THE UNIVERSITY OF TAMPA
SYKES COLLEGE OF BUSINESS

A University of Tampa Semi-Annual Review
Fall 2017

AACSB ACCREDITED

the tampa bay economy

WHY HAS U.S. INFLATION REMAINED PERSISTENTLY LOW?

By Vivekanand Jayakumar, Ph.D.

Steady improvement in labor market conditions has led to a sharp decline in the U.S. unemployment rate—from 8.3% in January 2012 to 4.1% in October 2017. Meanwhile, the Federal Reserve has embarked on a path to normalize U.S. monetary policy by undertaking several rate hikes (policy rate target was stuck at 0.00-0.25% between December 16, 2008 and December 16, 2015; following four rate hikes spread over the December 2015-June 2017 period, the federal funds rate target rate range has now reached 1.00-1.25%). With equity markets at or near record levels and with the unemployment rate close to the natural rate of unemployment, further rate hikes by the central bank appear inevitable. Furthermore, an emboldened Federal Reserve has recently implemented measures aimed at gradually unwinding its sizable balance sheet holdings of long-dated Treasury securities and mortgage-backed securities (three rounds of quantitative easing implemented between November 2008 and October 2014 saw the U.S. central bank's balance sheet balloon from under $1 trillion to around $4.5 trillion).

The above noted steps towards monetary policy normalization are being undertaken amidst a general sense of optimism regarding the health of the American economy. Decent economic growth (especially in light of the lowered estimates for U.S. potential GDP growth rate), robust financial market conditions, and a low unemployment rate appear to provide definitive support for policy tightening by the central bank. The Federal Reserve, however, continues to face a conundrum regarding one of its key policy objectives: a persistent and perplexing shortfall in the U.S. inflation rate—both headline and core inflation rate measures based on the personal consumption expenditure (PCE) have persistently fallen short of Federal Reserve's 2% target (see Figure 1.1). The Trimmed-Mean PCE inflation rate, an alternate measure of core inflation calculated by the Federal Reserve Bank of Dallas, also indicates that the U.S. inflation rate has consistently undershot the central bank's target in recent years. In a speech delivered to the *National Association of Business Economics* on September 26, 2017, Federal Reserve Chair Janet Yellen noted: "Key among current uncertainties are the forces driving inflation, which has remained low in recent years despite substantial improvement in labor market conditions". In the same speech, Yellen also highlighted her concerns regarding below-target inflation rates by noting: "Sustained low inflation such as this is undesirable because, among other things, it generally leads to low settings of the federal funds rate in normal times, thereby providing less scope to ease monetary policy to fight recessions. In addition, a persistent undershoot of our stated 2 percent goal could undermine the FOMC's credibility, causing inflation expectations to drift and actual inflation and economic activity to become more volatile".

There are two broad schools of thought regarding the persistence of low inflation in the U.S. and in several other advanced economies. Janet Yellen and many other members of the central banking community appear to holdout the hope that below-target inflation is a temporary phenomenon and that traditional theories of inflation dynamics (primarily, Phillips Curve-based theories that emphasize the role of resource utilization gaps and inflation expectations in determining inflation) are still capable of providing relevant information regarding the future evolution of inflation in the U.S. and other advanced economies. An alternate interpretation of recent trends, that undercuts traditional central bank viewpoints on inflation dynamics, has been proposed by, amongst others, economists at the Bank for International Settlements (BIS). Proponents of the alternate perspective, such as BIS Chief Economist Claudio Borio, suggest that fundamental structural developments are responsible for the persistence of low inflation in recent years and that the era of below-target inflation may last for a while longer. Specifically, they argue that demographic shifts,

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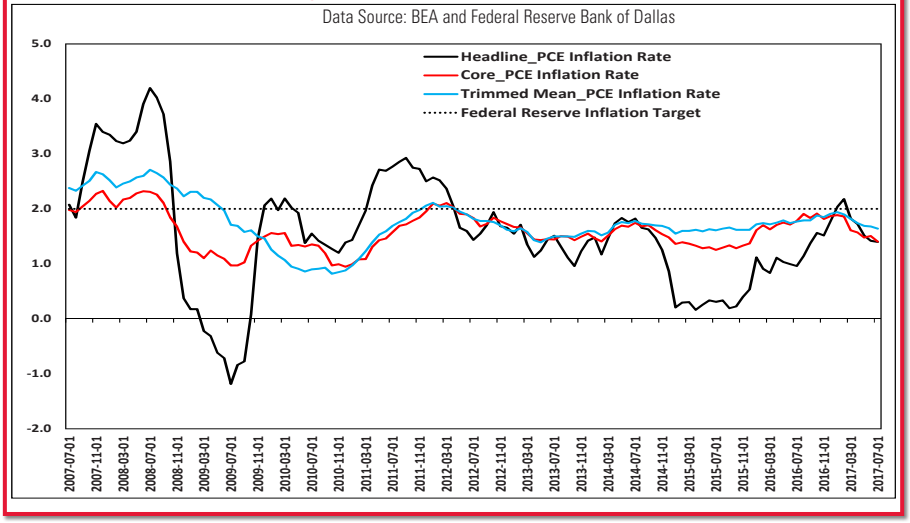
Figure 1.1 : U.S. Inflation Rate (%), 2007-2017

