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the tampa bay economy

HAS CONSUMPTION RECOVERED FROM THE FINANCIAL CRISIS?

By Vivekanand Jayakumar, Ph.D.

In recent decades the American consumer has often been credited with being the engine of U.S. and even global economic growth. The consumer-driven nature of the American economy is highlighted by the fact that household personal consumption expenditure has accounted for around 67%-70% of aggregate expenditure in recent decades, well-above the 60.2% average observed during the 1960-1981 period. Given the macroeconomic significance of US household spending, it is worth considering whether the 2007-2009 financial crisis and its aftermath left any lasting scars on the psyche of the American consumer. This brief article examines the underlying forces driving US personal consumption expenditure and attempts to determine any potential shifts in the post-crisis behavior of the American consumer.

Traditional Keynesian theories of consumption placed considerable emphasis on current (disposable) income as the key driver of household spending. Figure 1.1 indicates the historical trends in the growth rate of real personal consumption expenditure (RPCE) and the growth rate of real personal disposable income (RDPI). While there appears to be a link between RPCE and RDPI, it is clear that the consumption growth rate is smoother (less volatile) than the disposable income growth rate. It is apparent that we need to consider additional factors from both a theoretical as well as empirical standpoint.

In the 1950s, Milton Friedman's permanent income hypothesis (PIH) and Franco Modigliani's life-cycle hypothesis (LCH) put forward the still-influential viewpoint that current consumption is determined by permanent/lifetime income. PIH and LCH also emphasized the desire of households to smooth out their long-term consumption paths. The emphasis placed by both Friedman and Modigliani on the expected stream of future income gave credence to the notion that household net worth (or wealth) needs to be given due consideration as a possible driver of consumption. More recent theoretical attempts to explain the consumption/saving decision of households have emphasized the significance of the time horizon under consideration (short-term versus long-term planning horizon), time preferences (household's rate of preference for current versus future consumption—in economic parlance, the discount rate applied to future consumption), and the presence of credit/liquidity constraints. The potential significance of intertemporal consumption choice suggests a role for interest rates. For instance, the discount rate utilized by consumers for the purpose of discounting future income may be related to the observed real rate of return; also, intertemporal substitution and income effects (which refers to household decision to increase or decrease savings in response to higher interest rates) depend on the level of real interest rates.

A popular modern theory of consumption that incorporates many aspects of earlier theories is the so-called precautionary or buffer stock theory of
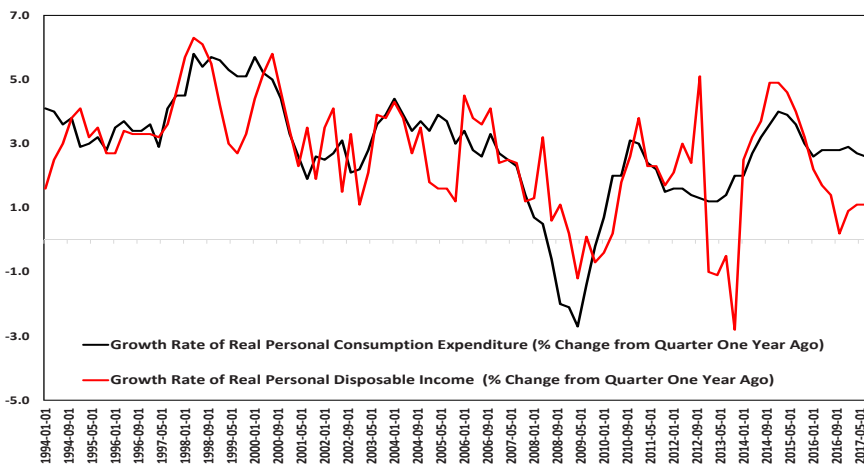
saving (popularized by Johns Hopkins University economist Christopher Carroll and others), which suggests that a major reason for holding and accumulating assets is to shield one's consumption against future uncertainties—unpredictable shocks or fluctuations associated with future earnings (possibly from a sudden job loss or family crisis) and unexpected expenditures (for example, unplanned healthcare expenses). An interesting implication of the precautionary saving model is that households with greater income uncertainty should actually save more and accumulate a greater stock of assets.
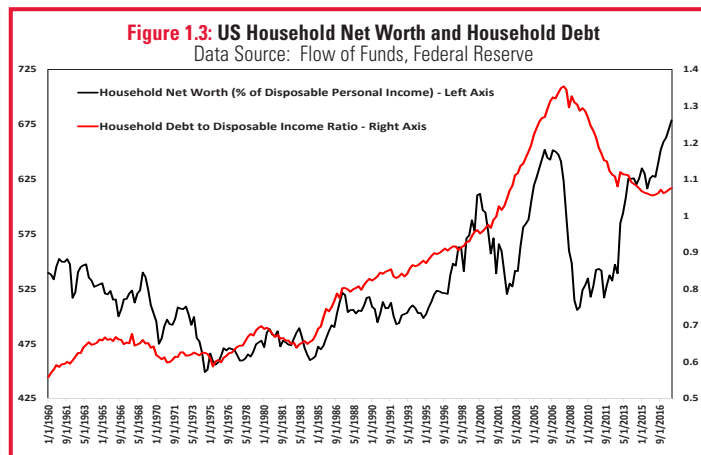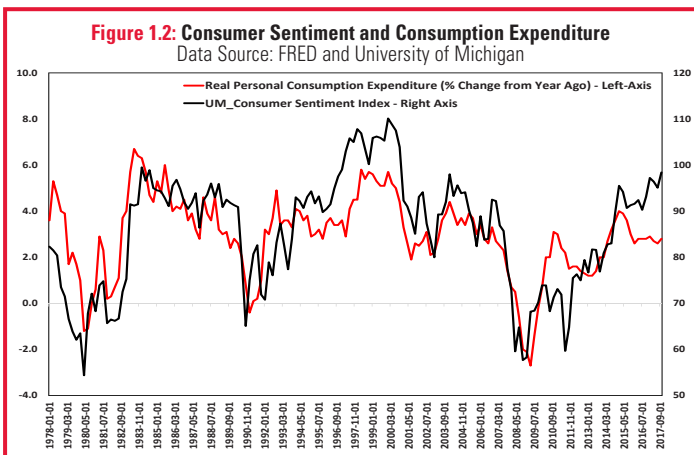
The lead up to the 2007-09 financial crisis and its aftermath highlighted the potential significance of liquidity and credit constraints in determining household consumption behavior. In the case of an adverse shock that results in an actual decline in current income, households that failed to accumulate sufficient savings and face restricted access to credit will be forced to curtail spending (even if lifetime earnings expectations

