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# the tampa bay economy

## SHOULD THE US FEDERAL RESERVE BE FORCED TO ADOPT A RULES-BASED POLICY PARADIGM?

*By Vivekanand Jayakumar, Ph.D.*

During the first session of the 114th Congress, the House of Representatives passed a new bill — H.R. 3189: The Fed Oversight Reform and Modernization (FORM) Act of 2015 — that aims to constrain the discretion of the Federal Reserve (Fed) by establishing a set of guidelines for the central bank to follow. The FORM act is particularly significant because it attempts to legislate an explicit rule (based upon a rule put forth by the Stanford economist John Taylor) for the Fed to follow when setting policy rate targets. If the FORM act were to become law (the bill faces the threat of a Presidential veto and lacks adequate support in the U.S. Senate), it would bring forth the most dramatic change to the U.S. central bank's modus operandi in decades.

Attempts to prescribe rules-based monetary policies have generated considerable debate. House Republicans, the primary backers of the FORM act, are upset over the Fed's perceived interventionist policymaking (highlighted by three rounds of Quantitative Easing (QE) and seven years of near-zero policy rates) in the aftermath of the financial crisis. Proponents of rules-based policies want to limit the degree of freedom that monetary authorities currently enjoy and ensure greater clarity by reducing the uncertainty associated with the timing and direction of Fed policy. The FORM act requires the U.S. central bank to adhere to a clear-cut policy interest rate setting model — in fact, the legislation requires the Fed to publicly reveal its interest rate setting model and to explain any significant deviations between its preferred rate and a reference rate based on the Taylor Rule framework.

Unsurprisingly, many current and former central bankers are upset with the legislation. Opponents of rules-based policies are concerned that, without broad discretion, the ability of the Fed to deal with a complex and ever-changing economy may be significantly diminished. On Nov. 16, 2015, Janet Yellen (the current chairwoman of the Fed) stated the following in an open letter to the leadership of the House of Representatives: "The FORM Act would severely impair the Federal Reserve's ability to carry out its congressional mandate to foster maximum employment and stable prices and would undermine our ability to implement policies that are in the best interest of American businesses and consumers. This legislation would severely damage the U.S. economy were it to become law." Despite Yellen's appeal, the House of Representatives voted 241-185 in favor of the bill on Nov. 19, 2015.

The so-called "rules versus discretion" debate has a long history — in fact, two Nobel Prize-winning economists (Finn Kydland and Edward Prescott) famously argued in a 1977 article ("Rules Rather than Discretion: The Inconsistency of Optimal Plans." *Journal of Political Economy* 85(3), pp. 473-491) that extensive tinkering with policy rates by central banks might hurt an economy. The "time inconsistency problem," they highlighted, is based on the notion that policymakers will attempt to improve welfare (for instance, by lowering unemployment) by publicly announcing one thing and then doing something else after people have made their decisions based on the initial announcement. Such inconsistent action will, however, eventually cause the public to assume actual central bank policy may not coincide with announced policy (in other words, in a world of sequential policymaking, central bankers may face a credibility problem in the absence of clearly established rules or credible commitment mechanisms).

John Taylor, a prominent monetary economist, noted in his 1997 Harry G. Johnson Lecture, that, in addition to the time inconsistency problem, there were at least six further reasons to pursue rules-based policies: public clarity will be enhanced if central bank decisions are based on clear-cut and easy to describe rules; systematic policymaking will reduce short-run political pressure on monetary authorities; less uncertainty will be associated with the direction of future policy when monetary authorities adhere to explicit rules; rules-based central banking will be less mysterious and easier to follow for newly appointed officials and central bankers; greater accountability of monetary authorities can be expected when policymaking is made more transparent; and, historical benchmarking may be easier to achieve in the presence of a rules-based monetary paradigm. Taylor proposed a

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## Inside this Issue of The Tampa Bay Economy:

**F. Frank Ghannadian, Ph.D.**
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**Figure 1.1: Effective Fed Funds Rate and Taylor Rule Policy Reference Rates (%)**
Source: Federal Reserve Bank of St. Louis and Author's Calculations