Data Source: BEA and Federal Reserve Bank of Dallas



Inside this Issue of The Tampa Bay Economy:

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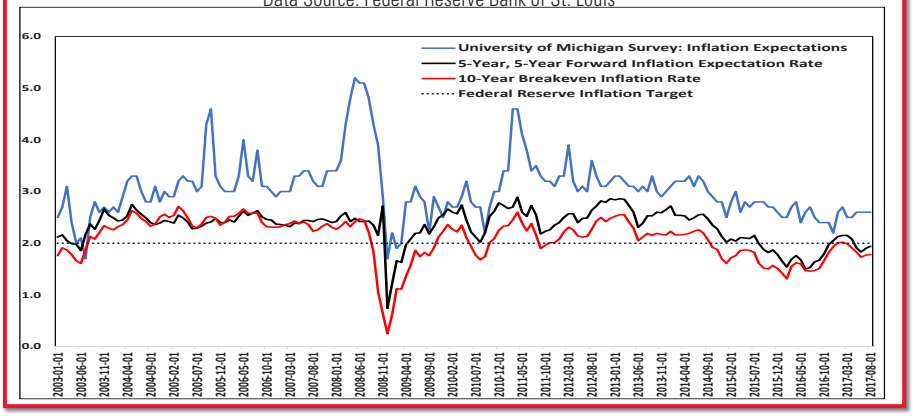
Figure 1.2: U.S. Inflation Expectations (%), 2003-2017
Data Source: Federal Reserve Bank of St. Louis



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technological changes and globalization have led to a lasting (and relatively benign) decline in inflation rates in much of the rich world. They also believe that the Phillips Curve-centric view of inflation dynamics is no longer relevant and argue that further declines in unemployment rates will likely have only muted effects on inflation in the current environment.

It is worth noting that for many central banks, maintaining price stability is often the primary or even the sole policy objective—more than 30 countries currently pursue a legislatively mandated inflation target. Even the Federal Reserve, with its dual mandate, seeks to attain price stability along with full employment. Central banks typically conduct monetary policy by changing short-term interest rates and by providing guidance regarding the future policy rate path. In turn, the expected future path of short-term interest rates, inflation expectations and term premium determine long-term bond yields. Consequently, discovering the underlying drivers of low inflation is of great importance for determining future monetary policy and for undertaking fundamentals-based valuation of financial assets. There is much riding on the ability of economists and market analysts to fathom inflation dynamics and to forecast inflation rates correctly.

For many years central bankers have operated under the assumption that inflation is primarily driven by a resource gap (or the degree of economic slack), inflation expectations, and temporary cost shocks. Given that the impact of temporary cost shocks (such as a spike in energy prices due to adverse weather conditions or a one-off drop in price of mobile phone services due to the proliferation of 'unlimited' calling plans) are of a transitory nature, policymakers typically underplay the significance of such factors. Economic research (undertaken by such noted luminaries as Milton Friedman and Edmund Phelps in the late 1960s, and Robert Lucas and Thomas Sargent in the 1970s) and real-world stagflationary episodes of the 1970s and early 1980s pushed inflation expectations to the forefront of monetary policy debates and transformed macroeconomic theory. Modern day central bankers are fully aware of the importance of anchoring long-term inflation expectations around the central bank's inflation target. In the earlier noted speech, Janet Yellen offered a summary of the current mainstream view: "In standard economic models, inflation expectations are an important determinant of actual inflation because, in deciding how much to adjust wages for individual jobs and prices of goods and services at a particular time, firms take into account the rate of overall inflation they expect to prevail in the future. Monetary policy presumably plays a key role in shaping these expectations by influencing the average rate of inflation experienced in the past over long periods of time, as well as by providing guidance about the FOMC's objectives for inflation in the future". Figure 1.2 illustrates recent trends in U.S. inflation expectations. Despite a few recent wobbles, inflation expectations for the most part appear well-anchored around the Federal Reserve's 2% target.

