

Fall 2017

FIRST PRINCIPLES QUARTERLY



First Principles Capital Management, LLC

First Principles Capital Management is an investment management firm with expertise across the global fixed income securities and derivatives markets. The firm provides highly customized investment portfolios for its clients, which include prominent endowments and foundations, financial institutions, industrial corporations, pension funds, family offices and trusts.

The investment team has extensive experience and a noteworthy history of innovation in the debt capital markets. The investment process and client service model is founded on the principle that it is necessary to gain an understanding of client-specific objectives, constraints and idiosyncratic factors in order to design and execute on the optimal strategy for each client. The orientation of the team facilitates a continuous relative value assessment within and across fixed income asset classes.

Fall 2017

FIRST PRINCIPLES QUARTERLY

Contact:

First Principles Capital Management, LLC

140 Broadway, 21st Floor
New York, NY 10005
Tel: 212.380.2280
Fax: 212.380.2290
www.fpcmlc.com

The information contained herein has been prepared solely for informational purposes and is not an offer to buy or sell or a solicitation of any offer to buy or sell any security.

First Principles Capital Management, LLC ("FPCM"), or any of its affiliates, do not make any representation or warranty, express or implied, as to the accuracy or completeness of the information contained herein, and the information contained herein should not be relied upon as a promise or representation whether as to the past or future performance. The information contained herein includes estimates and projections that involve significant elements of subjective judgment and analysis. These statements are not purely historical in nature, but are "forward-looking statements". They may include, among other things, projections, forecasts, targets, sample or pro forma investment structures, portfolio composition and investment strategies. These forward-looking statements are based upon certain assumptions. Actual events may differ from those assumed. FPCM or any of its affiliates do not make any representations as to the accuracy of these forward-looking statements or that all appropriate assumptions relating thereto have been considered or stated and none of them assumes any duty to update any forward-looking statement. Accordingly, there can be no assurance that estimated returns or projections can be realized, that forward-looking statements will materialize or that actual results will not be materially lower than those presented.

FPCM and its affiliates disclaim any and all liability as to the information contained herein or omissions here from, including, without limitation any express or implied representation or warranty with respect to the information contained herein.

The information contained herein is confidential and proprietary to FPCM and its affiliates. This material and information should be treated as strictly confidential and cannot be disclosed to any other party other than the recipient and its advisers. Notwithstanding anything to the contrary contained herein, the recipient (and each employee, representative, or other agent of the recipient) may disclose to any and all persons, without limitation of any kind, the tax treatment and tax structure of the transactions described herein and all materials of any kind that are provided to the prospective investor relating to such tax treatment and tax structure (as such terms are defined in Treasury Regulation section 1.6011-4). This authorization of tax disclosure is retroactively effective to the commencement of discussions with prospective investors regarding the transactions contemplated herein. By accepting this information, the recipient agrees to be bound by all of the limitations described herein.

In This Issue

CIO LETTER	2
MUNICIPALS.....	6
RATES	8
INFLATION	13
MORTGAGE-BACKED SECURITIES	16
ASSET-BACKED SECURITIES.....	18



Fall 2017

FIRST PRINCIPLES QUARTERLY

CIO LETTER



Mark G. Alexandridis

Chief Investment Officer

malexandridis@fpcmlc.com

212.380.2293

Threading the Needle

There is little controversy about the prodigious role central banks played in engineering the post Great Recession recovery. The combination of conventional tools and the untested, unorthodox quantitative easing (QE) using the central banks' balance sheets to promote liquidity and foster credit undoubtedly had a salutary effect on advancing the recovery. The efficacy of the policy response – unconventional tools in particular – is a subject of intense interest for central banks. Little quantitative evidence exists as to the isolated impact of monetary policy (slashing rates and several rounds of QE) on the growth of real GDP, employment, and inflation.

Blinder and Zandi have, however, provided estimates of the efficacy of the fiscal and monetary measures employed in the US using Moody's analytics macroeconomic model in a non-peer reviewed paper¹. The study attempts to measure the aggregate impact of fiscal (ARRA, TARP, Economic Stimulus Act) and financial responses (QE, FDIC guarantees, TALF, Commercial Paper Funding, Currency Swap facility, ...). They concluded that from 2008 through the end of 2012, the economic impacts of these policies: (1) increased cumulative GDP growth by 16%, (2) led to the creation of 10 million new jobs, and (3) induced inflation to be approximately 10% higher when they compared actual macroeconomic data with their forecast assuming no stimulus at all. They also estimated that most of the GDP gains, jobs added, and excess inflation owed to the financial policies.

Clearly, these results are conditioned on the underlying assumptions in the model and the exact magnitude of the causality between the stimulus and the recovery is impossible to discern. Nonetheless, as these policies are withdrawn an open question is whether the excess growth, employment, and inflation are genuinely excess or have they been brought forward from the future?

What is also evident is that low rates and a dearth of high quality assets have fostered investor confidence and buoyed global asset prices (e.g., all-time highs in S&P, investment grade and high yield spreads at 10-year lows, and Nikkei at levels not seen since 1994). As many of the

¹ [Blinder and Zandi: Policy Responses to Great Recession a Resounding Success](#)

CIO LETTER

central banks embark on weaning the markets from excessive accommodation by reducing their asset purchases (ECB) and/or shrinking their asset portfolios (Federal Reserve) while either raising (Federal Reserve, BOC) and/or contemplating raising (BOE) their policy rates, what are the salient risks to engineering a soft landing for the economy and for financial assets?

In the US, there are three conspicuous, principal – and interrelated – risks to a successful withdrawal of monetary accommodation. They are: (1) the uncertainty surrounding the next Chairman of the FOMC and the ultimate composition of the committee in 2018, (2) the possibility of a policy error in the absence of inflation, and (3) the ability to preserve financial stability.