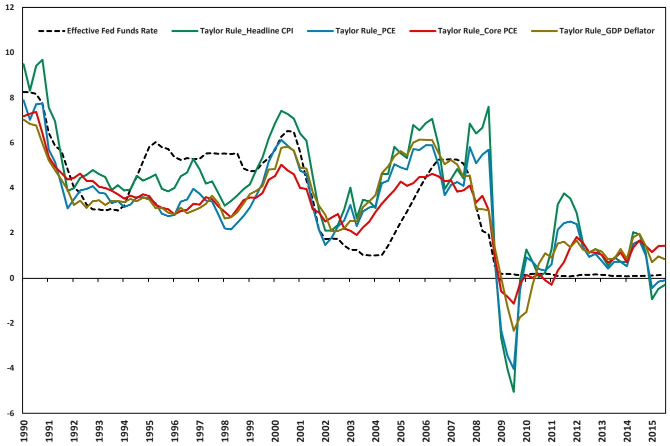
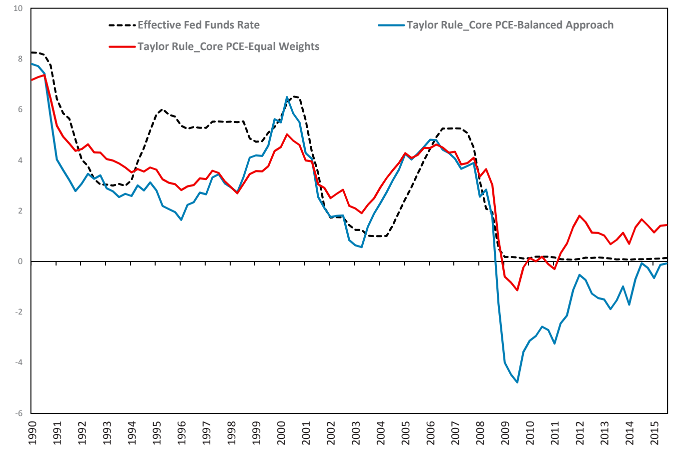



**Figure 1.2: Taylor Rule Policy Reference Rate Estimation — Equal Weights versus Balanced-Approach (%)**
Source: Federal Reserve Bank of St. Louis and Author's Calculations




## *Should the US Federal Reserve Be Forced to Adopt a Rules-Based Policy Paradigm?*

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simple policy rule in 1993 ("Discretion Versus Policy Rules in Practice." *Carnegie-Rochester Conference Series on Public Policy*, 39, pp. 195-214) that quickly gained widespread acceptance as a reasonable framework for analyzing policy setting decisions of central banks. Rate paths derived using the so-called Taylor Rule appeared to closely track the actual path of the Federal Funds Rate (the primary policy interest rate targeted by the Fed) through much of the 1987–2002 period. Taylor and others have criticized the Fed for unnecessarily deviating from the Taylor Rule's prescribed rates between 2003 and 2005, when it decided to keep policy rates deliberately low for an extended period (the U.S. central bank was driven by fears of a potential deflationary trap in the aftermath of the bursting of the dotcom bubble; persistent deflation, of course, failed to materialize). The excessively accommodative policy during the period 2003–2005 (see Figure 1.1) appears to have provided an additional fillip to a rapidly inflating U.S. housing bubble, which ultimately burst in 2007 and triggered a global financial crisis.

Though generally supportive of the Fed's emergency liquidity provision programs employed during 2008–2009 (short-lived, temporary programs implemented during the height of the financial crisis), Taylor has been a vocal critic of the central bank's decision to maintain a near-zero target for the Federal Funds Rate for a prolonged period (Federal Funds Rate target was pushed down to 0–0.25% in December 2008 and remained stuck in that range until Dec. 16, 2015). He has argued that the absence of a rules-based constraint may be leading the central bank astray — in particular, he has repeatedly stated in recent years (including at a 2014 Congressional hearing) that the Fed may once again be engaging in excessively accommodative policies that may lead to future financial instability.