Figure 1.1: Real Personal Consumption Expenditure and Real Personal Disposable Income
Data Source: FRED, Federal Reserve Bank of St. Louis

Growth Rate of Real Personal Consumption Expenditure (% Change from Quarter One Year Ago)
Growth Rate of Real Personal Disposable Income (% Change from Quarter One Year Ago)

Figure 1.2: Consumer Sentiment and Consumption Expenditure
Data Source: FRED and University of Michigan

Figure 1.3: US Household Net Worth and Household Debt
Data Source: Flow of Funds, Federal Reserve

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remain unchanged). For many households, credit constraints are binding during and after a financial crisis. Credit constraints intensify when financial institutions become more risk averse following a crisis, and when they institute tighter credit standards either voluntarily or as a result of new post-crisis regulations. Additionally, a decline in assets prices reduces collateral values and raises the external finance premium, resulting in reduced credit access. Consequently, depressed consumption levels are a likely post-crisis outcome. It is also reasonable to expect that the precautionary motive kicks into high gear during and after a major financial crisis, and the increased saving and deleveraging reduces consumption expenditure.

Recent research (Kaplan, Greg, Giovanni L. Violante, and Justin Weidner (2014) "The Wealthy Hand-to-Mouth", *Brookings Papers on Economic Activity* 48(1): 77-153) has highlighted the fact that it is not just poor households that encounter liquidity/credit constraints. In the U.S., where many households have their assets tied up in real estate and in tax-exempt retirement accounts, the phenomenon of "wealthy hand-to-mouth" is quite prevalent. In fact, Kaplan et. al. (2014) note: "The "wealthy hand-to-mouth"

are households that hold little or no liquid wealth, whether in cash or in checking or savings accounts, despite owning sizable amounts of illiquid assets (assets that carry a transaction cost, such as housing or retirement accounts.) … The portfolio configuration of the wealthy hand-to-mouth suggests that these households may have a high marginal propensity to consume out of transitory income changes, a prediction for which we find empirical support".

"In the early post-crisis recovery phase, deleveraging, credit constraints and negative wealth effects acted together to hold down household spending, but more recently, the slow growth in real disposable personal income and a highly skewed wealth distribution appear to be the primary factors behind the subdued growth rate in personal consumption expenditure."

The theoretical viewpoints discussed above broadly suggest that current disposable

income, consumer sentiments, household net worth, household debt levels, underlying credit/financial conditions (which reflect the extent of credit/liquidity constraints facing households), and interest rates are all possible drivers of aggregate personal consumption expenditure. Surveys of consumer sentiments provide insights into household confidence levels, which are bound to influence spending behavior. As shown in Figure 1.2, there has historically been a close link between consumer sentiment (which may reflect expectations regarding both future income and growth in non-equity wealth) and household consumption expenditure. Interestingly, there appears to be a disconnect between the two series since the 2016 US Presidential election — consumer confidence has surged while consumption expenditure has remained relatively subdued.