Leadership and composition of the FOMC

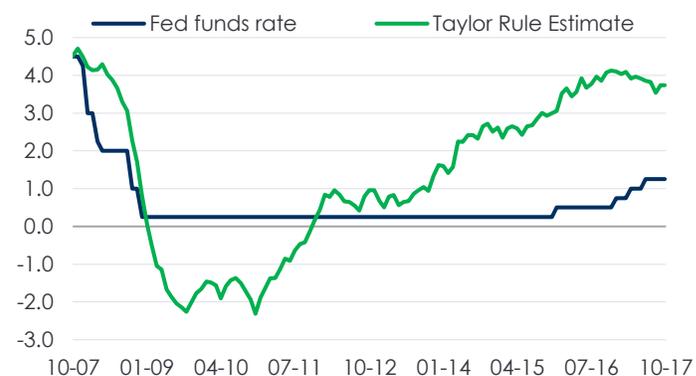
A decision on the next Chair of the Federal Reserve Board of Governors is expected imminently. The market consensus is that the universe of nominees is now limited to four candidates. They are: Janet Yellen, Federal Board Governor Jerome Powell, Professor John Taylor, and former Federal Board Governor Kevin Warsh. Yellen and Powell broadly represent the status quo and the market anticipates continuity with existing guidance on anticipated rate hikes and SOMA normalization.

The selection of Taylor or Warsh, however, would likely introduce much uncertainty into the path of future monetary policy. Both have expressed concerns about the pace of rate hikes, utility of maintaining the Fed's System Open Market Account (SOMA) portfolio at the size currently anticipated by the FOMC, the scope of supervision and regulation in the financial industry, and the magnitude of excess reserves and the interest rate on excess reserve (IOER). Ostensibly, the implementation of a more predictable, mechanical monetary policy as prescribed by the Taylor Rule would potentially radically alter the trajectory for path of short-term interest rates.

One such expression of the Taylor Rule estimate is depicted in Chart 1. Strict implementation over the last decade would have departed fundamentally from the actual path. The rule is elegant, but there exists much controversy about the small number of variables, the fact that many are

unobservable (e.g., natural rate of output, neutral rates of interest, and NAIRU), and the appropriate measure of inflation. Still, it should be noted that the FOMC regularly consults several rule-based models for monetary policy making.

Chart 1: Taylor Rule Model [%]



Source: Bloomberg

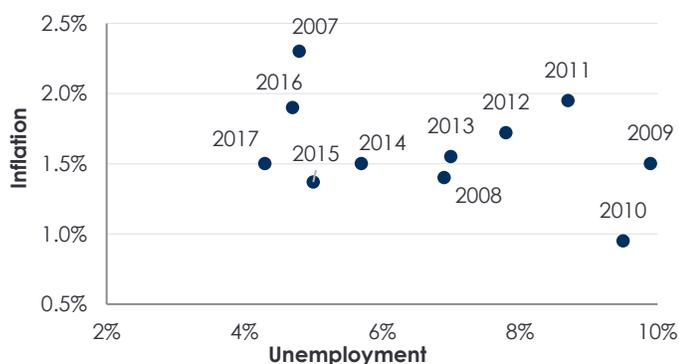
Additionally, the three additional seats on the Board of Governors need to be selected by the President and confirmed by the Senate – Randal Quarles took office in mid-October. It is expected that the administration will favor candidates that have had experience in the financial industry and will consequently help reinforce the administration's agenda to reform the regulatory framework for regulated financial institutions. Although well intentioned to promote economic growth, less supervision, capital, and regulation could equally have unintended adverse consequences.

Wither inflation?

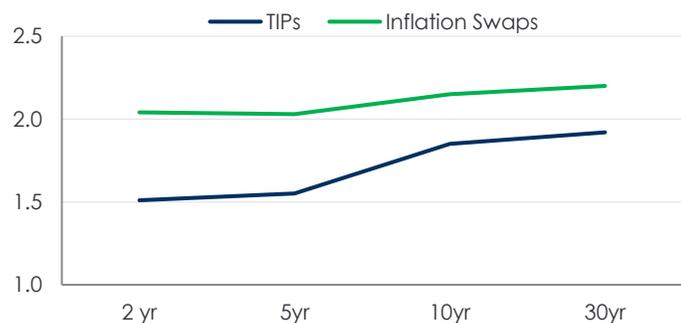
Given the synchronized expansion across both developed and emerging markets and the consequent tight labor markets, conventional wisdom (Phillips curve paradigm describes the inverse relationship between employment and inflation – Chart 2) would have suggested that inflation would have risen to a level near or above the FOMC's target of 2% after this sustained recovery. Realized inflation, however, remains stubbornly below the target. Note that the market implied estimates are on CPI not the FOMC's preferred measure PCE, which on average is 25 – 35 basis points lower (Chart 3).

² [Chair Janet L. Yellen: Inflation, Uncertainty, and Monetary Policy](#)

³ [Lawrence Summers: 5 reasons why the Fed may be making a mistake](#)

Chart 2: Federal Reserve GDP forecast

Source: Bloomberg, FT

Chart 3: CPI inflation expectations [%]

Source: Bloomberg

The latest FOMC minutes conveyed concern about the lag of inflation given the strengthening of the labor market and the extent to which experienced inflation could be attributed to transitory or more persistent factors. Moreover, the discussion alluded to secular trends – technological innovation – and the impact of common global factors that may be dampening domestic inflation. As the conversation/analysis has broadened from inflation lagging, to transitory effects, to secular changes, to the impact of globalization, it speaks to how little inflation dynamics are really understood. And can the FOMC credibly anchor inflation expectations when the outlook is more uncertain than ever and remains at odds with the market?