Given the above discussion, it is tempting to assume that a strong case can be made for the adoption of a rules-based monetary policy in the United States. However, as discussed below, strictly adhering to a Taylor Rule based policy setting framework in the real world may prove to be much harder than many believe. The original Taylor Rule, proposed by Taylor (1993), had the following form: Policy Rate = Equilibrium Real Interest Rate + Inflation Rate + b1*(Inflation Gap) + b2*(Output Gap). The policy rate in this context refers to the Federal Funds Rate target, and the equilibrium real interest rate is an estimated rate that corresponds to the theoretical natural rate of interest for the economy (Taylor assumed that the equilibrium real interest rate for the U.S. was stable and around 2 percent). The inflation gap refers to the difference between the actual inflation rate and the target inflation rate (equal to 2 percent). The output gap refers to the percentage difference between actual real GDP and potential or trend real GDP. Originally, the 'weights' (represented by b1 and b2) placed on the inflation gap and output gap were as follows: b1 = 0.5 and b2 = 0.5 (Taylor (1993) recommended equal weighting of the inflation gap and the output gap). Interestingly, the reference policy rule proposed by the FORM act adheres closely to the Taylor Rule. The FORM act specifically states: "The term 'Reference Policy Rule' means a calculation of the nominal Federal funds rate as equal to the sum of the following: (A) The rate of inflation over the previous four quarters, (B) One-half of the percentage deviation of the real GDP from an estimate of potential GDP, (C) One-half of the difference between the rate of inflation over the previous four quarters and two percent, (D) Two percent."

One crucial problem associated with implementing the Taylor Rule is in regards to the choice of the underlying price index utilized to measure the inflation rate. There are numerous reported price indices, of which the three most widely used measures are the implicit GDP deflator, the consumer price index (CPI) and the personal consumption expenditure index (PCE). As shown in Figure 1.1, the specific price index utilized for calculating the inflation rate appears to matter — the Taylor Rule policy rate varies noticeably when a different price index is used to calculate the inflation rate. Also, as apparent from Figure 1.1, the selection of core versus headline price indices also matters. Taylor (1993) originally used inflation rates based on the implicit GDP deflator. There is, however, no fundamental rationale to always prefer one particular price index over all others. Interestingly, the official inflation forecasts reported by the members of the Fed, which are included in the semiannual monetary policy reports submitted to Congress, have been based on different inflation measures. Until July 1988, inflation forecasts presented by Fed members were based on the implicit GNP deflator (precursor to the implicit GDP deflator). Thereafter, inflation forecasts were based on headline CPI. In February 2000, the personal consumption expenditure (PCE) index became the preferred measure. Starting in July 2004, Fed officials switched the basis for their inflation forecasts to the core PCE index (which excludes food and energy prices).

**Figure 1.3: Taylor Rule Policy Reference Rate Estimation with Time-Varying Laubach-Williams Natural Rate of Interest**
Source: Federal Reserve Bank of St. Louis, Federal Reserve Bank of San Francisco and Author's Calculations

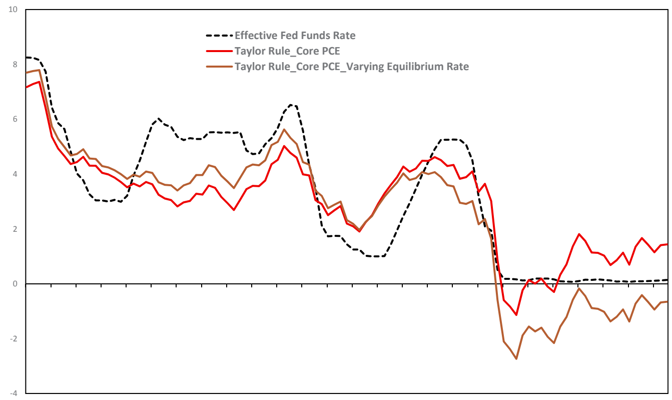
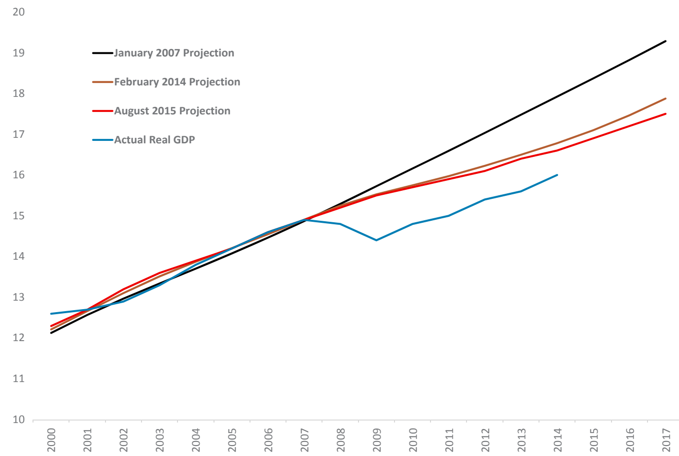