The U.S. household net worth to disposable income ratio can influence consumer expenditure via the so-called wealth effect — rising (falling) asset values lead to higher (lower) household net worth, which can induce an increase (decrease) in consumer spending. There have been three major cycles in household net worth since the mid-nineties (see Figure 1.3). The dot-com bubble related spike in net worth during the late 1990s came to an abrupt end in 2001 with the crash of the tech-heavy NASDAQ stock market. The housing bubble dramatically boosted net worth during the 2003-2006 period. The bursting of the housing bubble and the subsequent crisis caused a sharp in drop in net worth in 2008-2009. More recently, U.S. household net worth relative to disposable income has risen to record levels due to surging equity markets (recovering home prices are a factor as well). The U.S. household debt-to-disposable income ratio, as shown in Figure 1.3, rose gradually between 1960 and 1985, and then saw a pickup in growth between 1986 and 2000. The most dramatic increase in household debt relative to income occurred between the end of the dot-com bubble and the beginning of the 2007-2009 financial crisis, suggesting that American households were highly leveraged in the leadup to the crisis. Household debt fell in the crisis aftermath as a consequence of deleveraging (and as a result of rising defaults on mortgage loans), though it still remains at historically high levels. Elevated
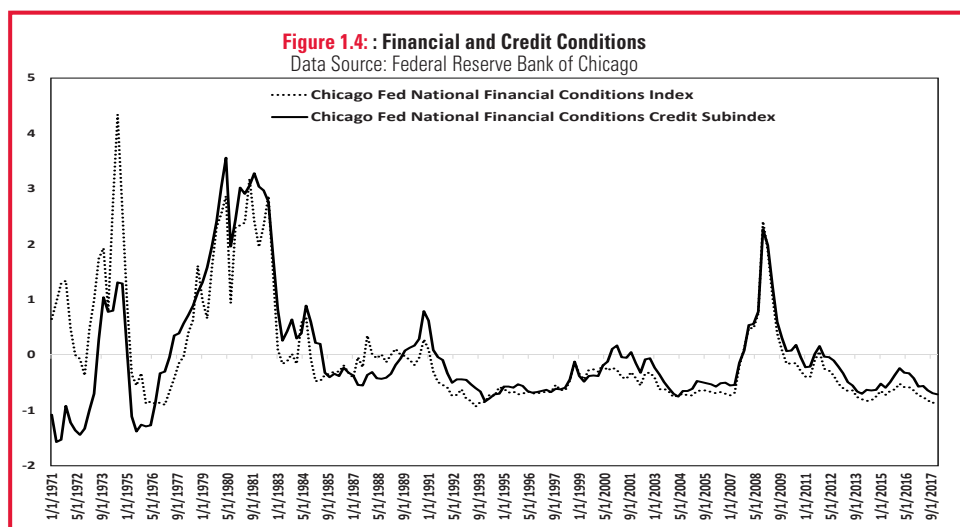
Figure 1.4: : Financial and Credit Conditions
Data Source: Federal Reserve Bank of Chicago

Figure 1.5: Growth Rate of Real Personal Consumption Expenditure Actual versus Fitted Values
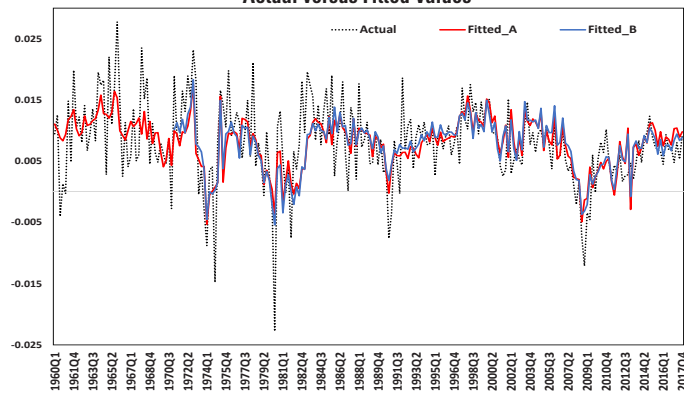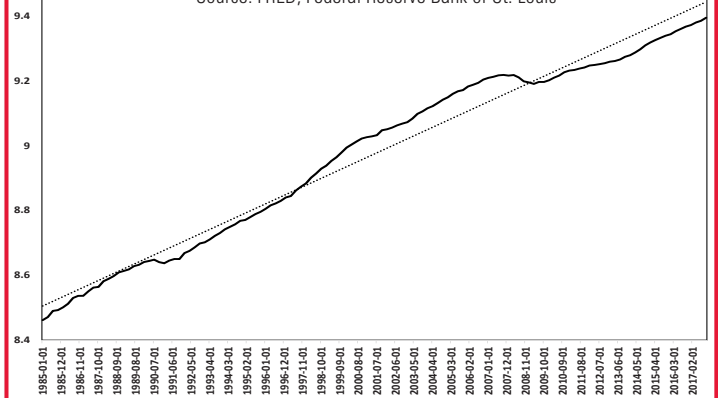