In a recent speech ("Inflation, Uncertainty, and Monetary Policy"²) Chairwoman Yellen stated that with regard to inflation "...many uncertainties attend [our] assessment, and downward pressures on inflation could prove to be

unexpectedly persistent." She also addressed the risk that if they are wrong the policy rate will have to be kept low, giving the FOMC "less scope to ease monetary policy to fight recessions." The minutes suggest that some members conditioned their commitment to gradual adjustments on the federal funds rate on evidence that low inflation owed to transitory factors and that inflation was on a trajectory to the 2% target. So much for "inflation [being] always and everywhere a monetary phenomenon."

Is this a policy error in the making? Gradually raising rates and normalizing the SOMA portfolio in the absence of inflation increases the odds of inducing a recession – with rates still very low and a large balance sheet – and would necessarily damage the credibility of the institution when most needed. Might it not be time to heed Summers's advice³ to "shoot only when you see the whites of the eyes of inflation"?

Financial stability and the central bank put.

A recent narrative in the Fed minutes⁴ has been a concern about the "persistence of highly accommodative financial conditions [that] could, over time, pose risks to financial stability." Nowhere in the Federal Reserve's mandate is there a reference to financial stability. This begs the question: is the FOMC subliminally influenced by extraordinary high asset prices as it continues with gradually removing accommodation while its inflation objective has yet to be met? Is there an implicit mandate that it is trying to satisfy?

Ex-Chairman Bernanke warned that monetary policy was the wrong tool to address financial stability⁵. He argued that stronger regulation and supervision were the preferred actions "because monetary policy has a broad impact on the economy and financial markets, and attempts to use it to 'pop' an asset price bubble, for example, would likely have many unintended side effects."

The emphasis on financial stability by the committee is troubling for two reasons. First, as mentioned above, preemptive rate rises at the short-end of the curve could potentially inhibit sub-target inflation and the impact on asset prices is more highly correlated with long-term rates – which may or may not respond in tandem with short rates.

⁴ [Minutes of the Federal Open Market Committee September 19–20, 2017](#)

⁵ [Ben Bernanke: Should monetary policy take into account risks to financial stability?](#)

CIO LETTER

Secondly, the emphasis on financial stability reinforces the notion of the “central bank put,” which fosters greater risk taking and ultimately asset bubbles. Neither, outcome is effective and/or desirable.

Inflection point?

After a decade of dominating the markets with unprecedented intervention, the Federal Reserve has embarked on a gradual reversal of its policies. The normalization process is likely to be especially challenging given the confluence of new leadership at the Federal Reserve, the implementation of quantitative tightening while inflation remains subdued, and concerns about financial stability as markets reach new heights. As Jamie Dimon said “it could be a little more disruptive than people think.” You think?

FIRST PRINCIPLES QUARTERLY

MUNICIPALS



David Ho

MD, Asset Management

dho@fpcmlc.com

212.380.2292

QUICK READ

- Municipal bonds performed in-line with Treasuries
- Muni investors often find themselves in a race for the exit
- Complacency must be counteracted by diligence
- Rating agency actions often lag the period investors should act

Municipal bonds perform comparably with US Treasuries

Municipal bonds performed in-line with Treasuries on a beta-adjusted basis for Q3, selling off 4 basis points (bps) while Treasuries sold off 6bps. The bond market see-sawed throughout the quarter, first on hawkish comments from Mario Draghi in late June, then reversing upon President Trump's "fire and fury" sabre rattling toward North Korea. Despite increased central bank rhetoric indicating reversal of monetary policy accommodation and bouts geopolitical tensions, volatility remained subdued throughout the quarter.

Peloton and field sprint

While watching the annual Tour de France bicycle race on television this summer, I was intrigued by the familiar sight of packs of riders forming "pelotons" (the main group of cyclists that utilize wind resistance and tempo) to protect their star riders. Rogue riders daring to "attack" by breaking away from the pack were often tracked down and reined in by the chasing peloton, often rendering stages decided by a mad field sprint in the final meters leading to the finish line.

It is difficult to observe this age-old cycling strategy unfold without drawing a parallel with the behavior of the fixed income capital markets. Most fixed income managers are benchmarked to one index or another, and these indices form the "pelotons" where most managers find comfort. Occasionally, a manager decides to "attack" and shorts certain sectors in the index; but, sometimes these sectors fail to cooperate with the manager's thesis and further richen, forcing the manager back into the pack. Then, when trouble is imminent, managers trample over each other to sell the troublesome securities, hoping to be the first ones to get out and cross the "finish line."

This behavior is acutely illustrated by the recent price action of Hartford, Connecticut's general obligation (GO) debt. Hartford's problems are no secret and have long been brewing. Connecticut's capital city faces massive budget deficits, has growing pension and retiree health-care liabilities, and is encountering business defection. Additionally, the city built an ill-fated, \$66 million debt-

MUNICIPALS

financed minor league baseball stadium last year placing further burden on the city's tax payers, who already face one of the highest property tax rates in Connecticut.

Though warning signs have been easily observable, investors seemed oblivious and willing to support Hartford's debt. However, sentiment about the city changed quickly when rating agencies finally decided to take action. Only after S&P downgraded the city to BBB from A+ in September 2016, and Moody's took similar action lowering the city's rating to Ba2 from Baa1 the following month, did Hartford GO bonds start to sell off. After the initial drop, prices on the city's debt stabilized on hopes that the state would rescue the troubled city. This wishful thinking proved ill-conceived and set the stage for a rude awakening when the state itself could not pass a balanced budget, requiring Hartford to hire a restructuring firm – and another mad dash towards the exits ensued. Chart 1 depicts the historical price action of Hartford's GO debt with a 5% coupon maturing on Apr. 1, 2033.

Chart 1: HAR 5% 04/01/33 Price history [\$]



Source: Bloomberg

Conclusion

Hartford (along with Puerto Rico, Detroit, etc.), can serve as a case study from which investors can glean several important lessons: (1) Investors must be diligent and “do their homework” on an issuer's finances – in Hartford's case, information about the City's finances was not hard to come by, and investors ignored it at their own peril; (2) If investors wait until rating agency downgrades before taking action, it will likely be too late – by then, there will likely be many investors pedaling madly towards the finish line and, inevitably, there will be very few winners.