> *"Global economic integration, technological changes and demographic shifts may have fundamentally altered inflation dynamics–global slack might increasingly influence domestic inflation."*

Many central bankers, including Federal Reserve Chair Janet Yellen, instinctively assume a central role for economic slack in the inflation generation process. Much of the current debate surrounding inflation dynamics and the future direction of U.S. inflation is centered around the resource gap issue. In a September 25, 2017 speech delivered to the *Economics Club of Grand Rapids*, Charles Evans, the President of the Federal Reserve Bank of Chicago, offered the following traditional perspective on the role of resource gap: "Think about how your company's payroll expenses increase in a tight job market: When it is increasingly difficult to hire and retain qualified staff, you would have to raise wages to get the workers you need. Since this is usually occurring in an environment of strong demand, you are able to recover at least some of these cost increases with higher prices on your products and services. Conversely, loose labor market conditions are associated with lower wage growth and lower inflation. Conceptually, resource slack or pressure must be measured against some benchmark.…We call this benchmark the natural rate of unemployment. It is the unemployment rate that would prevail in an economy making full use of its productive resources or, put differently, the rate that we would experience over the longer run in the absence of shocks to the economy. When the labor market is tight, the unemployment rate is below the natural rate and wages and prices tend to rise. Conversely, slack labor markets are characterized by an unemployment rate that exceeds the natural rate and correspondingly weaker wages and prices." This resource gap narrative is frequently represented by a modern expectations-augmented Phillips Curve.

Ever since the New Zealand-born economist A.W. Phillips published an article (Phillips, A. W., 1958, "The Relation Between Unemployment and the Rate of Change of Money Wage Rates in the United Kingdom, 1861–1957," *Economica*, Vol. 25, No. 100, November, pp. 283–299) that documented the existence of an inverse relationship between nominal wage changes and the unemployment rate in England, there has been a rigorous and often contentious debate regarding the robustness of the link between unemployment and inflation. As shown in Figure 1.3, the relationship between unemployment and inflation has been relatively weak in recent years. Additionally, as shown in Figure 1.4, the relationship between measures of nominal wage growth and unemployment appear to be less than robust of late. Recent empirical studies (see: Kuttner, K., & Robinson, T. (2010). Understanding the Flattening Phillips Curve. North American *Journal of Economics and Finance*, 21(2), 110–125; and, Blanchard, O, E Cerutti and L Summers (2015): "Inflation and Activity—Two Explorations and Their Monetary Policy Implications". *NBER Working Papers*, No. 21726) appear to indicate a flattening of the slope of the Phillips Curve. Research published in 2017 *BIS Annual Report* confirms the flattening of the Phillips curve—for the G-7 countries, the response of inflation (price-level inflation) to domestic labor market slack has diminished over the past three decades and is now virtually non-existent (see Figure 1.5).

Several explanations have been proposed to explain the empirically observed flattening of the Phillips Curve. Not surprisingly, many current and former central bankers prefer to believe that their success in taming inflation in the early 1980s and their pursuit of credibility enhancing inflation-targeting style regimes in the 1990s and 2000s had a lot to do with it. Central bankers believe that wages and prices have

Figure 1.3: U.S. Inflation Rate and Unemployment Rate (%), 1948–2017
Data Source: BLS