Figure 1.6: Natural Log of Real Consumption Expenditure
Source: FRED, Federal Reserve Bank of St. Louis

asset prices and increased leverage appear to have played a crucial part in supporting high US consumption levels in the years prior to the crisis.

Underlying financial conditions, as captured by the Chicago Federal Reserve's National Financial Conditions Index and the National Financial Conditions Credit Sub-index, reflect the extent of credit/liquidity constraints. As shown in Figure 1.4, following relatively easy credit conditions in the lead up to the crisis, there was a dramatic tightening of financial conditions during the 2007-2009 period. (Index values are constructed to have an average value of zero and a standard deviation of one. Positive values are associated with tight financial conditions and negative values are associated with easy financial conditions.)

To verify the relevance of the factors discussed above for analyzing personal consumption expenditure trends, simple regression estimations were undertaken. The non-stationary nature of several of the time series variables under consideration required differencing the affected variables to attain stationarity. The dependent variable was the first difference of the natural log of real personal consumption expenditure ($\Delta \ln$RPCE). The explanatory variables were the first difference of the natural log of real disposable personal income, $\Delta \ln$RDPI, the first difference of the natural log of net worth to disposable income ratio, ($\Delta \ln$NHW_DPI), the first difference of the natural log of

household debt to disposable personal income ratio ($\Delta \ln$HDEBT_DPI), the University of Michigan Consumer Sentiment Index (CSentiment), and the real interest rate (RRATE). All explanatory variables were statistically significant and had the appropriate signs (positive signs for all variables except for real interest rate).

Figure 1.5 (FITTED_A) shows the actual and fitted values, and it is apparent that the simple model discussed here does a reasonable job of capturing the key determinants of consumption expenditure. An alternate specification for the period 1971Q1-2017Q4 with the added explanatory variable Chicago Federal Reserve's National Financial Conditions Credit Sub-index (NFCCI) provides a better fit (FITTED_B in Figure 1.5). Real interest rate is excluded from this alternate specification as it becomes statistically insignificant with the inclusion of NFCCI (the financial conditions index incorporates data on various interest rate spreads). These discussions suggest that there are multiple drivers of US household consumption expenditure — current and future expected income (higher disposable income and positive consumer sentiment leads to higher consumption), wealth (higher net worth leads to higher consumption), and credit and financial conditions (credit availability and credit constraints matters — easy credit conditions lead to increased borrowing and higher consumption).

In the post-crisis era, real personal

consumption expenditure has remained subdued (see Figure 1.6) for a variety of reasons. Following the financial crisis, the focus of many households shifted towards deleveraging and balance sheet repair. The sharp decline in asset prices and binding liquidity/credit constraints adversely affected consumer spending. Subpar economic growth and relatively high unemployment rates during the initial recovery phase caused consumer expectations to remain low. However, since 2015, underlying economic conditions have improved significantly — recovery in net worth and gradual easing of borrowing constraints have been accompanied by dramatically improving labor market conditions (with the unemployment rate falling quickly towards its natural rate). Consumer sentiment has improved as well.

Yet two factors have played an important role in curtailing the growth rate of consumption expenditure of late. First, despite improving economic conditions, the growth rate of real personal disposable income has been very weak (see Figure 1.7). A recent Federal Reserve study found that the 10-year moving average of real disposable personal income growth was at a fifty year low (Aladangady, Aditya, and Laura Feiveson (2018). "A Not-So-Great Recovery in Consumption: What is holding back household spending?", *FEDS Notes*. Washington: Board of Governors of the Federal Reserve System, March 8, 2018). It is reasonable to assume that the so-called "new normal" era of slower growth, evident since the onset of the 2007-2009 financial crisis, has led to a downshifting of both actual growth rate of real disposable personal income as well as expectations regarding future income growth amongst households.