FIRST PRINCIPLES QUARTERLY

RATES



Laura Malvaez-Penalzoza
 Quantitative Analyst, Asset
 Management
 lmalvaez@fpcmlc.com
 212.380.2285

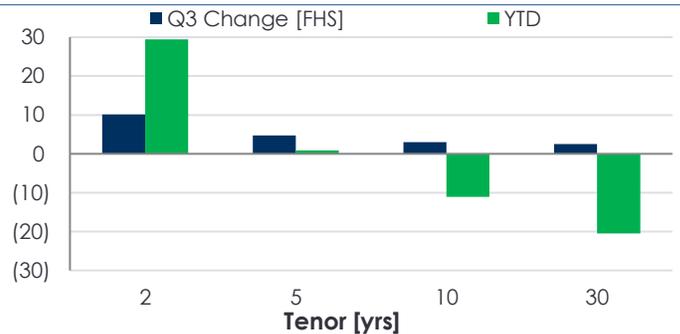
QUICK READ

- US rates navigated intermittent swings to end the quarter slightly higher
- Pro-growth anticipation persists while subdued inflation increasingly an afterthought
- Dec rate hike likely, Fed to begin reducing balance sheet
- Effects of balance sheet normalization not trivial
- There remain both market structure and operational reactions yet to be seen
- A few likely scenarios and highlights should be considered leading into unwind.

Hiking into the unknown

US Treasury yields, led by the front end, closed the third quarter marginally higher (Chart 1). There were, however, bouts of volatility throughout the quarter due to factors such as geopolitical risks, natural disasters, and shifting expectations of pro-growth policy reform in the US. Though weak inflation data persists, other economic data has been moderately positive, including slow but steady real GDP growth and an increasingly tighter labor market.

Chart 1: Treasury rate movements [bps]



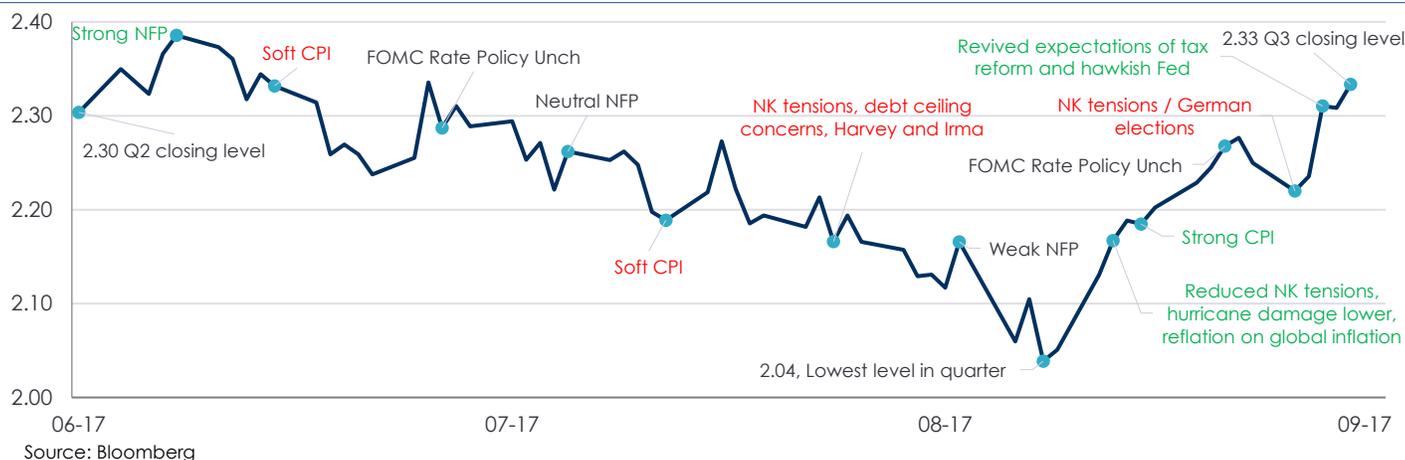
Source: Bloomberg

Fears of a potential government shutdown, in the face of a looming debt ceiling, were defused mid-September as Congress suspended limits the nation's borrowing authority until December 8. As is such, market expectations signal an increase in net bill supply to the order of \$185 billion between October and December 8, then a subsequent increase in Bill issuance over the last three weeks of December, creating a year-end cushion. Although a major market disruption is not anticipated, this scenario could push repo and Bill rates higher at year end given primary dealers' balance sheet pressures.

As anticipated by the market, the FOMC after its September meeting announced that it will begin reducing its balance sheet as of October. The statement was also constructive about the economy; downplayed medium-term, storm-related economic effects; and, despite concerns of low inflation prints being more than transitory, "many [FOMC] participants thought that another [rate] increase later this year was likely to be warranted."