**Figure 1.4: US Potential GDP-CBO Projections ($ Trillions)**
Source: Congressional Budget Office




A second practical problem related to the adoption of a Taylor Rule is related to the weights placed on the inflation gap and the output gap. While Taylor (1993) argued for equal weighting, many Fed officials have publicly stated their preference for placing extra weight on the output gap (specifically, b1 = 0.5 and b2 = 1.0). For instance, Janet Yellen made the following statement in a 2012 speech ("Perspectives on Monetary Policy"; Delivered at the Boston Economic Club Dinner, Boston, Massachusetts: June 6): "I will consider the prescriptions of two such benchmark rules — Taylor's 1993 rule, and a variant that is twice as responsive to economic slack. In my view, this latter rule is more consistent with the FOMC's commitment to follow a balanced approach to promoting our dual mandate, and so I will refer to it as the 'balanced-approach' rule". As shown in Figure 1.2, varying the relative weights placed on inflation and output gaps does affect the policy rate prescription: with greater weight placed on the output gap (balanced-approach), the Taylor Rule would suggest keeping interest rates near-zero at present, whereas with equal weights, the recommended rate is clearly above zero.

Another problem is the possibility of changes to the fundamental structural components incorporated in the Taylor Rule. The "new normal" post-recession era of persistently low inflation and subpar growth suggests that the equilibrium real interest rate and the potential output growth rate for the U.S. have markedly changed in recent years. Given that estimated values for both measures (they cannot be directly observed) appear to have declined in recent years, continued usage of a constant equilibrium real interest rate or a linear trend based measurement of potential output may result in erroneous recommendations for setting policy rates. For instance, using rolling estimates of the equilibrium real interest rate (based on the natural rate of interest estimates provided by Thomas Laubach and John C. Williams of the Federal Reserve Bank of San Francisco) yields the policy reference rate path shown in Figure 1.3, which differs markedly from the rate path based on the standard assumption of a stable 2 percent equilibrium real interest rate. According to the Laubach-Williams estimation, the equilibrium real interest rate has consistently remained below 1percent since the Great Recession. Incorporating the lower estimated values for equilibrium real interest rate implies a Taylor Rule rate path that is in negative territory during the entire 2009–2015 period.

It is also worth noting that all of the Taylor Rule estimates shown here incorporate the Congressional Budget Office's (CBO) latest estimates (August 2015) for U.S. potential GDP. If we were to utilize historical estimates of potential GDP or simple linear trend estimates, then the Taylor Rule will yield noticeably different policy rate recommendations (the output gap measure is directly dependent on estimated potential GDP values). For instance, as shown in Figure 1.4, CBO's 2007 projections for U.S. potential GDP was markedly higher than recent estimates. This leads to an especially pernicious problem with using simple policy rules to conduct monetary policy in real-time — central bankers have to make decisions based on expectations and forecasts regarding the future direction of the economy. The forward-looking nature of policy interest rate setting implies that current rate decisions will only affect future economic outcomes. Ex-ante, central bankers do not even possess complete information regarding current economic conditions, as initially reported data are often subject to several rounds of revisions. Quarterly GDP figures are subject to numerous revisions and even inflation rate measures are prone to data revisions. These factors affect the real-time applicability of the Taylor Rule framework. In recent years, economists have modified the Taylor Rule framework to incorporate future inflation forecasts and real-time estimates of output gaps. Economic forecasting, however, is still an imperfect science and prone to significant errors.

Given all the above noted concerns, it may be foolhardy to mandate that monetary authorities follow a simple policy setting rule based upon the Taylor Rule framework. Legally mandated adherence to specific policy rules may be too limiting in a world where the financial sector is rapidly evolving and affecting traditional monetary transmission mechanisms. There, however, does exist a rationale for constricting the ultimate goals of monetary policy — narrowing the focus of central bankers towards a clearly defined medium term goal would be a more appropriate legislative goal. For instance, some economists (see "Nominal GDP: Target or Benchmark?" by Robert L. Hetzel, Federal Reserve Bank of Richmond Economic Brief; April 2015, No. 15-04) have suggested that the Fed articulate a benchmark path for nominal GDP and then clearly state its strategy to keep its near-term forecasts of nominal GDP aligned with its benchmark path. A potential advantage of such an approach is that market expectations regarding future Fed behavior will be easier to shape, and may lead to a reduction in financial instability and market volatility.

