	-1.7	62,230	59,348	-2,882	-4.6
3341	Computer and Peripheral Equipment Manufacturing	1,647	1,489	-158	-9.6	19,506	17,775	-1,731	-8.9
3342	Communications Equipment Manufacturing	2,819	3,053	233	8.3	54,562	61,066	6,504	11.9
3344	Semiconductor and Other Electronic Component Manufacturing	6,008	6,965	957	15.9	87,484	112,006	24,523	28.0
3345	Navigational, Measuring, Electromedical, and Control Instruments Manufacturing	5,928	5,241	-687	-11.6	99,802	97,721	-2,081	-2.1
3364	Aerospace Product and Parts Manufacturing	1,846	1,671	-175	-9.5	26,840	23,782	-3,057	-11.4
5112	Software Publishers	4,929	5,027	98	2.0	131,100	146,870	15,770	12.0
5161	Internet Publishing and Broadcasting	1,595	1,690	95	6.0	29,801	30,552	750	2.5
5179	Other Telecommunications	448	392	-56	-12.6	7,558	6,821	-738	-9.8
5181	Internet Service Providers and Web Search Portals	8,597	8,286	-311	-3.6	250,956	218,294	-32,661	-13.0
5182	Data Processing, Hosting, and Related Services	12,551	11,790	-761	-6.1	213,251	197,880	-15,371	-7.2
5413	Architectural, Engineering, and Related Services	69,525	70,072	547	0.8	1,226,741	1,217,256	-9,485	-0.8
5415	Computer Systems Design and Related Services	109,378	120,281	10,903	10.0	2,345,984	2,575,341	229,357	9.8
5417	Scientific Research and Development Services	25,738	25,580	-158	-0.6	554,642	535,124	-19,518	-3.5
Level 2		132,493	138,084	5,590	4.2	2,601,023	2,695,291	94,268	3.6
Level 3		137,898	139,818	1,919	1.4	2,747,535	2,527,733	-219,802	-8.0

* Includes some stock options that were exercised.

Note: Data in this table include both privately-owned and government-owned high-tech operations. Industries for which data are not disclosed are excluded from the table but not from the total high-tech figures.

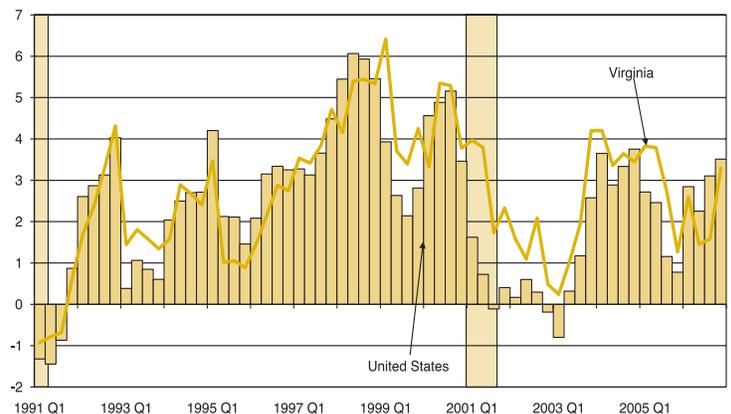
Source: Chmura Economics & Analytics and Virginia Employment Commission.

An industry is defined as high-tech in this publication if, at the national level, it possesses at least double the percentage of employment in technology-oriented occupations compared to the average for all industries. Level one high-tech industries possess at least five times the average. Level two employs 3.0 to 4.9 times the average and level three at least 2.0 times the average.

Income

As with employment growth, the nation outpaced Virginia in real personal income growth in 2006. For the year, real personal income advanced 3.3% in Virginia compared with 3.5% nationally. Real personal income growth in the state has slowed partially due to slowing employment growth in high-paying sectors such as professional and business services (PBS) and finance, insurance, and real estate (FIRE). For the year ending in the third quarter 2006, PBS employment advanced 3.1% in the state compared to 5.1% one year earlier, while FIRE experienced growth of 0.1% compared to 2.6% one year earlier. Both PBS (\$62,491) and FIRE (\$61,444) average annual wages are well above the state average of \$43,690.