FIRST PRINCIPLES QUARTERLY
RATES

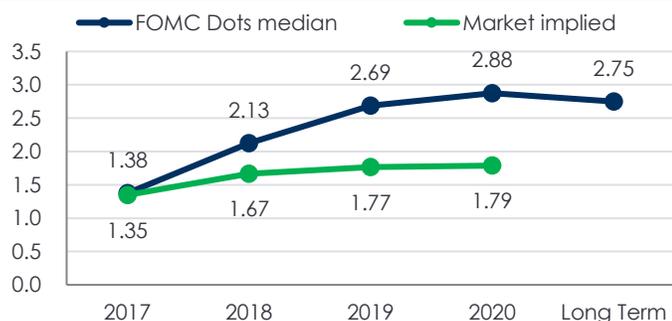
Chart 2: 10-year US Treasury yields [%]



The market implied probability of a December rate hike is above 70%. However, it continues to price a very shallow hiking cycle compared to that implied by the Fed's "dot plot" (Chart 3). The Fed might continue its normalization path as: (1) growth data remain robust, (2) labor market slack continues to decline, (3) financial conditions continue to ease, and (4) upward pressure on inflation is experienced in coming quarters, especially considering recent dollar weakening. Nonetheless, the Fed's reaction function could change given forthcoming changes in the composition of the FOMC: Fed Chairman, board of governors, and voting Fed presidents. The list of candidates for the Fed Chair includes, in order irrespective of likelihood: Jerome Powell, John Taylor, Gary Cohn, Janet Yellen, and Kevin Warsh.

plans outlined in June, the portfolio will shrink by \$30 billion in Q4 '17 and, on average, approximately \$500 billion per year over the next 3 years. This, until the Federal Reserve is holding "no more securities than necessary to implement monetary policy efficiently and effectively." Previously, all proceeds from bond maturities were reinvested back into the SOMA portfolio, where, henceforth, maturity caps will be instituted for each US Treasuries (USTs) and mortgage-backed securities (MBS) holdings, with only remaining proceeds over caps to be reinvested. To assess the potential market impact of this unwind, it is useful to map the interaction between the Fed, the Treasury, banks, and the non-bank public and to project the ultimate size of the Fed's balance sheet.

Chart 3: Market expectations vs Fed median projections [%]



After the financial crisis, the Fed increased its balance sheet by adding assets purchased as a result of QE and a significant increase in bank reserves in its liabilities. Thus, the size of the bank reserves in the system is determined by the size of the Fed's balance sheet. Therefore, reserve balances on the liability side of the Fed's balance sheet correspond to the cash balance on the asset side of bank balance sheets. On the other hand, regulatory changes forced banks to hold High-Quality Liquid Assets (HQLA) in order to meet new liquidity coverage ratio (LCR) standards, i.e., liquidity capable of absorbing at least 100% of projected net outflows over a stressed 30-day period. If the Fed's balance sheet shrinks, the reserves (cash) held by the banking system will fall (asset) and the non-bank public's deposits will also fall (liability), as the non-bank public purchases Treasury issued securities intended to make up for the run-off (bonds the Fed allowed to mature). A model of this process is shown below:

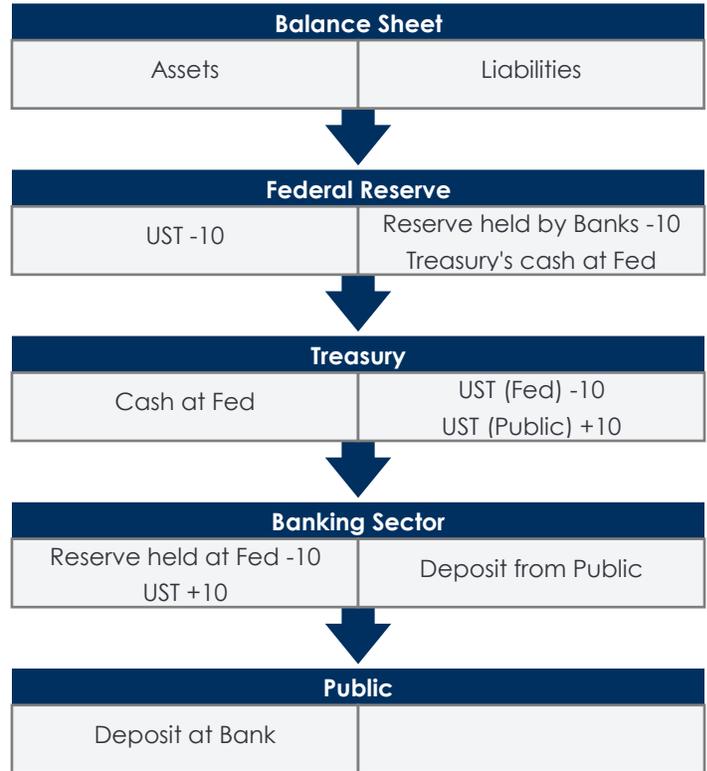
Mechanics of the Fed balance sheet reduction

At the September FOMC meeting, the Fed announced it will begin its balance sheet normalization plan, AKA reduction of its System Open Market Account (SOMA) portfolio. Given

FIRST PRINCIPLES QUARTERLY
RATES

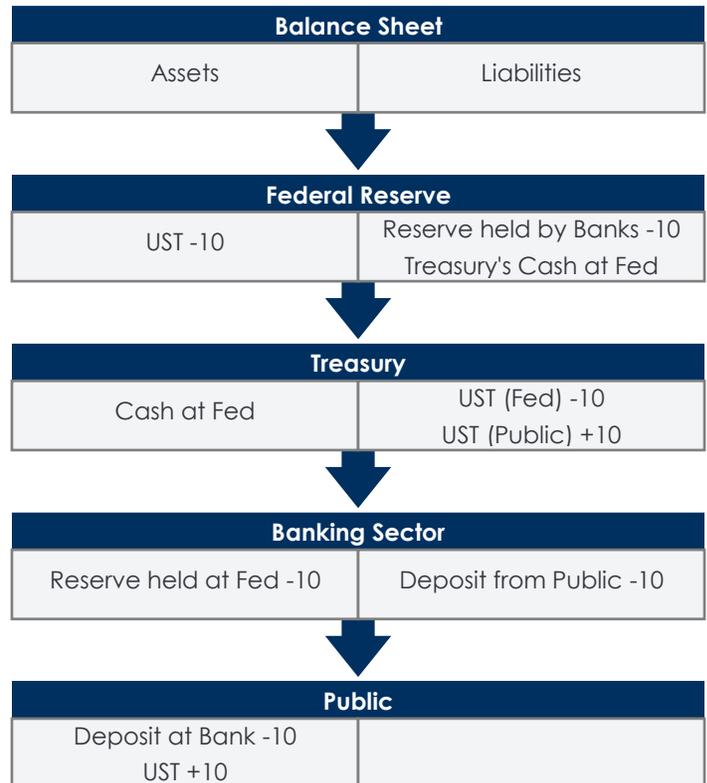
Example 1: Mechanics of Fed's run-off – bank pass-through transaction