Another intriguing explanation for the subdued growth rate in personal consumption expenditure is based on the work of New York University economist Edward Wolff. In his comprehensive study of American household wealth ("Household Wealth Trends in the United States, 1962 to 2016: Has Middle Class Wealth Recovered?", *NBER Working Paper* No. 24085, November 2017), Wolff found that financial asset holdings among American households was highly concentrated — the top 10% of American households, as defined by total wealth, owned

Figure 1.7: Real Disposable Personal Income Growth (10 Year Moving Average)
Source: Federal Reserve
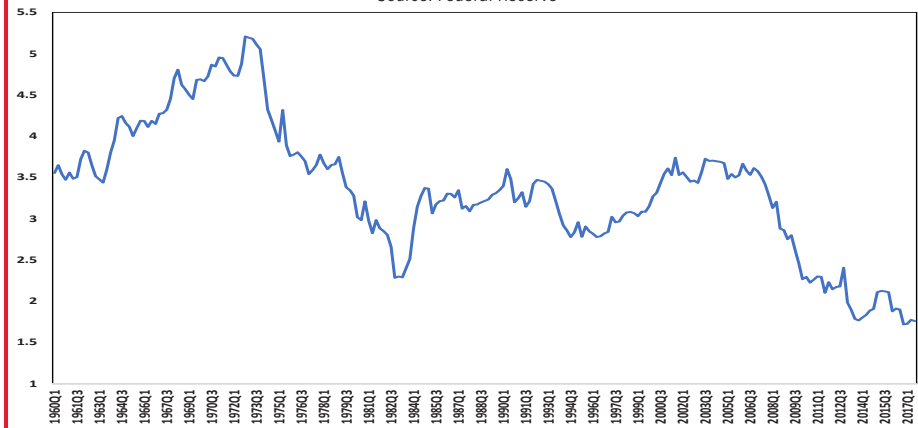
TAMPA BAY FORECAST: FEDERAL STIMULUS EXTENDS LOCAL EXPANSION

By John R. Stinespring, Ph.D.

Financial markets have been roiled in recent weeks by cross currents in economic policy. While the recent $1.3 trillion spending bill and tax cut legislation represent an enormous stimulus to the national economy—occurring just as unemployment reaches new lows and inflation shows signs of upward persistence—the Trump administration's trade restrictions represent a contractionary policy whereby trade retaliation from China and even long-term allies such as Canada may decrease U.S. export growth. The resulting uncertainty is reflected in nightly reports of wide gyrations in financial markets. What does this uncertainty imply for the Tampa Bay metropolitan area (consisting of Hernando, Hillsborough, Pasco, and Pinellas counties combined)? This forecast of the Tampa Bay economy (TBE) uses data from our local labor markets, housing markets, and aggregate spending to address this question. We conclude that the deficit-financed stimulative

spending should overwhelm the stifling effects of trade restrictions, higher interest rates and other contractionary policies in the near term. In fact, the federal stimulus may extend the Tampa Bay economic expansion beyond 2018 and into mid-2019, contributing to the longest TBE expansion on record.

To understand how the local economy responds to changes in the national economy, we examine the Federal Reserve Bank's indices of aggregate economic activity shown in Figure 2.1. These indices provide a bird's-eye view of economic performance at the national and local levels where values above zero indicate an expanding economy; those below, a contraction. The figure shows the TBE and U.S. indices track one another closely with a correlation of 0.76 (a correlation of 1.0 would indicate they move in lock-step). It also shows the TBE outpaces the U.S. in both expansions and recessions. The Federal Reserve economists who created the MSA indices (see "Metro business cycles" by Maria A. Arias, Charles S. Gascon, and David

E. Rapach, *Journal of Urban Economics* No. 94, 2016) estimated the sensitivity of the TBE index to changes in the U.S. index, known as the TBE's "beta", to be 1.5. This implies a 1 percentage point change in national economic activity is associated with a 1.5 percentage point change in the TBE. In fact, the Great Recession from 2007 through 2009 was 1.5 months longer for the TBE

> *"The recent $1.3 trillion spending bill and tax cut legislation . . . may extend the Tampa Bay economic expansion beyond 2018 and into mid-2019, contributing to the longest TBE expansion on record."*

(at 32 months) than the U.S. (at 21 months). This economic responsiveness implies the enormous federal fiscal stimulus is likely to reverse the downward trend in TBE economic activity that began in 2016.

The size of our economic expansion is also evident in local labor markets. Figure 2.2 shows a historically long increase in monthly payrolls that began in September 2010 and continues through January 2018, with a significant, though temporary, "hurricane" dip in September. Though below its mid-2016 peaks, monthly job growth has remained strong and was last recorded at 2.3% for Tampa, well above the national rate of 1.5%. The growth in payrolls is mirrored by a decrease in the unemployment rate as shown in Figure 2.3. As of January 2018, the unemployment rate stood at 3.7% for the TBE, 3.9% for Florida, and 4.1% nationally. Though these unemployment rates are below their pre-Great Recession historic averages of 4.7% for TBE and 5.5% for the US, the stimulus may lower them further. This would perpetuate

