



the tampa bay economy

CAN THE US ECONOMY GROW AT A 3.5% TO 4% RATE ON A SUSTAINED BASIS?

By Vivekanand Jayakumar, Ph.D.

A centerpiece of the Trump administration's economic agenda is to push the U.S. real GDP growth rates towards the 3.5-4% range. During the 2016 presidential election campaign, Trump stated the following in a speech at the Economic Club of New York: "Over the next ten years, our economic team estimates that under our plan the economy will average 3.5% growth ... This growth means that our jobs plan, including our child care reforms, will be completely paid for in combination with proposed budget savings. It will be deficit neutral. If we reach 4% growth, it will reduce the deficit. It will be accomplished through a complete overhaul of our tax, regulatory, energy and trade policies." The politics of Trump's economic policies will be debated ad nauseam in the coming months and years. However, from a purely economic standpoint, there is a simple yet profoundly important question that needs to be addressed first: Is it realistic to expect the U.S. economy to grow at 3.5-4% per year over the next decade or longer?

A quick appraisal of the post-World War II growth pattern of the U.S. economy suggests that expectations of 3.5% or higher real GDP growth rates may be unrealistic. Figure 1.1 shows the average annual economic growth rate on a 10-year moving average basis (both GDP and GDP per-capita growth rates are displayed). A few long-term trends can be gleaned from the figure: until the early 1970s, U.S. average growth rate was quite

high; but, it swiftly declined and leveled off to a rate around 3% per year for the remainder of the 20th century. Over the past decade, however, growth has been substantially lower — averaging only around 1.3% per year.

There is widespread consensus amongst macroeconomists regarding the fundamental drivers of long-run economic growth. Real potential GDP growth rate (or the long-run sustainable economic growth rate) is determined by the growth rate of total hours worked (labor input) and by the growth rate of labor productivity (output per hour of work). Labor input is influenced by factors such as the overall population growth rate, the age-structure of the population, and the labor force participation rate (and the employment-population ratio). Demographic shifts (arising from aging of the population, decline in fertility rates and immigration) play a critical role in determining the long-run trends associated with the labor input. Policy factors can also have some influence — tax rates, support for female labor force participation, labor market flexibility and other such factors do affect labor supply. In the long run, however, fundamental demographic trends matter significantly more than policy changes related to labor supply. Labor productivity is typically defined as real output per labor hour (increases in labor productivity arise when output increases at a faster pace than labor hours). Labor productivity is determined by: technological progress (referred to as total factor productivity (TFP) growth), capital intensity or capital deepening (capital per worker), and labor composition (which

Inside this Issue of The Tampa Bay Economy:



F. Frank Ghannadian, Ph.D.
Dean, Sykes College of Business

...1

Can the US Economy Grow at a 3.5% to 4% Rate on a Sustained Basis?

by Vivekanand Jayakumar, Ph.D.
Associate Professor of Economics



...4

The Tampa Bay Economy: March Update

by John R. Stinespring, Ph.D.
Editor, Associate Professor of Economics



captures human capital or the education, skill-level and experience of workers). Figure 1.2 highlights the labor productivity growth rate and the growth rate in total hours worked. It is

continued on page 2

Figure 1: US Long Run Growth Rates (Annual Growth Rates (%); 10-Year Moving Averages

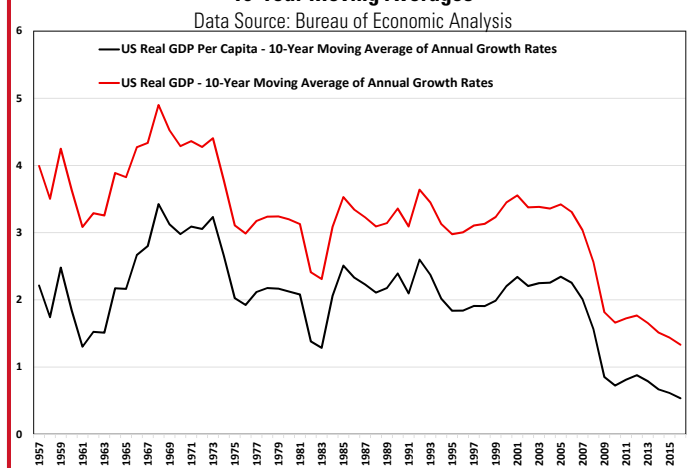


Figure 1.2: US Labor Input and Labor Productivity Growth Rates (%)