Real Personal Income Growth Percentage Change From A Year Ago



Source: Bureau of Economic Analysis and Bureau of Labor Statistics.

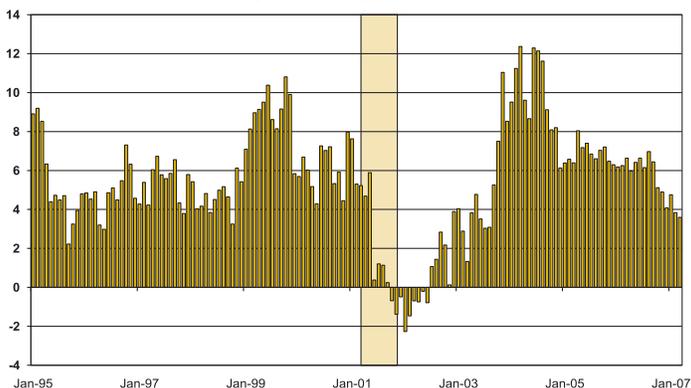
The proportion of income supplied by net earnings showed little change in both the state and the nation in 2005 and 2006. Net earnings consist of wage and salary disbursements, other labor income, and proprietor's income. As of the fourth quarter of 2006, net earnings provided 74.2% of personal income in the state and 69.2% in the nation compared to 74.5% and 69.4% in the fourth quarter 2005 respectively. The percentage of income supplied by transfer payments (social security, unemployment compensation, welfare, disability payments, etc.) also showed very little change in 2005 and 2006. As of the fourth quarter 2006, transfer payments provided 11.1% of personal income in the state and 14.8% in the nation compared to 10.9% and 14.7% in the fourth quarter 2005 respectively.

Retail Sales

Consumer spending in Virginia has slowed substantially since the summer of 2006. For the twelve months ending February 2007, retail sales in the state grew 3.6%, the slowest year-over-year growth since August 2003. The current growth in retail sales is nearly half the 7.0% pace experienced in August 2006. Regionally, Lynchburg (+9.6%), Bristol (+9.4%), and Blacksburg (+8.7%) saw the fastest growth over the year ending February 2007, and Winchester (-2.3%), Northern Virginia (+0.8%), and Danville (+0.8%) displayed the slowest growth for the year.

After retail sales growth slowed to 2.5% in 2006, consumer spending is expected to rebound in 2007. Real retail sales in the state are forecast to grow 3.2% in 2007 before slowing to a 2.4% pace in 2008.

Virginia Retail Sales Percentage Change, Year-Over-Year, Six-Month Moving Average

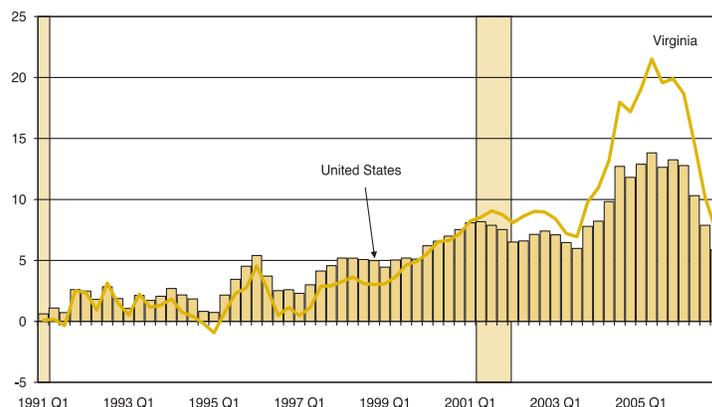


Source: Virginia Department of Taxation.

Housing Market

The substantial correction in the housing market is expected to end in late 2007. Higher mortgage rates and an all-time high in home appreciation growth in 2005 caused home affordability to plummet. Since 2005, mortgage rates have remained above 6.0%, and Chmura forecasts that mortgage rates will remain at levels greater than 6.0% throughout 2007 and into 2008.