Given a scenario wherein the maturity of \$10 billion of USTs held in the Fed's portfolio is met by a Treasury issue of \$10 billion in new USTs, the assumption is that these new securities will be absorbed by the non-bank public. To settle that transaction, non-bank investors will redeem their bank-held deposits in order to fund the purchase of new issue USTs in the market. Banks will then be required to reduce reserves at the Fed by an equivalent amount. Due to these transactions, both the Fed's and Banks' balance sheets become smaller. As banks reduce reserves and deposits from the non-bank public, the outcome is undesirable LCR changes (lower) for the bank.

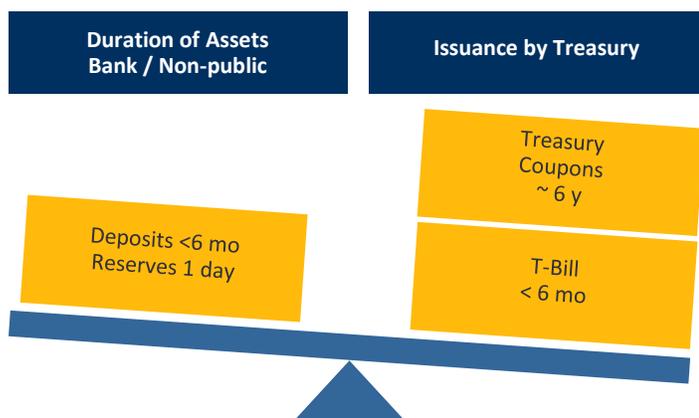


Example 2: Mechanics of Fed's run-off – bank actively manages LCR

Proceeding a step further and making the assumption that banks would buy USTs to maintain their LCR, the Bank would buy USTs from the non-bank public, add these deposits to their liabilities, and correspondingly increase assets. In this scenario, the Bank's balance sheet stays unchanged.



RATES



There remain a few key issues to highlight:

- 1) Inherent to current-day banks are complicated regulatory and operational constraints. There exist myriad considerations in assessing and optimizing their balance sheet as they are constrained by liquidity and capital dynamics including, but not limited to: common equity tier 1 (CET1), supplementary leverage ratio (SLR), LCR and other soft constraints such as Comprehensive Capital Analysis and Review (CCAR) stress-testing and net stable funding ratio (NSFR). So far, there have been a couple of proposals to recalibrate SLR and some proposed changes to LCR, however these proposals would take time given the need for coordination between regulatory agencies and consultation with the market. Potential easing of regulatory constraints could have a profound effect on banks' demand for USTs, but could also increase the ability of banks to offer other balance sheet intensive activities such as repo lending.
- 2) What will be the "new normal," as it pertains to size of the Fed's balance sheet? The Fed's liabilities can be classified in two ways: (1) exogenous (i.e. Treasury General Account and currency in circulation) and, (2) those dictated by policy (excess reserves related to SOMA). To project the size of what will be the "normal" balance sheet, it is necessary to make assumptions about the potential growth of its components. Some of

the exogenous variables have increased significantly from pre-crisis levels. For example, currency in circulation has doubled since the start of the crisis, with a current level of approximately \$1.5 trillion – an annual growth rate of 7%. – but is expected to grow at a slower rate as the Fed raises rates (TBAC¹ assumes 4.5% annually). The US Treasury holds cash balances at the Fed in the Treasury General Account (TGA), considered its "checking account." Pre-crisis, the balance was approximately \$5 billion on most days, however, post-crisis the Treasury announced to hold a level of cash large enough to cover one week of outflows to mitigate potential market access interruptions. TGA balances have averaged around \$280 billion, reaching as high as \$440 billion. There are also overnight repo agreements to foreign official and international account holders and the overnight reverse repo (ON RRP) facility, which has helped the Fed absorb shocks caused by money market regulation and control the federal funds rate. TBAC estimates the "exogenous" liabilities could grow by \$145 billion by Q1 2021. On the other hand, the size of the reserve balances is a function of the demand for reserves and the supply needed to manage monetary policy given the choice of framework. Post-crisis the Fed has used a dual floor mechanism based on two rates set by the Fed: (1) the interest rate on excess reserves (IOER) available only to banks and, (2) the reverse repo (RRP) rate which absorbs liquidity from non-banks such as GSE's and money funds. In this framework, there is a larger supply of reserves in the system than in the alternative "corridor system" and effective federal funds rate is managed by adjusting the rate paid on bank reserves. The current mechanism has been effective as the Fed has raised the fed funds rate four times within very tight margins from the target. NY Fed Dudley and the TBAC have come out to support the continuation of the floor system and their estimate of the size goes from \$400 billion to \$1 trillion. If we take the TBAC's estimate based on a "steady state" scenario that allows for a buffer, their estimate of the reserves is \$650 billion, which

¹ The Treasury Borrowing Advisory Committee (TBAC) is an advisory committee governed by federal statute that meets quarterly with the Treasury Department. The Borrowing Committee's membership is comprised of senior representatives from investment funds and banks (currently chaired by Jason Cummins from Bevan Howard and Vice Chair Stuart Spodek from

BlackRock). The Borrowing Committee presents their observations to the Treasury Department on the overall strength of the U.S. economy as well as providing recommendations on a variety of technical debt management issues.

FIRST PRINCIPLES QUARTERLY

RATES

would reduce the reserves by \$1.5 trillion. Therefore, the UST balances at the Fed could be reduced by \$800 billion (range from \$500-1 trillion on various currency in circulation growth and reserves scenarios).