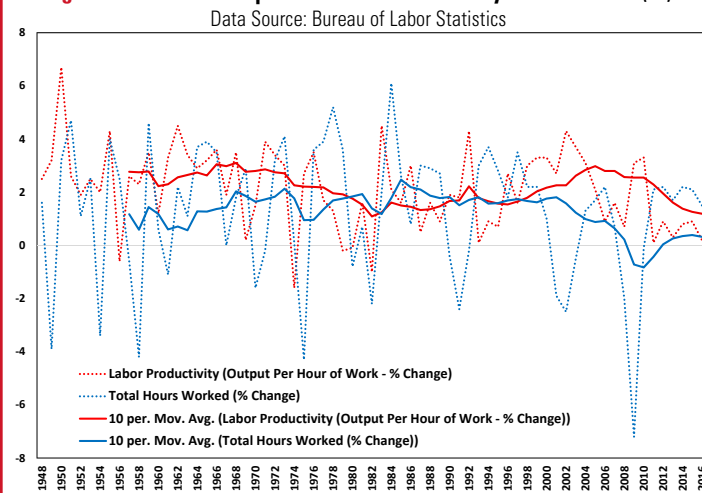
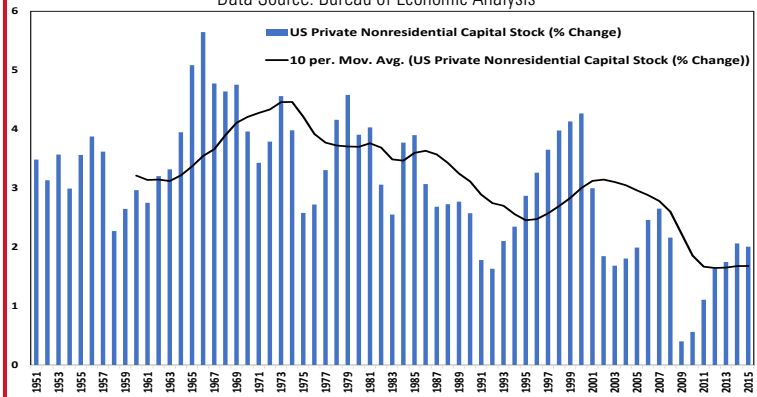


Figure 1.3: US Private Nonresidential Capital Stock (Chain Weighted Index; Annual % Change)

Data Source: Bureau of Economic Analysis



Can the US Economy Grow at a 3.5% to 4% Rate on a Sustained Basis?

continued from page 1

apparent that since 2001, growth rate of total hours worked has been underwhelming. During and after the Great Recession (recession lasted from December 2007–June 2009), both labor input and labor productivity growth rates have persistently disappointed.

Economists employ growth decomposition techniques to examine the underlying drivers of long-run economic growth. In Box 1, a simple yet widely-used version for studying the determinants of real potential GDP growth rate is highlighted. The primary insights provided by the decomposition technique are as follows: the real potential GDP growth rate is dependent on the growth rate of labor productivity, on the underlying changes in labor utilization rates, and on fundamental demographic trends (captured by the growth rate of the working-age population share and the overall population growth rate). In the following sections, recent developments and future prospects associated with the growth contributing components are discussed.

U.S. labor productivity growth rate has been quite low in recent years (see Table 1). There was a brief spike observed between 1996 and 2004 that was associated with the information communication technology (ICT) revolution and the dot-com bubble. However, the recovery in labor productivity proved to be fleeting. Declining contribution from capital deepening and slowdown in TFP (also referred to as Multi-Factor Productivity (MFP)) growth rate appear to be the primary culprits behind the recent slowdown in U.S. labor productivity

growth. Capital deepening (capital per worker), by some measures, has been growing at an historically low rate in recent years. As shown in Figure 1.3, there has been a steady decline in the rate of capital accumulation in the U.S. — the growth rate of the capital stock (which includes equipment, structures and intellectual property products) has fallen from an annual average rate of around 3.45% during the 1951–2000 period to an average rate of around 1.81% since 2001. Less capital per worker adversely affects labor productivity. Weak economic recovery and subdued prospects for future growth may be contributing to the persistently disappointing levels of business investment observed in recent years. Additionally, increased financialization of the economy and a flawed corporate incentive structure that prioritizes share buybacks and dividend payouts relative to long-term capital investments have contributed to the relative weakness in business fixed investment. Some have argued that policy uncertainty may also be a factor — if so, the heightened uncertainty seen in the early months of the Trump administration may not bode well for long-term business investment (pro-business policy pledges involving tax reform and deregulation may be offset by business-unfriendly policies involving immigration, border taxation and international trade).