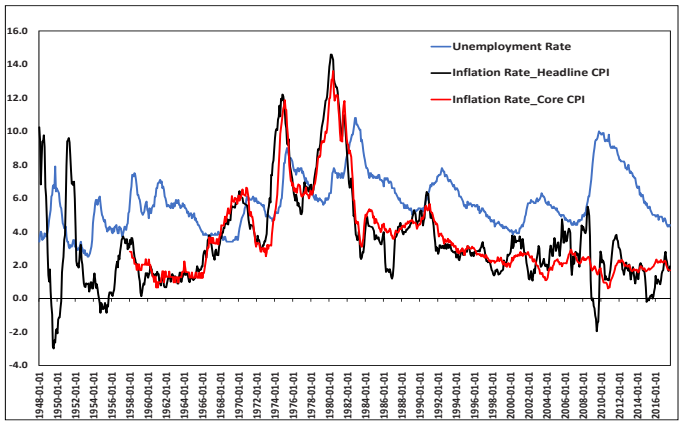
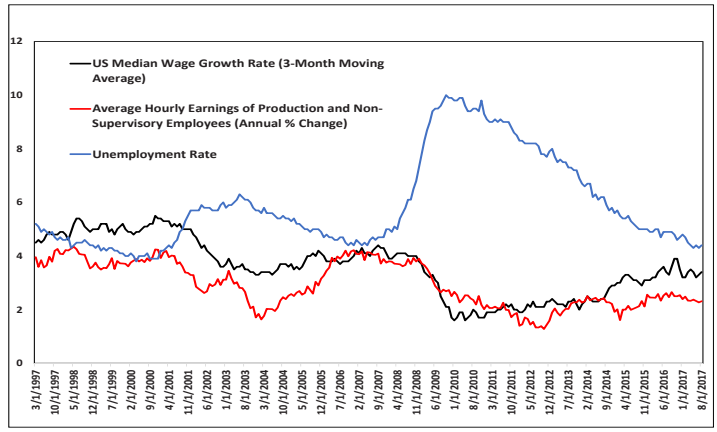


Figure 1.4: U.S. Wage Growth and Unemployment Rate (%), 1997-2017
Data Source: BLS and Federal Reserve Bank of Atlanta



become less responsive to slack (gap in resource utilization) due to their own success in realizing well-anchored inflation expectations. Though an appealing hypothesis, the persistence of low inflation over almost an entire business cycle and the international spread of the below-target inflation problem suggests that there might be more to the story. Additionally, despite public declarations to aggressively push for higher inflation rates (and suggestions of tolerance for temporary overshooting of inflation rates above target levels) by central bank officials in the Euro Area, Japan and the U.S. over the past few years, the inflation undershooting phenomenon continues to bedevil much of the advanced world.

The most intriguing arguments put forth to explain the weakening link between measures of domestic slack and inflation (and the consequent flattening of the Phillips Curve) are centered around long-term structural changes involving demographics, globalization, and technology. In his September 22, 2017 *OMFIF City Lecture in London*, BIS Chief Economist Claudio Borio offered the following excellent summary of the structuralist view: "Is it reasonable to believe that the inflation process should have remained immune to the entry into the global economy of the former Soviet bloc and China and to the opening-up of other emerging market economies? This added something like 1.6 billion people to the effective labour force, drastically shrinking the share of advanced economies, and cut that share by about half by 2015. Similarly, could it have remained immune to the technological advances that allowed the de-location of the production of goods and services across the world? Surely we should expect the behaviour of both labour and firms to have become much more sensitive to global conditions. . . .we should expect globalisation to have made markets much more contestable, eroding the "pricing" power of both labour and firms. If so, it is quite possible that all this has made the wage-price spirals of the past much less likely. More specifically, one can think of two types of effect of globalisation on inflation. The first is symmetrical: assuming something akin to a global Phillips curve, one would expect domestic slack to be an insufficient measure of inflationary or disinflationary pressures; global slack would matter too. The second is asymmetrical: one would expect the entry of lower-cost producers and of cheaper labour into the global economy to have put persistent downward pressure on inflation, especially in advanced economies and at least until costs converge".

The above noted structural change-based explanations for the persistence of low inflation is of growing interest to monetary economists. Mark Carney (Governor of the Bank of England) and Lael Brainard (member of the Federal Reserve Board of Governors) are amongst a growing number of central bankers who have acknowledged the need for monetary authorities to consider the role of global slack in determining inflation dynamics. Integrating the role of long-term demographic shifts may further strengthen our understanding of inflation dynamics in the advanced world. Japan's experience of persistent deflation during much of the past two decades may turn out to be a harbinger of future price-level dynamics in other economies encountering significant aging of the population. The impact of demographic shifts on inflation can be quite complex. On the factors of production front, expectations of lower aggregate demand arising from aging populations and low birth rates may result in a decline in business investment and a fall in the cost of capital. However, a fall in the share of the working age population may push up wages for the remaining workers and thus raise labor costs. On the fiscal front, rising demand for old-age welfare benefits may force governments to undertake spending cuts to keep debt at sustainable levels. It is also possible that faced with a rising government debt burden, the central bank is forced to engage in debt monetization. On the financial front, a growing dependency ratio (smaller working age population share) may suggest a potential shift towards dissaving and asset sales.