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# THE TAMPA BAY ECONOMY: JANUARY UPDATE

*By John R. Stinespring, Ph.D.*

The economy of the Tampa Bay metropolitan statistical area (Hernando, Hillsborough, Pasco and Pinellas counties) continued to grow over the previous six-month period. Gross sales and home building permits continued on a somewhat jagged but upward trend. Improving labor market conditions increased employment and lowered unemployment to their pre-recession levels. Existing home prices appreciated and the gap between housing prices and rental costs continued to narrow.

Gross sales per month grew an average 5.3 percent (year-on-year) in 2015 for the Tampa Bay MSA, a faster pace than the 2014 average of 3.9 percent. The higher sales totals, however, occurred amidst a slowdown in the latter half of 2015. The November 2015 data show a $9.8 billion sales total, 0.1 percent below the November 2014 total (see Figure 2.1).

Figure 2.2 illustrates Tampa Bay's seasonally adjusted (SA) job loss duration due to the Great Recession and the previous two U.S. recessions. Whereas job recovery required 34 months for the 1990-1991 recession and 47 months for the 2001 recession, the Great Recession required a full 82 months. As of December 2015, the MSA could boast a net 43,400 jobs, 3.6 percent above of the employment level observed in December 2007. These job increases contributed to a decline in the unemployment rate — the number of those unemployed and looking for work divided by the labor force — from 5.2 in December 2007 to 4.6 percent in December 2015. This compared favorably to the 5 percent overall rate for Florida and the U.S.

Figure 2.3 reports Tampa Bay's 2013 employment shares by sector relative to the U.S. Higher ratios indicate the sectors in which Tampa Bay specializes. By comparing local to national sector shares, common macroeconomic events are neutralized. The analysis reveals that the top sector in Tampa Bay is finance and insurance, while the largest share of local employment goes to health care and social assistance

Tampa Bay housing prices continued to rise over the previous six-month period but remained below their 2006 highs. Figure 2.4 shows the S&P's Case-Shiller housing price index (HPI) for high, middle and low tier HPI segments of the Tampa Bay housing market indexed to 100 in January 2000. The top third of Tampa Bay's housing market — the High Tier segment — reached a maximum value

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**Figure 2.1: Gross Sales in Tampa Bay: January 2007–October 2015**
Source: Florida Department of Revenue