TFP growth rate depends on factors such as the pace of technological progress (which itself depends on aspects such as the existing stock of knowledge and the resources devoted to innovation-related activities), underlying business sector dynamism (which can affect the adoption and transmission rate of new innovation and the replacement rate of inefficient firms/sectors with more efficient ones), and the allocative efficiency of asset and factor markets (for instance, resource misallocation due to asset market bubbles or unsustainable

credit booms can hurt TFP growth). There is considerable debate regarding the pace of innovation and the significance of recent technological breakthroughs. Economist Robert Gordon, in his 2016 magnum opus *The Rise and Fall of American Growth*, argues that productivity benefits arising from the previous generation of technological breakthroughs (especially those that occurred between 1870 and 1900) provided one-time benefits that were unique in their scale and impact on human society and are unlikely to be repeated. In a prior work, Gordon noted: “The second industrial revolution (IR2) within the years 1870–1900 created within just a few years the inventions that made the biggest difference to date in the standard of living. Electric light and a workable internal combustion engine were invented in a three-month period in late 1879. The number of municipal waterworks providing fresh running water to urban homes multiplied tenfold between 1870 and 1900. The telephone, phonograph, and motion pictures were all invented in the 1880s. The benefits of IR2 included subsidiary and complementary inventions, from elevators, electric machinery and consumer appliances; to the motorcar, truck and airplane; to highways, suburbs and supermarkets; to sewers to carry the wastewater away. All this had been accomplished by 1929, at least in urban America, although it took longer to bring the modern household conveniences to small towns and farms. Additional “follow-up” inventions continued and had their main effects by 1970, including television, air conditioning and the interstate highway system. The inventions of IR2 were so important and far-reaching that

Box 1: Decomposition of the Potential Real GDP Growth Rate

Mathematically, Real GDP (Y) can be written

$$Y = \left(\frac{Y}{H}\right) \left(\frac{H}{WP}\right) \left(\frac{WP}{P}\right) P$$

where H refers to total hours worked, WP refers to working-age population, and P refers to total population. $\frac{Y}{H}$ equals real output per hour of work (a measure of labor productivity); $\frac{H}{WP}$ captures labor utilization; and, $\frac{WP}{P}$ represents the working-age population share. Labor utilization can be written in a form that is more informative (note: E refers to total employed, and LF refers to labor force):

$$\frac{H}{WP} = \left(\frac{H}{E}\right) \left(\frac{E}{LF}\right) \left(\frac{LF}{WP}\right)$$

= (Average Hours Per Worker) (Employment Rate) (Labor Force Participation Rate)

Taking logs and differentiating with respect to time both sides of the real GDP equation allows us to consider the drivers of real potential GDP growth rate:

$$g_Y = g_{LP} + g_{LU} + g_{WPR} + g_P$$

Essentially, the growth rate of real potential GDP (g_Y) can be stated as the sum of the growth rate of labor productivity (g_{LP}), the growth rate of labor utilization (g_{LU}), the growth rate of working age population share (g_{WPR}), and the growth rate of overall population (g_P).

Taking logs and differentiating with respect to time the labor utilization equation gives us (AH refers to average hours per worker; ER refers to employment rate; and, $LFPR$ refers to labor force participation rate):

$$g_{LU} = g_{AH} + g_{ER} + g_{LFPR}$$

Labor utilization is related to the average hours per worker, the employment rate and the labor force participation rate.

Table 1: Decomposition of US Labor Productivity Growth Rate (%)

Data Source: Bureau of Labor Statistics

	Labor productivity	Multifactor productivity	Contribution of labor composition	Contribution of capital intensity
1988–1995	1.6	0.6	0.4	0.6
1996–2004	3.3	1.7	0.2	1.2
2005–2016	1.3	0.5	0.2	0.5

Figure 1.4: US Total Factor Productivity Growth Rate (%)
Data Source: Federal Reserve Bank of San Francisco

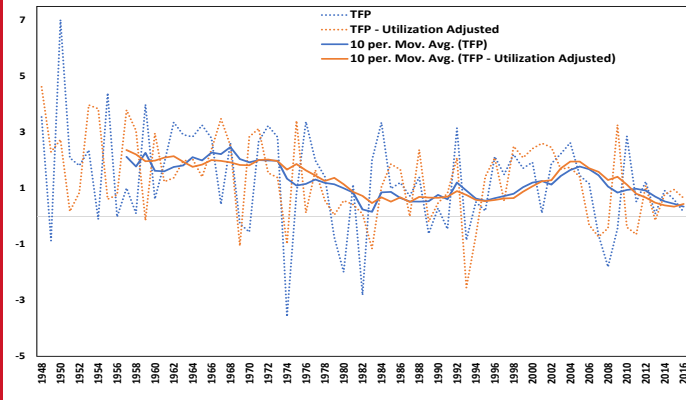
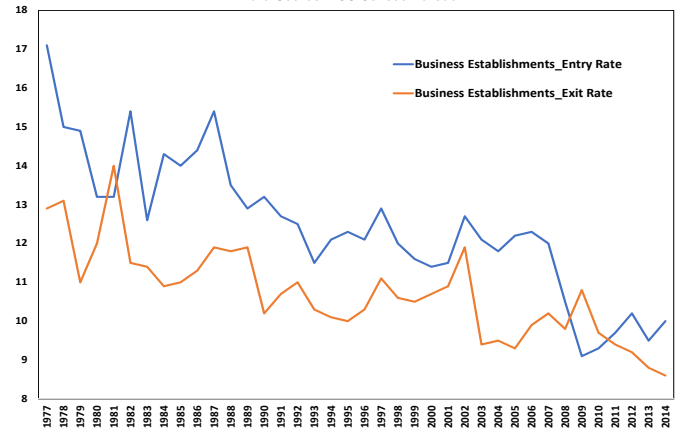