Given the lack of clarity on the theory front, empirical analysis of the effect of demographic shifts on inflation becomes critical. Japanese economists (Katagiri, Mitsuru, Konishi, Hideki, & Ueda, Kozo, 2014. "Aging and Deflation from a Fiscal Perspective," *Globalization and Monetary Policy Institute Working Paper*, No. 218, Federal Reserve Bank of Dallas) have suggested that distinguishing demographic shocks between population aging driven primarily by falling birth rates and population aging driven mostly by increasing life expectancy is essential. Their research indicates that demographic shifts

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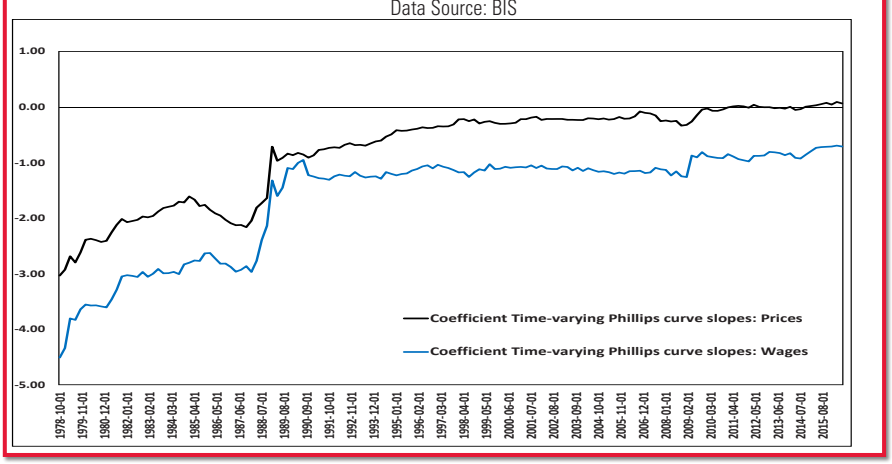
Figure 1.5: Flattening of the Phillips Curve [Time-Varying Slope Coefficients]
Data Source: BIS



TAMPA BAY FORECAST: NEAR-HISTORIC EXPANSION CONTINUES

By John R. Stinespring, Ph.D.

The second longest economic expansion in Tampa Bay's recorded history continues unabated. Though 2017 has seen threats of military conflicts and promises of tariff-raising trade wars—and these are just the ones emanating from Washington itself—the Tampa Bay metropolitan area (consisting of Hernando, Hillsborough, Pasco, and Pinellas counties combined) appears to be not only resilient, but thriving as it outperforms Florida and the nation overall on multiple economic measures. The measures we examine in this update are of the labor market, aggregate demand, and the housing market. From the previous six-month period to our six-month ahead forecast, the Tampa Bay Economy (TBE) appears to be expanding with no near-term slowdown. We conclude that while the long-term forecast is made more uncertain with each growing political and economic threat at the national level, the near-term forecast for the economy indicates an expansion that persists through 2017 and early 2018.

First consider the local labor market, which has enjoyed declining unemployment and sustained employment growth. Figure 2.1 shows recent data on local, state, and national unemployment. As of August 2017, the unemployment rate stood at 3.7% for the TBE, 4% for Florida, and 4.4% nationally. Though these unemployment rates are below their pre-Great Recession historic averages of 4.7% for TBE and 5.5% for the U.S., they may still fall further. This would merely continue the steady decline since 2009 for all three series seen in Figure 2.1. In fact, the TBE unemployment rate has fallen below 3.7% in 56 separate months since 1990.

As unemployment has fallen in the TBE, payrolls have risen. Figure 2.2 shows the historically long increase in monthly payrolls that began in September 2010 has continued through August. Similar to the unemployment data, monthly job growth has remained strong at 3% for Tampa, double the national rate. The job growth has been spread among some of the most important industries in the TBE. For one example, local construction saw 7,400 new jobs created between August 2016 and August 2017. This 10 percent bump in industry employment represented the fifth-highest number of jobs created in any of the 358 U.S. metropolitan areas over that period.

> *"While the long-term forecast is made more uncertain with each growing political and economic threat at the national level, the near-term forecast for the local economy indicates an expansion that persists through 2017 and early 2018"*

Rapid job growth and low unemployment have combined to put upward pressure on wages, causing weekly earnings to rise by 3.1% from August 2016 to August 2017. The resilience of our local economy is evident from the fact that these wage gains have occurred as Tampa absorbed over 60,000 new residents last year, the fourth highest MSA population growth rate in the nation. Many more are projected for 2017 due to this continued trend and the recent influx of people from Puerto Rico.