Home Price Appreciation Percentage Change, Year-Over-Year



Source: Office of Federal Housing Enterprise Oversight

The cooling housing market was evident in 2006 as home sales declined after setting records in 2005. The Virginia Association of Realtors reported that new and existing home sales totaled 112,699 in 2006, a decline of 18.5% from 2005. New and existing home sales were 138,223 in 2005.

The correction of the housing market was further seen as home price appreciation slowed drastically in Virginia as well as the nation in 2006. For the year, home prices advanced 7.5% in Virginia and 5.9% in the nation. Only one year prior, growth was more than double the pace as home prices advanced 19.9% in Virginia and 13.2% in the nation, according to the Office of Federal Housing Enterprise Oversight (OFHEO) house price index.¹⁵

The declining housing market in 2006 was also apparent in residential building permit activity. After growing 0.1% in 2005, building permit activity plummeted 24.7% in 2006. Building permits are expected to move toward recovery in coming years, only declining 8.1% in 2007 and then growing 0.1% in 2008.

¹⁵ The OFHEO house price index is a weighted repeat sales index and therefore is a true measure of price appreciation as it is not affected by changes in the size or quality of homes sold.

Metro Areas

Employment is forecast to grow in 10 of Virginia's 11 metropolitan areas in 2007 and 2008. Danville is expected to continue its trend of negative growth, contracting 1.7% in 2007 and 1.0% in 2008. This region has been hit especially hard by the declining manufacturing sector which lost 31% of its employment in 2006.

The fastest pace of employment growth is expected in Northern Virginia. This region has benefited from above average employment growth in professional and business services (+3.7%), education and health services (+2.8%), and government (+2.6%) in 2006. Employment growth in 2007 is expected to be accompanied by a 6.1% increase in wages, surpassing the 5.1% expected wage growth for the state. Building permit activity in Northern Virginia is expected to be 17.1% lower in 2007 as compared to the prior year.

Employment in Winchester, Charlottesville, and Harrisonburg are also expected to grow faster than the state average over the next two years. In 2007, employment is expected to advance 2.5% in Charlottesville, 2.1% in Winchester, and 1.9% in Harrisonburg. Real retail sales for these areas are also forecast to expand at a respectable pace in 2007, aided by strong employment and wage growth. Wages in Winchester are forecast to grow 7.0% in 2007, the fastest among all metro areas in the state.

Richmond (+1.5%) employment is forecast to grow at a pace just below the state average of 1.6% in 2007. Wages in Richmond are also expected to grow at rates comparable to the state average, while real retail sales are forecast to have above average growth. Building permits in Richmond are expected to show a similar decline compared to the state in 2007 but are expected to grow significantly faster than the state average in 2008.

The metro areas of Blacksburg (+1.3%), Lynchburg (+1.3%), and Hampton Roads (+1.2%) are expected to add jobs at a slightly slower pace than the state (+1.6%) in 2007. Lynchburg (+4.5%), however, is forecast to experience a fast pace of growth in real retail sales. Hampton Roads and Blacksburg, meanwhile, are forecast to show slower than average growth in both wages and retail sales in 2007. Wages in 2007 are forecast to grow 4.6% in Hampton Roads and 3.8% in Blacksburg compared to 5.1% in the state. Real retail sales are expected to increase 3.2% in the state but 3.0% in Hampton Roads and 2.6% in Blacksburg in 2007.

Roanoke (+1.0%) and Bristol (+0.3%) are expected to experience employment growth in 2007 at a substantially slower pace than the state (+1.6%). Wage growth in Roanoke (+3.9%) and Bristol (+1.2%) is also forecast to be slower than the state average of 5.1% in 2007. Real retail sales growth in Roanoke (+3.6%), however, is expected to outpace the state (+3.2%) in 2007 while growth in Bristol (+2.8%) is forecast to be slower than in the state.