Figure 1.5: Business Sector Dynamism - Firm Entry/Exit Rates
Data Source: US Census Bureau



they took a full 100 years to have their main effect ("Is US economic growth over? Faltering innovation confronts the six headwinds" by Robert J. Gordon, *CEPR Policy Insight No. 63*, September 2012). Unlike the techno-optimists in Silicon Valley, Gordon and others are less enthused about the potential for future productivity growth. As shown in Figure 1.4, the ICT revolution associated with the internet only provided a brief bump up in economy-wide TFP (the surge in productivity was fleeting and involved mostly the 1996-2004 period), and the on-going digital revolution is yet to provide a noticeable boost to productivity. In fact, barring the 1996-2004 period, U.S. TFP growth rate has been underwhelming ever since 1973.

Besides the controversies surrounding the pace and impact of revolutionary technologies, there are other areas of concern associated with TFP. Decline in government and private sector funding for basic science research poses a long-term threat to the innovation potential of the American economy (according to data gathered by the American Association for the Advancement of Science, federal government R&D expenditure fell from a peak of 11.7% of total outlays in 1965 to a low of 3.4% of total outlays in 2016). There has also been a steady decline in the rate of firm entry and exit in recent years that reflects a worrying decline

in U.S. business sector dynamism (see Figure 1.5). Subdued rates of business creation and destruction may signal that resources are not necessarily being shifted to their most productive use. Additionally, growing concentration and rising market power of established firms may prevent the entry of young and more innovative firms. According to a recent report (*Dynamism in Retreat* published by the Economic Innovation Group), the share of firms in the economy that were 16 years or older stood at 36% in 2014 as opposed to just 23% in 1992; also, share of jobs in firms that were 16 years or older stood at 74% in 2014 as opposed to just 60% in 1992. The report also notes that market concentration in the U.S. has risen sharply — two-thirds of America's industries saw an increase in market concentration between 1997-2012 and, astonishingly, in nearly half of all industries, the four largest companies captured 25% or higher market shares).

Clearly, given the above discussion surrounding the decline in capital deepening and the slowdown in TFP growth, it is hard to foresee a sustained surge in labor productivity occurring anytime soon. Labor composition growth, which depends on improvements to human capital, has largely stabilized over the past decade — it is hard to sustain improvements in skill-development and educational attainment

levels over time (for instance, it is difficult to replicate the impact of the GI Bill and the jump in college enrollments seen in the post-World War II decades). On the demographic front (whose importance is highlighted in the growth decomposition shown in Box 1), the working-age share of the population has started falling and it is expected to continue to decline. The post-World War II boost to U.S. working-age population provided by baby-boomers (and their kids) has largely run its course (see Figure 1.6). Even more strikingly, the employment-population ratio and the labor force participation rate have both declined sharply over the past decade, and, with the aging of the baby-boomers, it is unlikely to return to the high levels seen at the end of the 20th century. Additionally, the one-time benefit provided by the entry of women into the formal workforce has already been cashed in — female labor force participation rate, which rose steadily throughout the second half of the 20th century, peaked in 2000 and has declined ever since. These developments are likely to adversely affect the labor utilization rate and the labor input growth rate going forward.

The overall population growth rate and the overall labor force growth rate have also declined in recent years (see Figure 1.7). Declining fertility rates, slowing immigration and aging of the

continued on page 6

Figure 1.6: US Long-Run Demographics and Labor Market Trends (%)
Data Source: World Bank and Bureau of Labor Statistics