The growing employment and wages have translated into strong aggregate demand within the TBE. Our measure of overall demand, Gross Sales, is a *coincident indicator* that reveals the economy's current position in the business cycle. As Figure 2.3 makes clear, Gross Sales trend up with local expansions amid seasonal spikes in December, March, June, and September. The upward trend recently exceeded the trend in payrolls, rising 3.8 percent from August 2016

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Figure 2.1: Unemployment Rate (%) for U.S., Florida, and Tampa MSA
Source: U.S. Bureau of Labor Statistics (Seasonally-Adjusted)

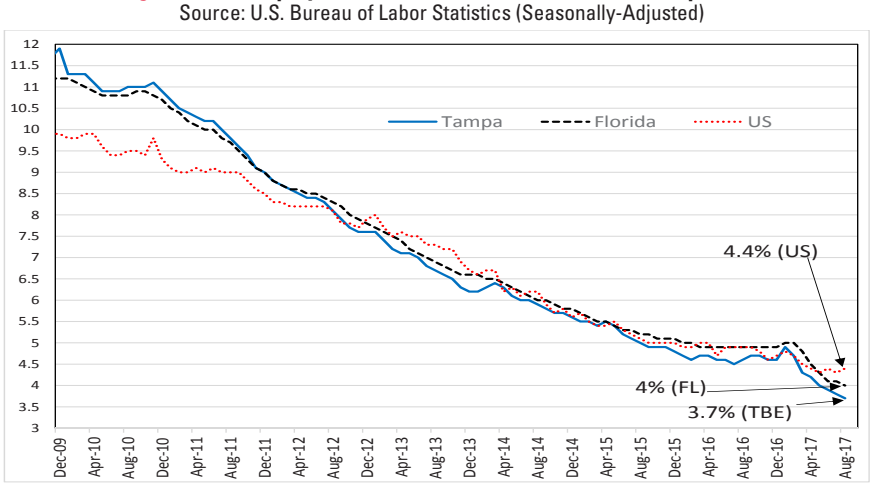


Figure 2.2: Percentage Change Payrolls for Tampa Bay and U.S. (Seasonally Adjusted)
Source: Bureau of Labor Statistics

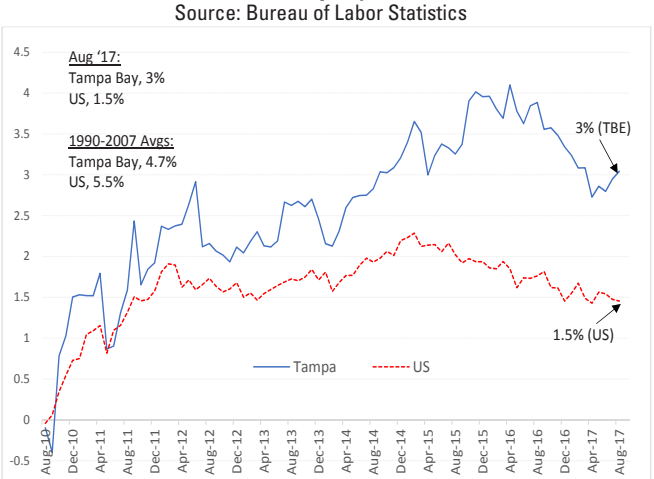
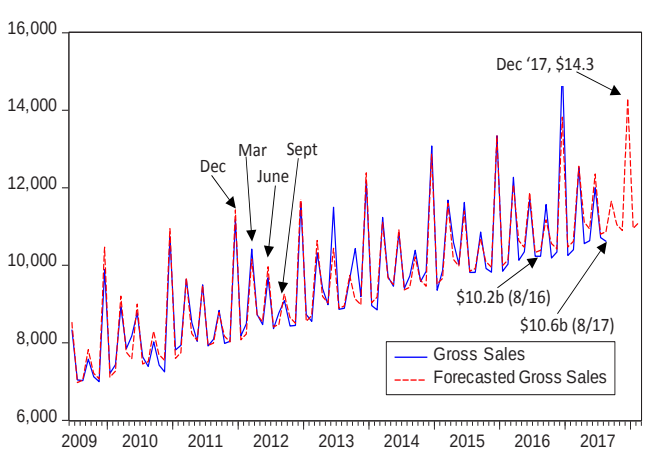


Figure 2.3: Gross Sales in Tampa Bay, January 2009–January 2018
Source: Florida Department of Revenue and author's calculations



Tampa Bay Forecast: Near-Historic Expansion Continues

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to August 2017. This constituted an increase in TBE Gross Sales grew from $10.2 billion to $10.6 billion over the period which should continue into the near term. Our forecast of Gross Sales (dotted line in Figure 2.3) shows a steady trend of an additional $40m per month through the latter half of 2017 for Tampa Bay with holiday sales in December totaling more than $14b. The figure reveals that our forecasted Gross Sales (dotted line) closely tracks actual data through August 2017.