Assets	\$bn	Liabilities	\$bn	
Securities	4,240	Currency in Circulation	1,580	} Exogenous
UST	2,465	Reverse Repo	455	
MBS	1,768	Treasury General Account (TGA)	155	
Other Assets	262	Other Liabilities/Capital	134	
		Reserve Balances	2,178	Policy Dependent
Total Assets	4,240	Total Liabilities and Capital	4,502	

Source: Federal Reserve

- 3) As can be seen from the simplified models, assets that the Treasury issues to replace the maturing assets from the Fed is the main factor in determining the potential duration impact in the market. Reserves at the Fed have zero duration, so if the Treasury replaces them with T-Bills, the duration impact will be minimal. However, considering the longer duration and larger the size of the unwind, the impact could be significant. The Treasury expressed plans to increase T-Bill issuance in order to increase the proportion of T-Bills outstanding in the market – close to levels before the crisis (13% vs pre-crisis 20-25%) – as well as further demand stemming from money market reform. TBAC recommends the Treasury consider increasing auction sizes across all tenors while gradually increasing T-Bills as a share of total debt. According to the August TBAC paper, their estimate is that the decline in SOMA securities over the next 4 years could raise 10-year Treasury yields by 40 basis points all else equal.

Conclusion

The financial market is a complex system and the main players optimize decisions based on regulatory, operational, and economic constraints. Currently, it is difficult to predict with a high degree of certainty the most likely outcome, as a changing of the guard is looming in some of the financial regulatory bodies. Additionally, the prospect of a significant increase in the federal deficit or changes in the Treasury issuance patterns (for example ultra-long dated bonds) could have larger – intended or unintended – impacts on the shape of the yield curve than the Fed's balance sheet normalization alone.

FIRST PRINCIPLES QUARTERLY

INFLATION



Prasad Kadiyala

MD, Asset Management

pkadiyala@fpcmlc.com

212.380.2297

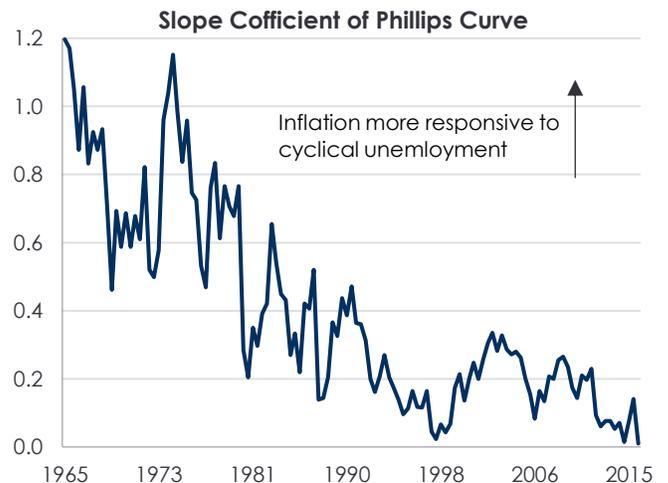
QUICK READ

- Subdued inflation confounds economists and wears on traditional correlations
- Globalization could lend to structural downward inflation pressure
- Labor force comprised differently than in past
- Technology-driven price discovery has accelerated
- Experts and regulators acknowledge lack of firm grasp on inflation dynamics

Evidenced by disconnect between expected and realized inflation, projections are less than reliable

Experienced PCE year-over-year (YoY) inflation has been below the Fed's 2% target for all of 2017, and has been declining with the lowest estimate of 1.29% in August. Chairwoman Yellen has admitted it is a "mystery" when she was recently asked about inflation. Economic theory would suggest that full employment in the labor market coupled with modest economic growth should lead to upward pressure on inflation. This phenomenon, illustrated by plotting a curve of inflation vs. unemployment, is referred to as the Phillips curve. However, an analysis of historical data from advanced economies shows that the slope of this relationship has declined significantly since the mid-1970's (Chart 1). Presently, the slope of the curve is close to zero – demonstrating inelasticity of inflation respective to low unemployment.

Chart 1: The link between inflation and slack is severed



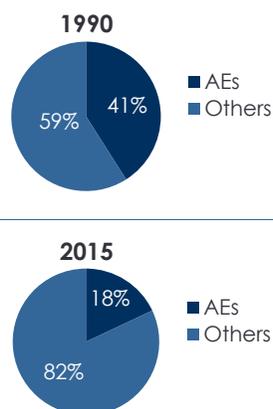
Source: IMF, OECD, Haver, UBS. Median coefficient on unemployment gap from Phillips curve models for 20 advanced economies, rolling 5-year estimation

INFLATION

Academics have postulated many theories to explain this observed change in the relationship between inflation and unemployment. However, there has yet to be a conclusive study. Empirical evidence seems to indicate that the weakness in global inflation is the outcome of emerging longer-term factors influencing inflation rather than a response to random, idiosyncratic events. Some of these long-term drivers are (1) globalization; (2) global overcapacity; (3) technological innovations; (4) domestic oversupply; (5) labor bargaining power; and (6) a strong dollar.

Globalization is the single most significant factor exerting downward pressure on inflation. The loss of high quality manufacturing jobs in the US is a well-chronicled subject and was a rallying point in the recent election cycle. Since 1970, the manufacturing footprint, as a share of total jobs, in the US has dropped from about 25% to about 10% today (Bureau of Labor Statistics). Globalization has expanded the depth and breadth of the labor force – consequently, labor force demographics today look quite different from the past (Chart 2). This change has resulted in increased availability of lower-cost producers and cheaper labor in increasing numbers, causing persistent downward pressure on inflation. Coincident with this shift has been the hollowing out of labor unions, lowering labor wage bargaining power as negotiations have migrated from collective bargaining to individual one-on-one negotiations.