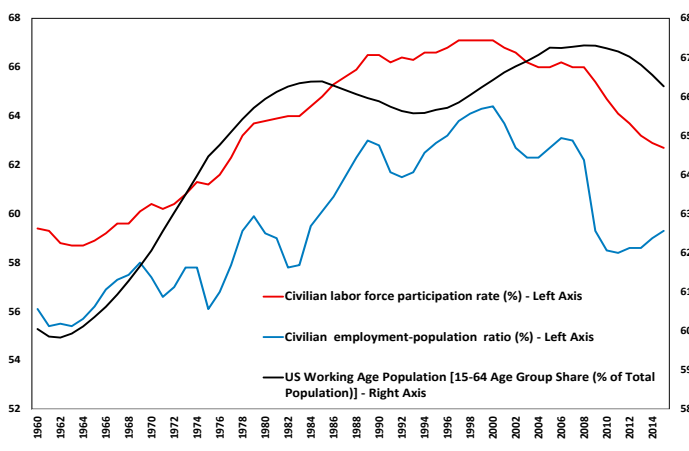
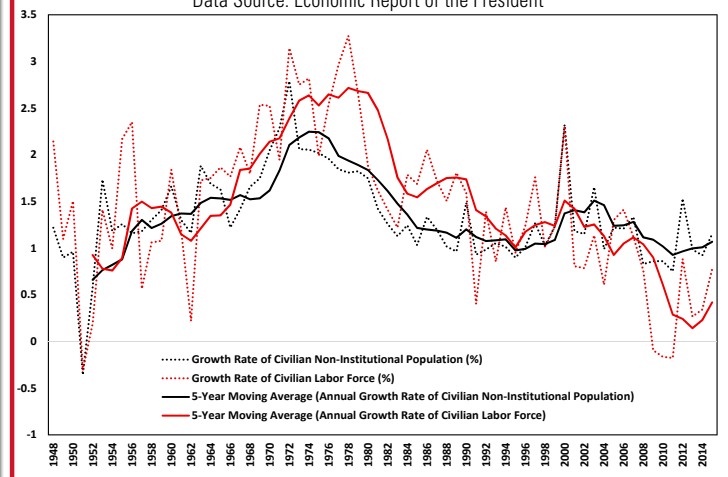


Figure 1.7: US Population and Labor Force Growth Rate (%)
Data Source: Economic Report of the President



THE TAMPA BAY ECONOMY: MARCH UPDATE

By John R. Stinespring, Ph.D.

Is the economy due for a recession? The U.S. has now entered its third longest economic expansion since 1850 and economists are wondering when it will end. We at *The Tampa Bay Economy* are wondering the same as our local economy (Hernando, Hillsborough, Pasco and Pinellas counties combined) enjoys its second longest economic expansion since records began in 1990. In this update, we examine economic indicators for insight into our current expansion and its duration. We will see that Tampa Bay's economic expansion has the potential to continue into the foreseeable months ahead based on measures of economic activity, the labor market and housing market.

Figure 2.1 shows the monthly economic activity index for both the U.S. and the Tampa Bay economy (TBE) from December 2000 through December 2016. Values above 0 indicate an expanding economy (as measured by employment, output and other measures of economic activity) while those below indicate contraction. One noteworthy picture arises: though economic activity in the U.S. declined more deeply than in the TBE, the U.S. recession

was shorter because the TBE recession began earlier (March 2007 compared to December 2007 for the U.S.) and ended later (December 2009 compared to June 2009 for the U.S.). A St. Louis Federal Reserve study of the relationship between business cycles at the national and metropolitan levels indicates that the TBE is more volatile than the U.S. This same study (later published as "Metro business cycles" by Maria A. Arias, Charles, S. Cascon and David E. Rapach, *Journal of Urban Economics* No. 94, 2016) implies the longer recessionary period for the TBE may generate a longer expansionary period than for the U.S. The steep slowing of economic activity starting in June 2016 makes this relationship and other local economic indicators even more important to assessing our expansion's potential.