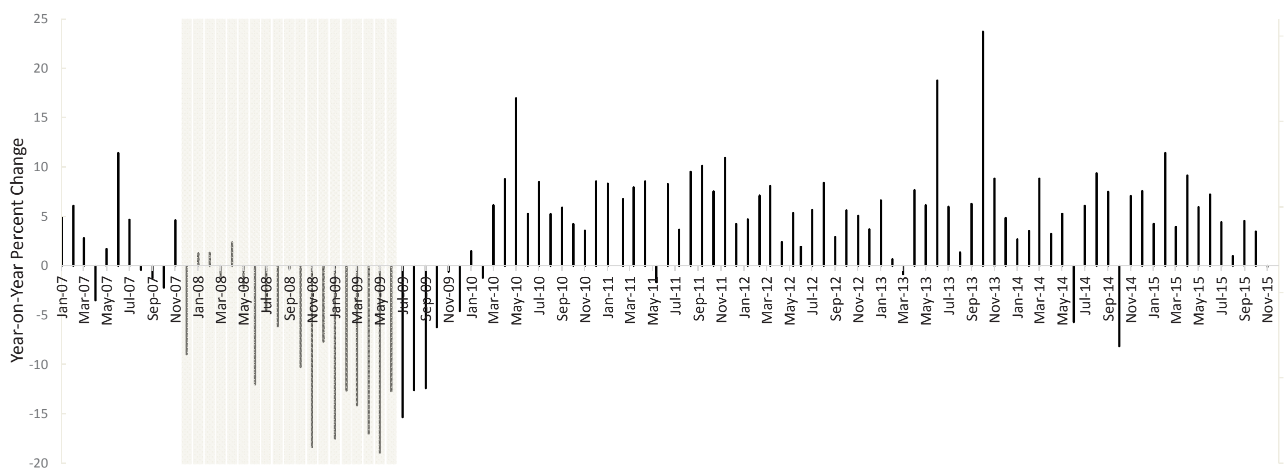



**Figure 2.2: Duration of Job Loss in Tampa Bay**
Source: Bureau of Labor Statistics

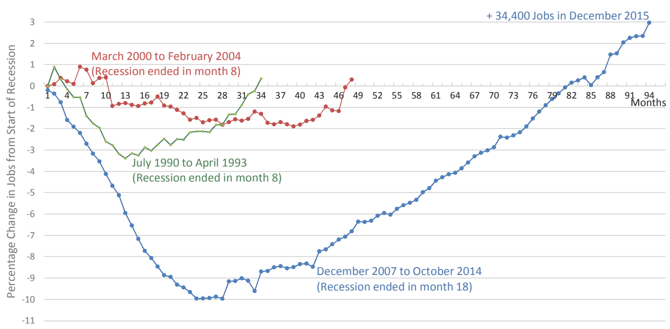
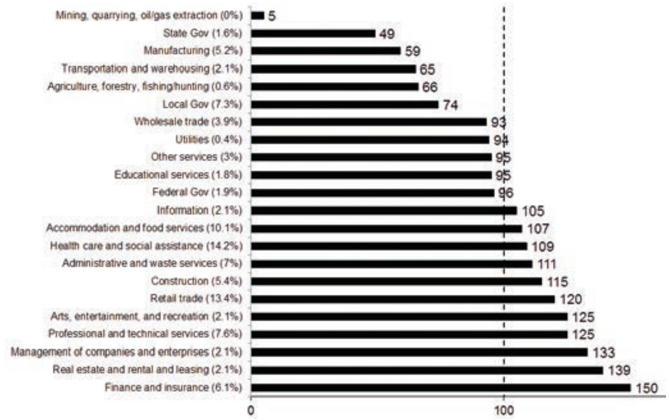



**Figure 2.3: Tampa Bay Employment Share by Sector: 2015**
Source: Bureau of Labor Statistics
*Note: Sector share of Tampa Bay's labor market in parentheses.*



## *The Tampa Bay Economy: January Update*

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of 225.96 in May 2006 before declining 43 percent to a low of 128.73 in September 2011. By November 2015, it had risen 35 percent above its low. The middle third of Tampa Bay's housing market — the Middle Tier segment — reached a maximum of 244.56 in June 2006 before declining 52 percent to a low of 116.7 in November 2011. By November 2015, it had risen 49 percent above its low. The bottom third of Tampa Bay's housing market — the Low Tier segment — reached a maximum value of 279.07 in July 2006 before declining 63 percent to a low of 102.93 in December 2011. By November 2015, it had risen 80 percent above its low.

The increase in housing prices in Tampa Bay contributed to an increase in the MSA's Price-Rent Index (PRI), a measure of home prices relative to their implicit rental value. Using the S&P's Case-Shiller aggregate HPI for Tampa Bay to represent price and the owner's equivalent rent index (OWRI) to represent rent, the PRI is the HPI/OWRI ratio indexed to one in 1987. A PRI greater than one implies home prices are high relative to rents. A PRI less than one means that home prices are low relative to rents. Figure 2.6 indicates that from 2003 to 2007 home prices were high relative to rents and declined dramatically during the Great Recession. The Tampa Bay PRI bottomed in 2011 at 0.75 implying an individual could purchase a home and maintain a monthly payment for 75 percent of the cost required to rent the same home. As of November 2015, the PRI was 0.93, above the previous year's value of 0.91.

The number of home building permits slowed in the previous six-month period, falling from 969 in June 2015 to 553 the following December — the latter being the same number issued in January of that year. Figure 2.5 shows the absolute number of privately owned one-unit residential permits for new homes in the Tampa Bay area. The figure illustrates the housing bubble's peak issuance of 2,908 permits in June 2005. Though permits slowed toward the end of 2015, the 2015 monthly average of 728 was a significant increase over the 2014 monthly average of 614.

In summary, recent data suggest cautious optimism. The labor market has been robust but this strength has been tempered by uneven growth in the housing market and gross sales in the Tampa Bay MSA.

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**Figure 2.4: Case-Shiller HPI for Tampa Bay: 1987–2015**
Source: St. Louis Federal Reserve