Virginia Forecast Summary: Most Likely Scenario

	Percentage Change From A Year Ago				
		Actual		Forecast	
	2004	2005	2006	2007	2008
Northern Virginia					
Total Nonagricultural Employment	4.5%	3.7%	2.6%	2.7%	3.2%
Wages and Salaries*	9.5%	8.5%	7.5%	6.1%	6.7%
Real Retail Sales	7.8%	4.0%	1.1%	2.4%	3.6%
Building Permits	0.1%	-7.2%	-36.1%	-17.1%	-9.4%
Hampton Roads					
Total Nonagricultural Employment	3.2%	1.5%	0.4%	1.2%	1.5%
Wages and Salaries*	5.8%	5.3%	5.5%	4.6%	5.5%
Real Retail Sales	5.9%	3.3%	2.8%	3.0%	2.6%
Building Permits	-4.7%	1.0%	-20.8%	-8.9%	-1.5%
Richmond					
Total Nonagricultural Employment	2.6%	2.0%	1.7%	1.5%	1.0%
Wages and Salaries*	7.6%	6.4%	4.8%	5.3%	5.1%
Real Retail Sales	6.3%	4.0%	4.8%	4.5%	2.5%
Building Permits	5.6%	10.4%	-15.0%	-7.9%	4.5%
Roanoke					
Total Nonagricultural Employment	-0.5%	1.5%	2.1%	1.0%	0.9%
Wages and Salaries*	4.6%	3.2%	5.7%	3.9%	3.1%
Real Retail Sales	2.8%	2.6%	3.9%	3.6%	3.1%
Building Permits	0.3%	-11.2%	-13.3%	-8.3%	1.5%
Lynchburg					
Total Nonagricultural Employment	1.5%	2.5%	2.9%	1.3%	0.3%
Wages and Salaries*	5.0%	6.0%	6.2%	3.5%	2.7%
Real Retail Sales	4.9%	3.3%	8.7%	4.5%	1.6%
Building Permits	-2.0%	28.6%	-0.6%	1.5%	10.6%
Charlottesville					
Total Nonagricultural Employment	2.5%	3.2%	2.8%	2.5%	1.8%
Wages and Salaries*	6.8%	7.0%	9.1%	5.1%	5.2%
Real Retail Sales	3.3%	7.2%	0.2%	4.4%	3.0%
Building Permits	4.7%	1.1%	-17.3%	1.5%	5.0%
Danville					
Total Nonagricultural Employment	-3.3%	-1.2%	-3.2%	-1.7%	-1.0%
Wages and Salaries*	1.2%	0.8%	0.0%	1.4%	2.0%
Real Retail Sales	1.4%	-0.8%	2.7%	0.0%	-0.8%
Building Permits	9.9%	7.9%	-14.0%	-12.4%	2.4%
Bristol					
Total Nonagricultural Employment	-1.0%	1.1%	1.6%	0.3%	0.2%
Wages and Salaries*	-1.5%	4.6%	8.1%	1.2%	3.3%
Real Retail Sales	1.8%	-1.1%	4.0%	2.8%	-2.0%
Building Permits	16.2%	-24.9%	-1.8%	-5.5%	-0.2%
Blacksburg					
Total Nonagricultural Employment	0.6%	-0.1%	1.4%	1.3%	1.3%
Wages and Salaries*	5.2%	4.8%	6.1%	3.8%	4.3%
Real Retail Sales	1.4%	2.2%	7.0%	2.6%	1.4%
Building Permits**	29.7%	N/A	N/A	N/A	N/A
Harrisonburg					
Total Nonagricultural Employment	2.1%	0.1%	3.2%	1.9%	2.0%
Wages and Salaries*	3.4%	4.5%	6.7%	4.1%	2.8%
Real Retail Sales	9.0%	4.7%	3.3%	2.5%	2.0%
Building Permits	52.5%	10.1%	-24.9%	2.3%	19.0%
Winchester					
Total Nonagricultural Employment	3.3%	1.9%	5.5%	2.1%	2.7%
Wages and Salaries*	7.1%	7.5%	7.9%	7.0%	6.2%
Real Retail Sales	12.6%	11.6%	0.2%	2.4%	6.5%
Building Permits	22.4%	22.5%	-24.1%	-3.1%	11.6%
Non-MSAs					
Total Nonagricultural Employment	-2.8%	0.9%	1.4%	-1.2%	-0.5%
Wages and Salaries*	6.3%	5.9%	3.7%	3.1%	4.0%
Real Retail Sales	4.6%	4.3%	2.2%	1.8%	1.5%
Building Permits	17.4%	27.9%	-20.8%	-7.5%	3.0%
VA-Totals					
Total Nonagricultural Employment	2.5%	2.3%	1.9%	1.6%	1.7%
Wages and Salaries*	7.6%	6.9%	6.2%	5.1%	5.6%
Real Retail Sales	6.4%	3.9%	2.5%	3.2%	2.4%
Building Permits	3.3%	0.1%	-24.7%	-8.1%	0.1%