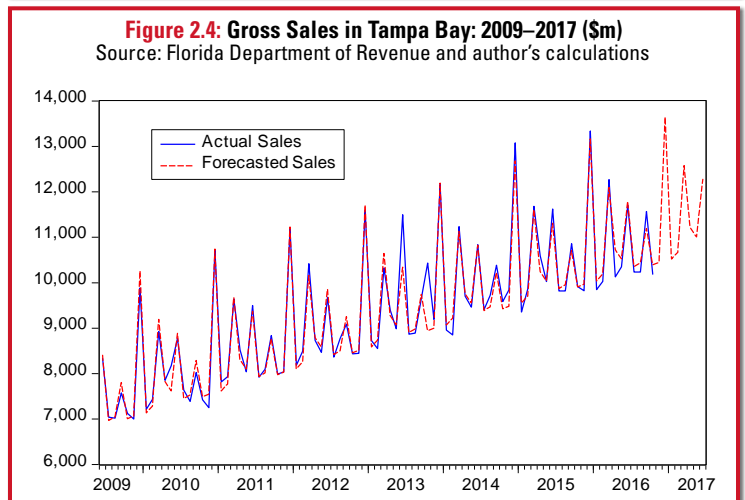
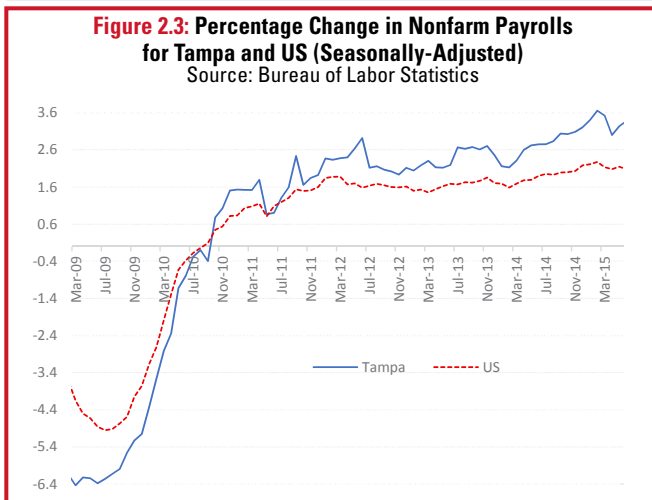
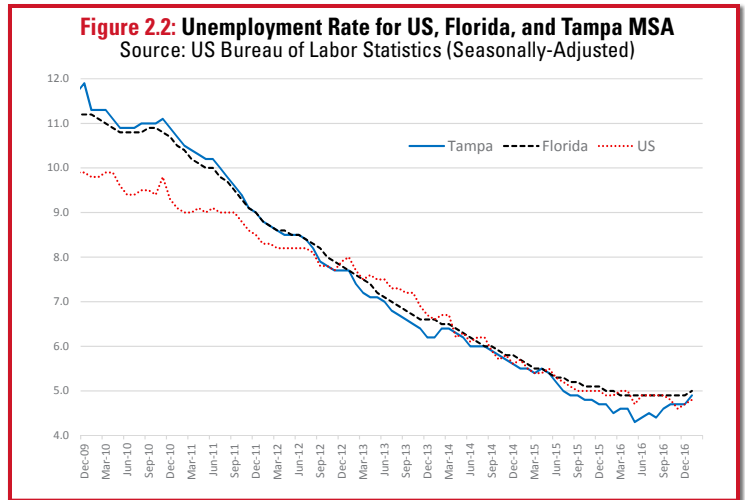
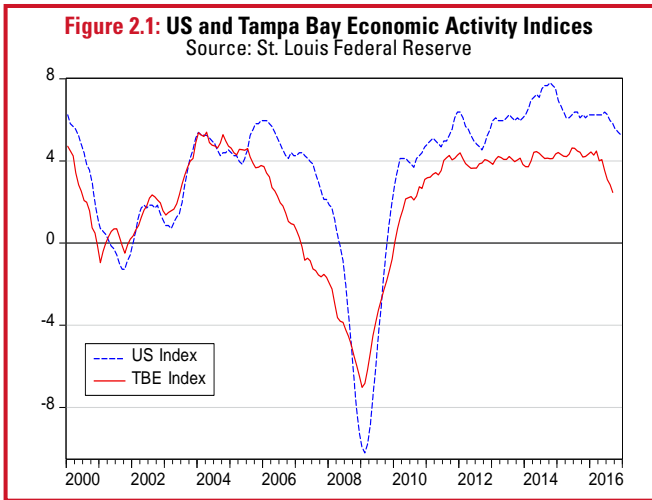
Labor market indicators of expansion in the Tampa Bay economy remain positive as seen from both employment growth and unemployment declines. As of January 2017, the (seasonally adjusted) unemployment rate stood at 4.9% for the TBE, 5% for Florida, and 4.8 nationally. Figure 2.2 shows the unemployment rate falling steadily since 2009 for all three series and leveling off near 5%, well within its "natural" range for the nation as estimated

by economists. Though job growth lagged the unemployment declines, a historically long increase in monthly payrolls began in September 2010 as can be seen from Figure 2.3. Similar to the unemployment data, monthly job growth seems to have leveled off at near 3.6% for Tampa and 1.8% for the nation. These employment measures are lagging indicators of the economy's direction and as such, only tell us how well the economy performed in the recent past to generate these jobs.

For a coincident indicator — one that indicates where the economy currently is in the business cycle — we examine measures of overall demand in the Tampa Bay economy. Figure 2.4 shows TBE Gross Sales following a clear upward trend from \$7.1 billion in October 2009 to over \$10 billion by October 2016. The graph depicts a growing economy in expansion with seasonal peaks that appear quarterly in December, March, June and September. As is clear from the figure, our model of gross sales forecasts the trend and seasonality of the actual data well and indicates continued sales growth through the first half of 2017.