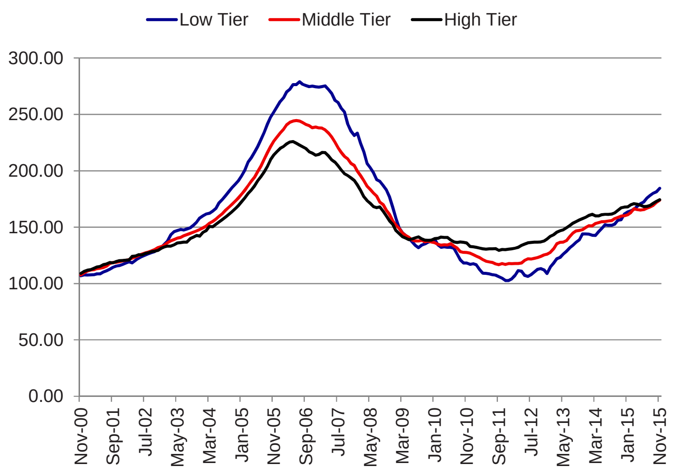



**Figure 2.5: Number Residential Building Permits in Tampa Bay: January 1988–December 2015**
Source: U.S. Department of Housing and Urban Development

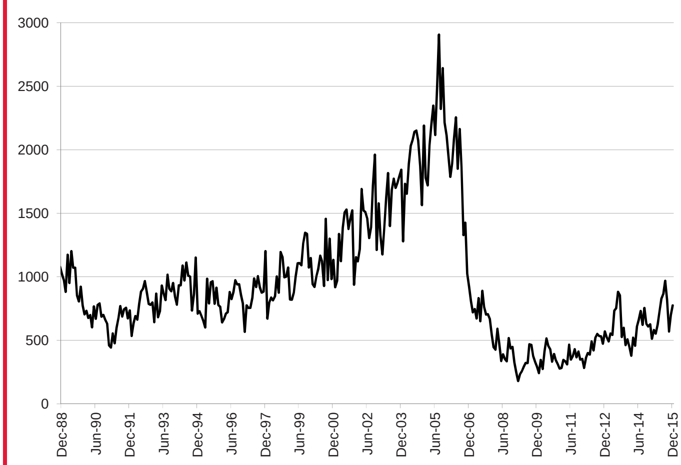
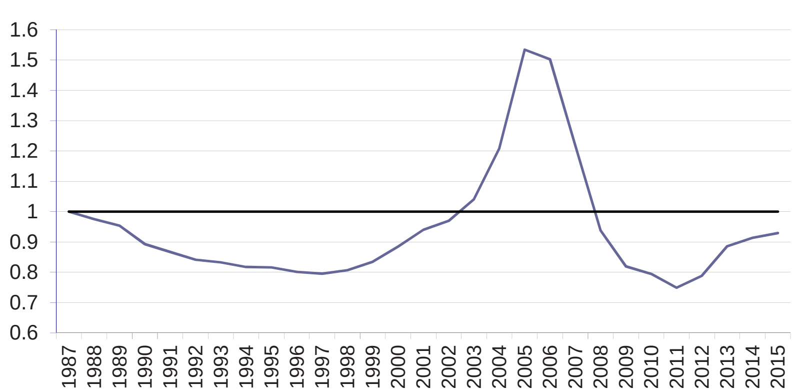


**Figure 2.6: Tampa Bay's Price-Rent Ratio: 1987–2015**
Sources: St. Louis Federal Reserve, Bureau of Labor and personal calculations



## RESEARCH CORNER: OKUN'S LAW FOR TAMPA BAY

*By John R. Stinespring, Ph.D.*

Understanding how increases in economic growth can lower unemployment is crucial for forecasting economic performance and enacting successful fiscal and monetary policy. Known as Okun's law, the unemployment-output relationship has been estimated to be near 0.3 for multiple countries over multiple time periods: every 1 percent increase in a country's GDP growth rate leads to a 0.3 percent decrease in unemployment. Using a relatively new statistical technique known as spatial econometrics, Stinespring and University of Tampa student Jeremy Luciene have estimated Okun's law for the Tampa Bay MSA economy with interesting results. The two researchers measured the impact on MSA unemployment from changes in both local MSA and neighboring MSA output. Their working paper entitled "Okun's Law at the Florida MSA Level" estimates a percent increase in Tampa Bay's output decreases its unemployment by 0.1 percent while a percent increase in neighboring MSA output decreases Tampa Bay's unemployment 0.2 percent. The combined effect explains the 0.3 estimate found at larger-scale economies.[1]

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[1] For national estimates see Owyang et al, "Output and Unemployment. How Do They Relate Today?" Federal Reserve Bank of St. Louis *The Regional Economist*, 2013. For MSA estimates see Kuscevic, "Okun's law and urban spillovers in US unemployment." *Annals of Regional Science*, 2014.



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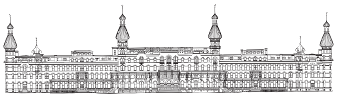

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