Figure 2.1: US and Tampa Bay Monthly Economic Activity Indices, 2004-2017
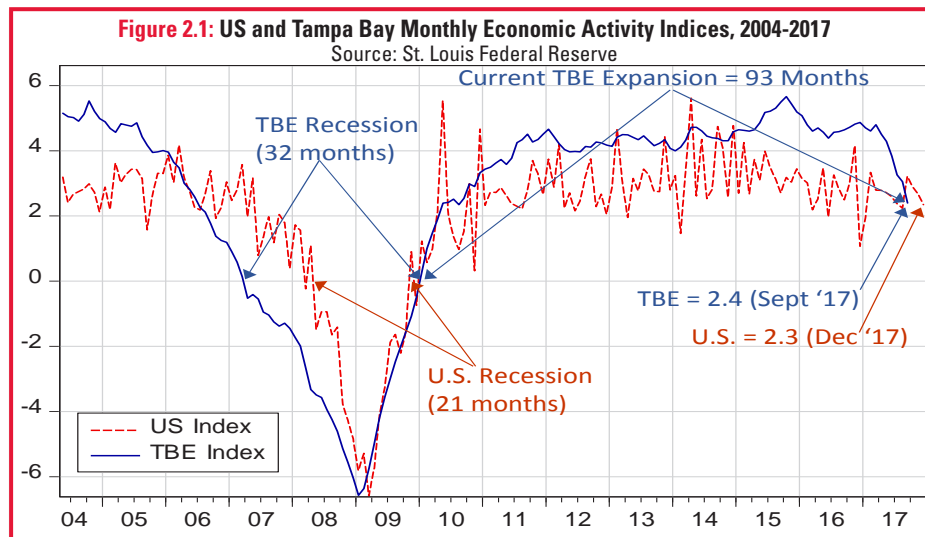Source: St. Louis Federal Reserve

Current TBE Expansion = 93 Months
TBE Recession (32 months)
U.S. Recession (21 months)
TBE = 2.4 (Sept '17)
U.S. = 2.3 (Dec '17)
US Index
TBE Index

Figure 2.2: Percentage Change Payrolls for Tampa Bay and US, 2010-2018
Source: Bureau of Labor Statistics Seasonally-Adjusted)

Jan 2018:
Tampa Bay, 2.3%
US, 1.5%
2.3% (TBE)
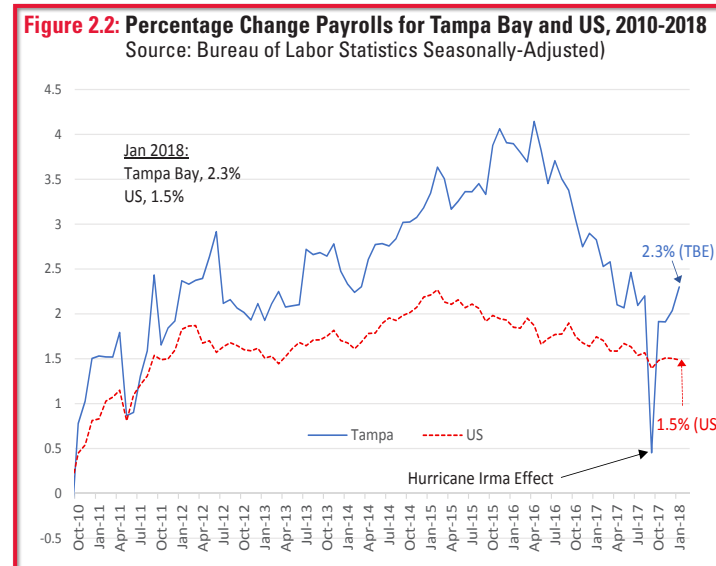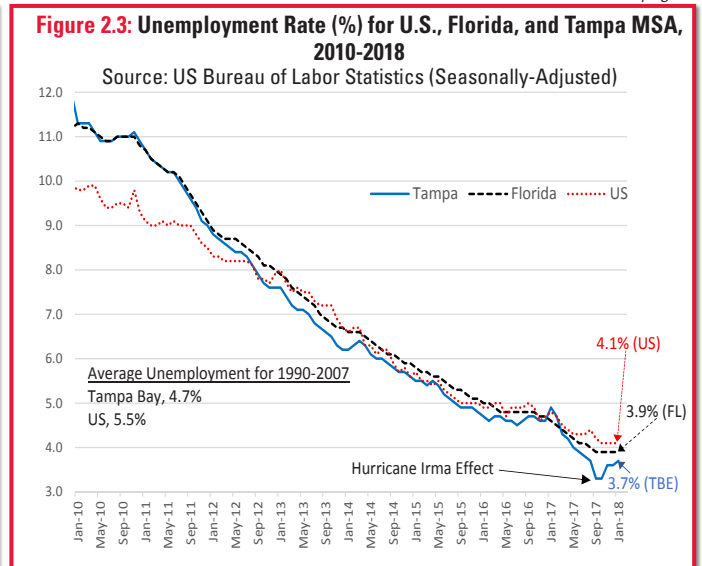1.5% (US)
Hurricane Irma Effect
Tampa — US