No economic expansion can be sustained without a healthy housing market. Home construction has a significant economic

continued on page 5



The Tampa Bay Economy: March Update

continued from page 4

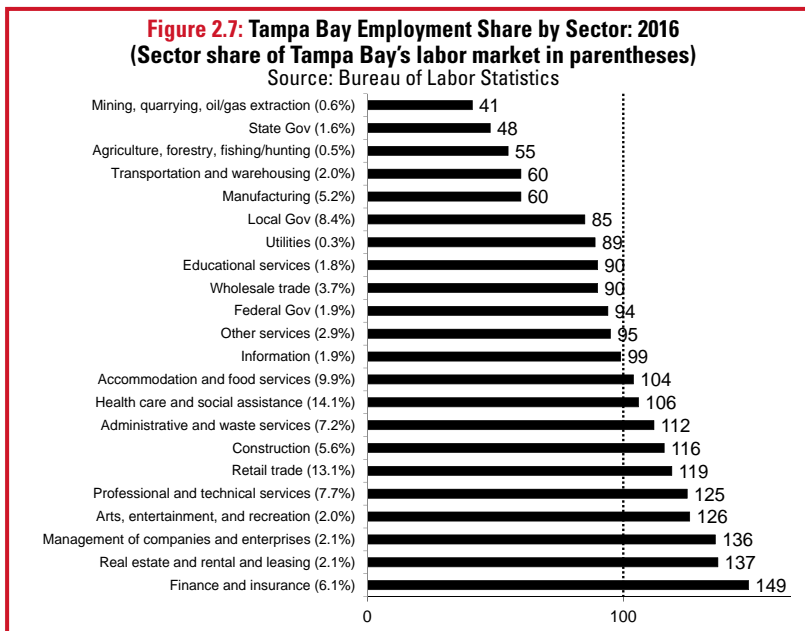
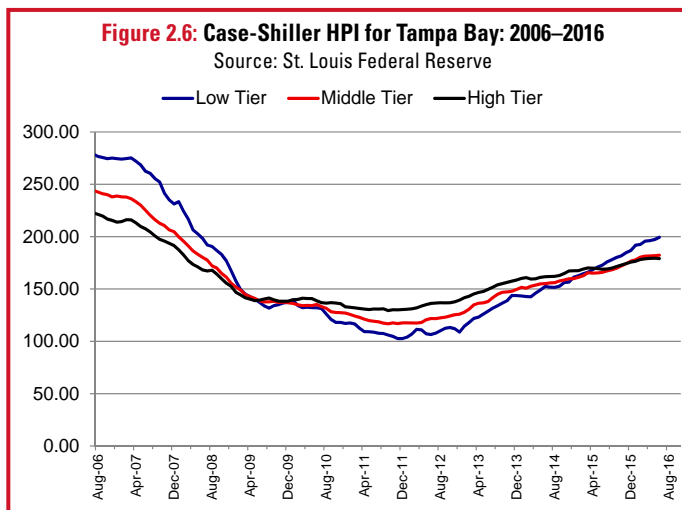
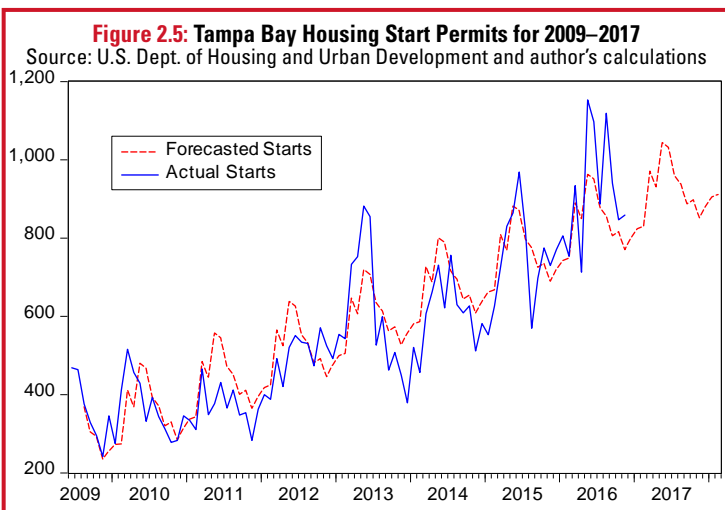
impact on an economy. Persistent increases in construction lead economic expansions while sustained declines tend to lead recessions. As such, housing provides a crucial leading indicator of our local economy. Figure 2.5 shows that Housing Starts by Building Permits since mid-2009, though volatile, have followed an upward trend with seasonal spikes. Our forecast fits the data fairly well and suggests a continued trend over the succeeding months. Home prices also suggest a continued economic expansion as they have risen consistently along with sales. The Case-Shiller index in Figure 2.6 shows an increase in low-, medium-, and high-tier home prices throughout the region since Dec. 2011 (where index = 100 for year 2000). Though increases have been steady, house prices remain well below their 2006 peaks.