For our economic expansion to continue, a strong housing market is required. Housing market data is crucial to understanding the TBE's position in the business cycle because housing is a *leading indicator* of our local economy. Sustained increases in construction lead economic expansions while recessions are presaged by sustained declines. Figure 2.4 shows that Housing Starts by Building Permits since mid-2009, though volatile, have followed an upward trend with seasonal spikes. The TBE model of housing permits (dotted line) closely predicts the actual data as is clear from the figure, with roughly 93% accuracy. Our forecast estimate for permits in 2017 is a monthly average of approximately 1,100. Though this exceeds the 2014, 2015, and 2016 averages, it remains well below the 2005 monthly average of 2,263. This suggests that additional housing demand due to the increase in population, jobs, and wages, could be met without much difficulty.

The rise in home construction has been encouraged by a steady increase in home prices at all tiers. Figure 2.5 shows the Case-Shiller housing price index increasing for low-, medium-, and high tier home prices since December 2011 (where index = 100 for year 2000). Since bottoming out in 2011, home prices in the TBE have risen consistently. High-tier and Mid-tier house prices have risen 47 percent and 72 percent, respectively, while Low-tier homes have more than doubled in price 131 percent above its trough. The graph makes clear that home prices in all tiers have more room to rise before they reach their 2006 peaks.

Our confidence in the positive economic forecast herein is bolstered by the indices of local and federal monthly economic activity produced by Federal Reserve Bank economists. Figure 2.6 shows these indices from 2009 through 2017. Values above zero indicate an expanding economy; those below, a contraction. Two features stand out. First, the national recession was shorter than our local recession. This may actually bode well for our local economy because longer recessionary periods are often followed by longer expansionary periods. The deeper the economic hole, the longer the climb out of it. Second, both the U.S. and TBE indices continue to be strong and significantly positive through the summer of 2017. Our analysis indicates that the Federal Reserve's index closely tracks our own from the labor, demand, and housing markets, and both suggest our expansion will continue well into 2018.

In the end, the importance of economic expansions goes beyond abstract statistics. An expanding economy means higher incomes, higher employment, and greater potential well-being. Consider that the record-setting expansion from 1991-2001 was a period which introduced personal computers into the home and workplace and saw the advent of internet connectivity. Our current expansion has seen incredible technological advances in software engineering, medicine, physics, and myriad other fields. The impact they have had on society has been substantial. The extent to which they will perpetuate our local and national economic expansions, however, will depend on whether the tailwinds we have enumerated in this update can overcome the potential headwinds from Washington.

Write to Professor Stinespring at jstinespring@ut.edu.

Figure 2.4: Tampa Bay Housing Start Permits, June 2009–December 2017
Source: U.S. Department of Housing and Urban Development and author's calculations

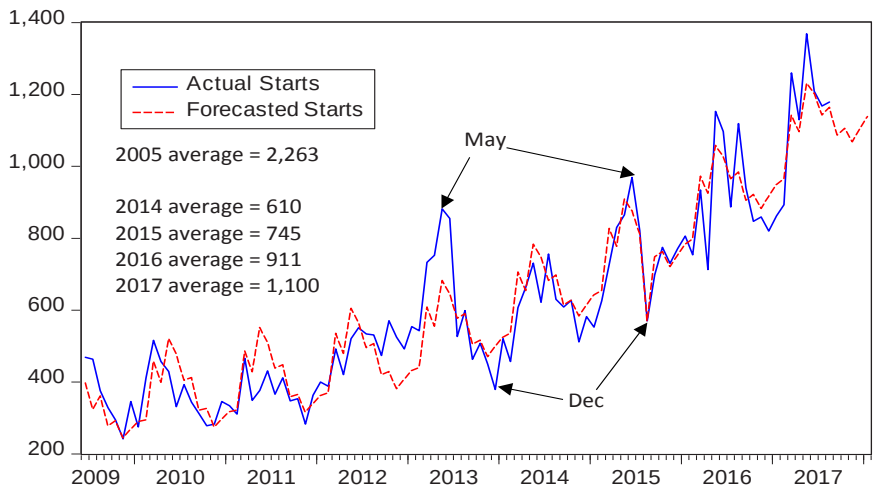


Figure 2.5: Case-Shiller HPI for Tampa Bay, 2000–2017
Source: St. Louis Federal Reserve