Figure 2.3: Unemployment Rate (%) for U.S., Florida, and Tampa MSA, 2010-2018
Source: US Bureau of Labor Statistics (Seasonally-Adjusted)

Tampa —— Florida ---- US
Average Unemployment for 1990-2007
Tampa Bay, 4.7%
US, 5.5%
4.1% (US)
3.9% (FL)
Hurricane Irma Effect
3.7% (TBE)

Tampa Bay Forecast: Federal Stimulus Extends Local Expansion

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the steady decline since 2009 for all three series seen in Figure 2.3. The high job growth and low unemployment have combined to put upward pressure on wages, causing inflation-adjusted weekly earnings to rise by 3.1% from January 2017 to January 2018.

The labor market data above are *lagging indicators*, and as such, tell us where the economy was in the business cycle before the stimulus. For a measure of the economy's current position in the business cycle we examine Gross Sales, which is a *coincident indicator*. Figure 2.4 shows that Gross Sales trend up with local expansions amid seasonal spikes in December, March, June, and September. It also shows significant deviations of actual data from our forecast due to Hurricane Irma. In particular, forecasted sales exceeded actual in September ($11.5 billion compared to $10.8 billion) and fell

well below in December when spending seemed to catch-up to trend. Our forecast of Gross Sales (dotted line in Figure 2.4) shows a trend of an additional $40m per month through the first half of 2018. The figure reveals that our forecasted Gross Sales (dotted line) closely tracks actual data through September 2017.

To predict where the economy is headed, we need a *leading indicator* of the TBE. One standard indicator is housing construction because sustained increases in construction lead economic expansions while sustained declines often presage recessions. Figure 2.5 shows Housing Starts by Building Permits in the TBE. Though volatile, the data follow a clear upward trend with seasonal spikes which our forecast (dotted line) predicts with roughly 86% accuracy. From it, we predict at least 1,100 permits per month in the first half of 2018. Though this significantly exceeds the 2014, 2015, and 2016 averages, it is near the 2017 average of 1,055. Moreover, this figure remains far below the 2005 monthly average of 2,263, implying supply has more room to grow.

Though housing supply is rising, it is clearly outpaced by housing demand as evidenced by the dramatic price increases in Tampa Bay. Figure 2.6 shows the Case-Shiller Home Price Index for low-, middle-, and high-tier home prices in the region since May 2009 (note each index = 100 in year 2000). After bottoming out in 2011, TBE home prices have risen significantly and persistently. High-tier and middle-tier home prices have risen 51 percent and 79 percent, respectively, while low-tier homes have more than doubled in price at 131 percent above their trough. Though not shown in Figure 2.6, all tiers remain below their 2006 peak prices. Over the past three years, the price increases have stabilized to an impressive average of 15% for low-tier, 10% for middle-tier, and 5% for high-tier.

Given this data for the local economy and the national policies, our near-term forecast is for sustained economic growth in the Tampa Bay economy coupled with greater volatility in financial markets. The downside risks from contractionary policy pronouncements from the White House and expected rate increases from the Federal Reserve, seem unlikely to prevent the economy from heating up over the next few quarters. Should the TBE expand to July 2019, it will mark the longest recorded expansion at 114 consecutive months. This economic feat comes at a cost. Congress has injected a massive stimulus into an economy with little slack. They have increased government spending while cutting taxes, which will increase an already massive federal deficit that will soon exceed $1 trillion a year into the indefinite future. Expect higher inflation, higher bond yields, and accelerated Federal Reserve rate hikes in an effort to slow an overheating economy. Difficult tradeoffs will be required to pay for this stimulus. Until then, hold on tight for a bumpy ride.

Write to Professor Stinespring at jstinespring@ut.edu.