Overall, our indicators suggest Tampa Bay's economic expansion may be sustained

in the months ahead. Labor markets seem to be near their equilibrium level. Sales appear to be growing on their long-term trend. And housing construction and prices have room to grow. So perhaps now is the time to think about the next recession for Tampa Bay. Specifically, when it does come — as inevitably it will — where will it be felt most? One way to gain insight is to consider the dominant sectors of the local economy and how they typically respond to economic downturns. Figure 2.7 reports Tampa Bay's employment shares by sector relative to the U.S., where ratios above one indicate sectors in which Tampa Bay specializes relative to the U.S. For 2016, Finance and Insurance remains the top specialty. Though some of this industry may be procyclical, meaning a downturn in the economy will be reflected by a downturn in this industry, the direct impact

on employment may be modest as it only employs 6.1% of the workforce. Similarly, the construction sector of Tampa Bay is highly procyclical and a dominant local sector, but employs only 5.6%. Retail trade, however, is both procyclical and the second largest employer of Tampa Bay, encompassing 13.1% of employment. As such, its recessionary impact will be significantly larger. To counter these negative shocks, the largest employer in the TBE is health care and social assistance, and this sector is not procyclical but is, instead, considered "recession proof." Until the next recession comes, let us hope for even more expansion records to be broken.

Write to Professor Stinespring at jstinespring@ut.edu



Can the US Economy Grow at a 3.5% to 4% Rate on a Sustained Basis?

continued from page 3

population are the primary causes. Going forward, if the current anti-immigration sentiments become more pervasive and if public policy shifts towards curtailing inflow of foreigners, then it will have a marked effect on the growth rate of the U.S. labor force and thus reduce the real potential GDP growth rate. Importantly, an aging society requires considerably more resources to be devoted to the social safety net — Social Security and Medicare expenditures are likely to grow sharply in the coming decades. This will affect resource allocation from both the public sector and the private sector — less funding for basic science research and technological innovation and more resources devoted to taking care of the elderly. It will also limit the magnitude of future tax cuts — assuming that controlling government budget deficits and stabilizing the federal debt level is still a matter of priority for politicians.

To summarize, the slowdown in total factor productivity and capital deepening are likely to persist and they will continue to limit labor productivity growth. Meanwhile, fundamental

demographic shifts indicate a diminishing contribution to overall GDP growth from labor input growth. Logically, slow productivity growth when combined with a reduction in labor input growth implies a lower trend GDP growth rate for the U.S. While tax cuts and deregulation may help on the margins, they are unlikely to provide a sustained boost that can overcome the fundamental supply-side constraints affecting the American economy. In the absence of a revolutionary technological breakthrough (that provides a lasting economy-wide impact) or a massive increase in U.S. labor force growth rate, it is hard to foresee the potential GDP growth rate reaching 3.5%. It is possible to make a case that the rapid growth era of 1948–1972 (a period during which the U.S. achieved growth rates above 3.5% with ease) was in fact an historical anomaly that cannot be easily duplicated. In his recent book, *An Extraordinary Time: The End of the Postwar Boom and the Return of the Ordinary Economy*, Marc Levinson argues that boom times are in fact the exceptions and not the norm, and that the circumstances that led to the post-World War II boom and the golden age of growth (1948–1972) were truly unique. Levinson rightly notes that: “During the boom years, raising productivity was easy. Millions of sharecroppers and subsistence

farmers were drawn into factory jobs where they did their work with advanced machinery instead of horses and mules. Large investments in education had an immediate payoff in the form of a more highly skilled workforce, and new expressways helped get goods to market more easily. Meanwhile, reductions in trade barriers forced companies to become more efficient if they hoped to survive. But once that low-hanging fruit was picked, raising productivity became a far more difficult task. After growing about 4.4% per year from 1951–1973, average productivity in 12 wealthy economies has grown less than 2% per year since 1974. Nothing governments have done — lowering taxes on business, deregulating and privatizing industries, funding scientific research, weakening unions, reforming education — has changed that trend,” (“The Problem with the U.S. Economy Isn’t Something Politicians Can Fix” by Marc Levinson, *Harvard Business Review*, Nov. 29, 2016).

Write to Professor Jayakumar at vjayakumar@ut.edu.

This newsletter is generously underwritten by:

Thomas Financial



Wealth requires constant nurturing. There’s the work of accumulating it and the diligence required to preserve it. Planning for the future, or for the future of your company, is serious business. Thomas Financial specializes in serving the financial security needs of the fortunate few hundred.



Rick Thomas,
University of Tampa, Class of ’72
Chairman Emeritus, University of
Tampa Board of Trustees

CEO, Thomas Financial
5550 W. Executive Drive, Suite 500
Tampa, FL 33609

Phone (813) 273-9416
www.thomasfinancial.com

The Tampa Bay Economy newsletter is free for individual and organizational subscribers.
To subscribe, visit: www.ut.edu/business/tampabayeconomy/subscription/



The University Of
T A M P A

The University of Tampa | John H. Sykes College of Business
401 W. Kennedy Blvd. | Box 0 | Tampa, FL 33606-1490 | www.ut.edu