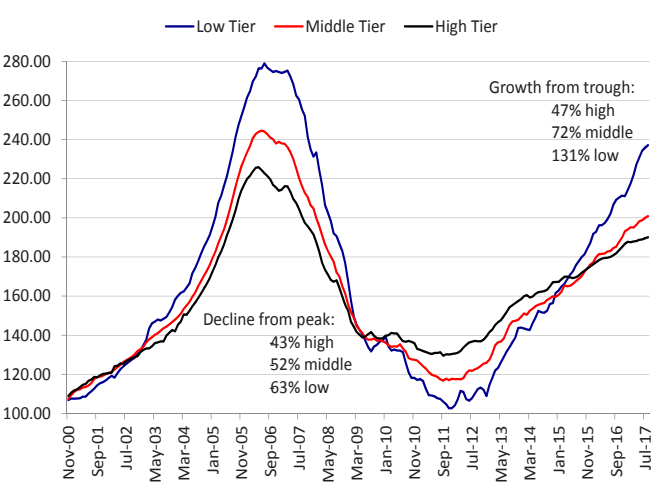
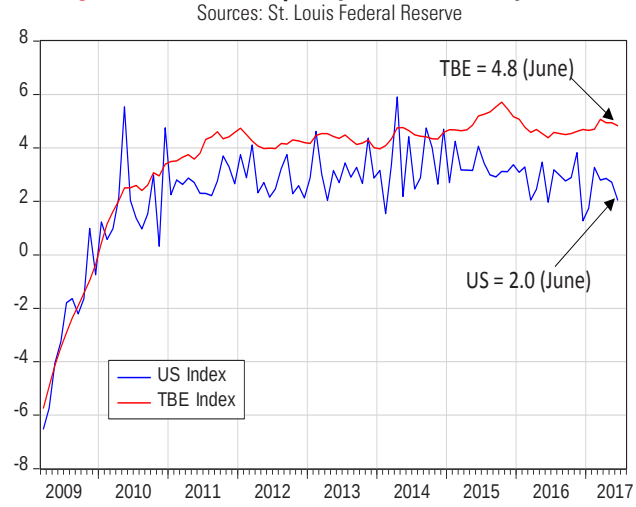


Figure 2.6: U.S. and Tampa Bay Economic Activity Indices
Sources: St. Louis Federal Reserve



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driven primarily by falling birth rates may lead governments, faced with a declining tax base, to use higher inflation to reduce fiscal debt burdens. On the other hand, demographic shifts driven primarily by rising longevity may create political pressure to maintain low inflation or even deflation as the rising number of retirees on a fixed income will prefer to maintain their purchasing power.

The above discussion suggests that a Phillips Curve-based narrative centered around domestic slack and anchored inflation expectations may offer an incomplete picture of the underlying inflation dynamics. Policymakers and financial analysts need to be cognizant of long-term structural developments and appreciate their potential to disrupt traditional models and policy paradigms. Global economic integration, technological changes and demographic shifts may have fundamentally altered inflation dynamics—global slack might increasingly influence domestic inflation. Given the structural forces affecting inflation, monetary authorities may want to reorient their policy focus—reducing the weight placed on price stability and increasing the weight placed on financial stability. From a practical standpoint, this implies that the Federal Reserve should steadily normalize monetary policy to reduce the risk of future financial instability rather than wait for signs of a spike in inflation caused by further declines in unemployment rates.

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Save the Date - Upcoming Events

January 29, 2018—Leadership Speaker Series
Featuring: Richard Gonzmart, President, Columbia Restaurant Group

February 15, 2018—Sykes Hall of Fame Business Speaker Series
Featuring: John Gainor, President and CEO, International Dairy Queen, Inc. and Nick Friedman, President and Co-Founder, College Hunks Hauling Junk

February 21, 2018—Leadership Summit
Featuring: Ryan Holiday, Author of *Perennial Seller*, *Ego is the Enemy*, *The Daily Stoic*, and more

April 12, 2018—The Adam Smith Breakfast: An Annual Tampa Bay Economy Update
Featuring: Associate Professors of Economics John Stinespring, Ph.D. and Vivekanand Jayakumar, Ph.D.

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