Figure 2.4: Gross Sales in Tampa Bay, 2009–2018
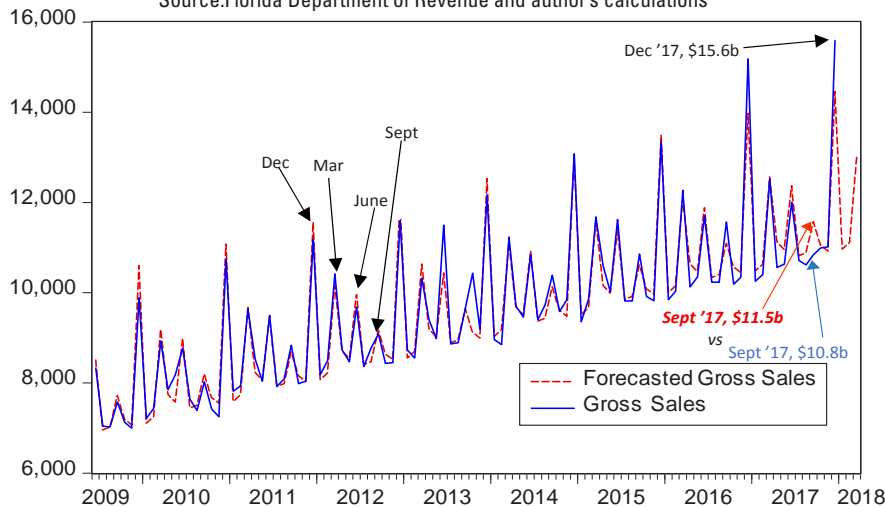Source:Florida Department of Revenue and author's calculations

Figure 2.5: Tampa Bay Housing Start Permits, 2009–2018
Source: U.S. Department of Housing and Urban Development and author's calculations
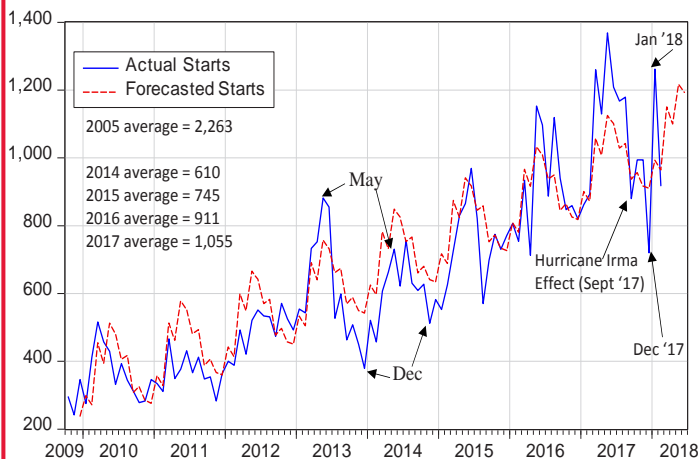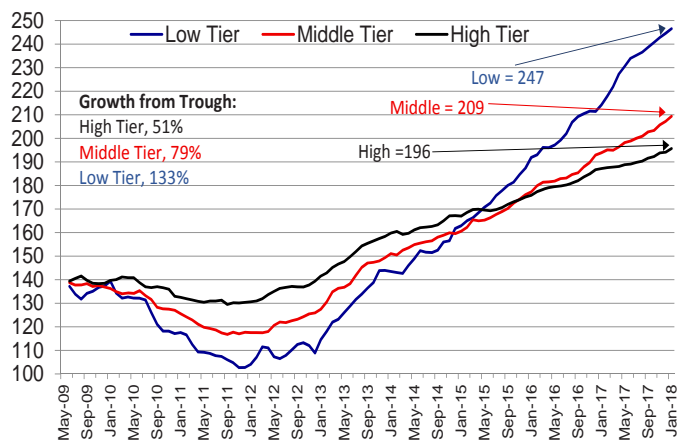

Figure 2.6: Case-Shiller Home Price Index for Tampa Bay, 2009–2018 (Index = 100 in Year 2000)
Source: St. Louis Federal Reserve

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around 84% of all stocks in 2016. According to Wolff (2016), "... [w]hile 94 percent of top percentile also reported stocks worth $10,000 or more (in current dollars), only 27 percent of the middle quintile and 4 percent of the bottom quintile did so." Given that the surge in net worth observed between 2012 and 2017 was largely driven by booming stock markets, the impact on personal consumption expenditure may be muted given that a significant fraction of American households may not have fully experienced the benefits of higher equity prices. Additionally, the wealth effects associated with stock prices have been found to be empirically weaker than those associated with real estate prices.

It appears that the relatively slow growth

"... it is feasible that the strengthening economy (characterized by low unemployment rates and an improving growth outlook) will lead to broad based wage gains and more widespread sharing of asset market gains, and result in a more robust consumer spending recovery."

in real personal consumption expenditure observed since the 2007-09 financial crisis may have multiple causes. In the early post-crisis recovery phase, deleveraging, credit constraints and negative wealth effects acted together to hold down household spending, but more recently, the slow growth in real disposable personal income and a highly skewed wealth distribution appear to be the primary factors behind the subdued growth rate in personal consumption expenditure. Looking ahead, it is feasible that the strengthening economy (characterized by low unemployment rates and an improving growth outlook) will lead to broad based wage gains and more widespread sharing of asset market gains, and result in a more robust consumer spending recovery.

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