*Wages and salaries include some options that were exercised. Actual data are through 3rd quarter 2006.

**Since 2005, Building Permits data are not reported for Blacksburg Metro. All reported series are seasonally adjusted.

*About
Chmura Economics & Analytics*

Chmura Economics & Analytics (Chmura) was founded by Christine Chmura in 1999. The firm specializes in applied economic consulting, quantitative research, and software solutions requiring the integration of advanced economic analysis.

- ✦ **Economic Impact Studies** - Chmura analyzes the economic impact of construction projects, transportation and tourism initiatives, and the relocations of companies and industries.
- ✦ **Economic and Workforce Development** - A variety of tools and consulting services are offered for analysis of area workforce inventories, industry conditions and target markets, and occupation clusters.
- ✦ **Education Tools** - Chmura helps educators determine demand for training programs.
- ✦ **Forecasting** - Chmura builds regional, industry, and firm-specific economic models.
- ✦ **Publications** - The *Virginia Economic Trends*© is published quarterly and the weekly *Economic Update* is available online. Chmura also creates and updates customized publications.
- ✦ **Regional Economic Development** - Chmura analyzes the strengths and weaknesses of regions to find industries that best fit an area's economic development goals and to conduct target marketing.
- ✦ **Site Selection** - Chmura provides consulting services to help businesses find the ideal location.
- ✦ **Software Solutions** – Chmura produces customized and user-friendly software systems and databases. Products include **JOBSeq**®, **WIBeq**™, and **OnStage**, an online project management workspace and collaboration tool.
- ✦ **Strategic Planning** - From vision to mission to implementation and tracking performance measures, Chmura offers a full range of services.
- ✦ **Surveys and Focus Groups** - Chmura conducts surveying and focus group research.

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Michael Thompson

Chairman and President: For over twenty years Mr. Thompson owned his own marketing company. He has been very active in national, state and local politics as well as a number of state and community organizations, commissions, and committees.

Randal C. Teague

Secretary/Treasurer/Counsel: A Partner in the law firm of Vorys, Sater Seymour and Pease, Mr. Teague is a noted international attorney.

John Alderson

President of the John Alderson Insurance Agency, he chaired the Reagan for President campaigns in Virginia.

Warren Barry

Former State Senator and small business owner.

William W. Beach

Director of the Center for Data Analysis and John M. Olin Senior Fellow in Economics at the Heritage Foundation in Washington, D.C.

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John Ryan

Senior Counsel and Director of Government Affairs for Bristol Myers Squibb.

Robert W. Shinn

President of Public Affairs, Capital Results.

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President, National Federation of Independent Business.

Dr. Robert F. Turner

Law professor at the University of Virginia at Charlottesville.

Robert W. Woltz, Jr

President and CEO of Verizon-Virginia.



“...a wise and frugal government, which shall restrain men from injuring one another, shall leave them otherwise free to regulate their own pursuits of industry and improvement, and shall not take from the mouth of labor the bread it has earned. This is the sum of good government, and this is necessary to close the circle of our felicities.”

—Thomas Jefferson, 1801

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