Chart 2: Global labor force



Source: World bank, BIS

² Tarullo, Daniel K; Monetary Policy Without a Working Theory of Inflation; Hutchins Center Working Paper #33, Oct 2017

Technology has been instrumental as well in exerting downward pressure on inflation, given the ubiquity of the internet and the ease of price discovery. However, this downward pressure seems to have accelerated in the last few years with the breakthrough of services such as Amazon, Uber, and Airbnb – so much so, in fact, that the term “Amazon Effect” seems to be a regular feature in news articles covering pricing trends and business developments.

Other factors such as overcapacity, both domestic and global, and a long-term USD bull market also contribute to downward pressure on inflation. Additionally influencing inflation is shifting US demographics as the onset of broad baby boomer retirement leads lower spending patterns. The confluence of these factors has made the task of inflation projections even more challenging than it normally is – continuing misses to the low side of the Fed’s inflation projections over the last five years is a testament to this challenge. A provocative paper by former Fed Governor Tarullo highlights the limitations of the current approach used at the Fed².

Tarullo’s paper posits that the Fed currently doesn’t have a theory of inflation dynamics that works well for real-time monetary policy making. It highlights the outsized role that unobservable factors such as productivity and savings rate play. Inflation expectations, another unobservable metric, have become central to policy discussions and are often quoted in Fed communications – although not an explicit part of the mandate. Historically, expectations have firmed up around Fed targets and are remarkably stable, reflecting the confidence the market has in the Fed (Chart 3). The dynamics of this crucial factor are yet to be fully understood, as Tarullo highlights the following three limitations: (1) measurement of inflation expectations is not well-defined; (2) the disconnect between expectations and actual inflation; and (3) how and why inflation expectations change.

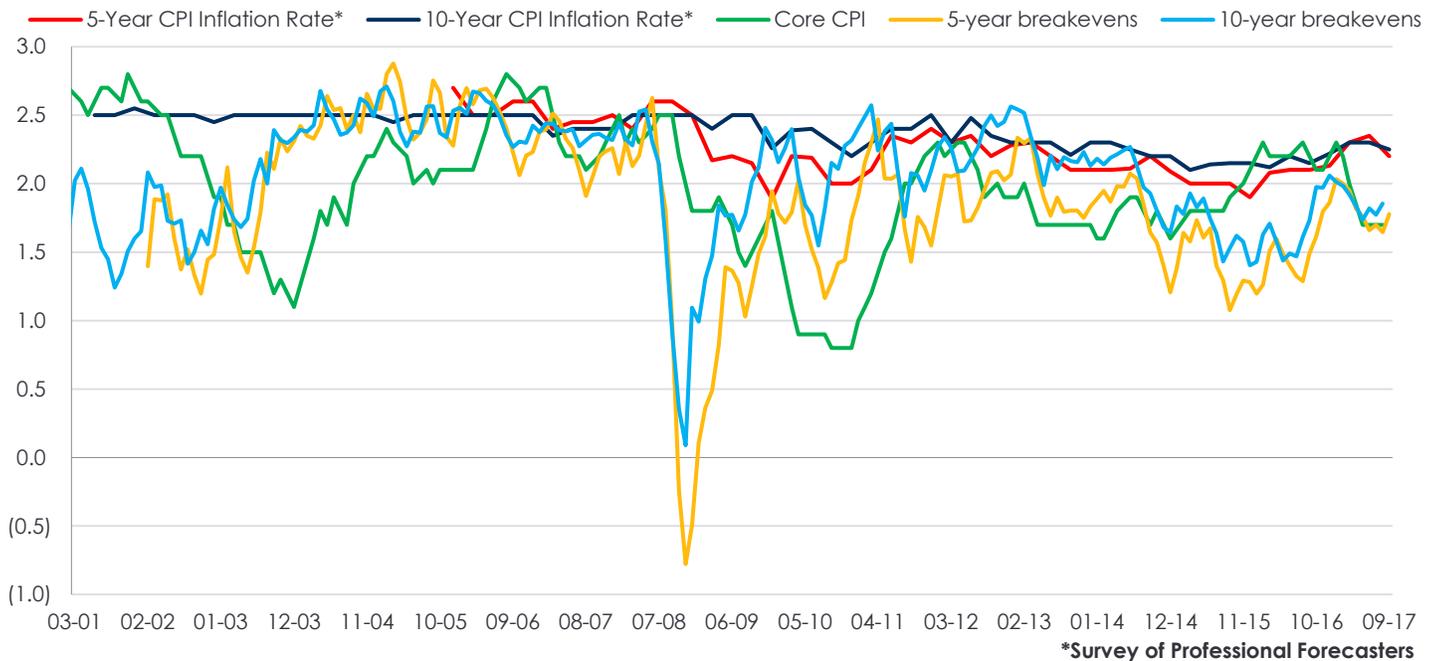
Recent Fed communications have acknowledged the conundrum, but they still have expectations of hitting the 2% target soon. Implied break-even inflation numbers from the TIPS market also show a firming of inflation expectations, albeit at a level slightly below 2%, although it is CPI not PCE,

FIRST PRINCIPLES QUARTERLY
INFLATION

which is typically lower. Inflation option markets also currently project stable values since the premium for inflation tail scenarios has dropped to historical lows. Given the supportive global macro-economic environment and the upward revisions to global growth, future inflation prints are

likely biased to the upside. While the USD has been on a strengthening trend over the past decade, it has weakened about 10% YTD, which could lead to temporary pass-through inflation increases. In this scenario, TIPS are likely to outperform nominal securities.

Chart 3: Inflation expectations [%]



Source: Bloomberg

*Survey of Professional Forecasters

FIRST PRINCIPLES QUARTERLY

MORTGAGE-BACKED SECURITIES



Mattan Horowitz

VP, Asset Management

mhorowitz@fpcmlc.com

212.324.6018

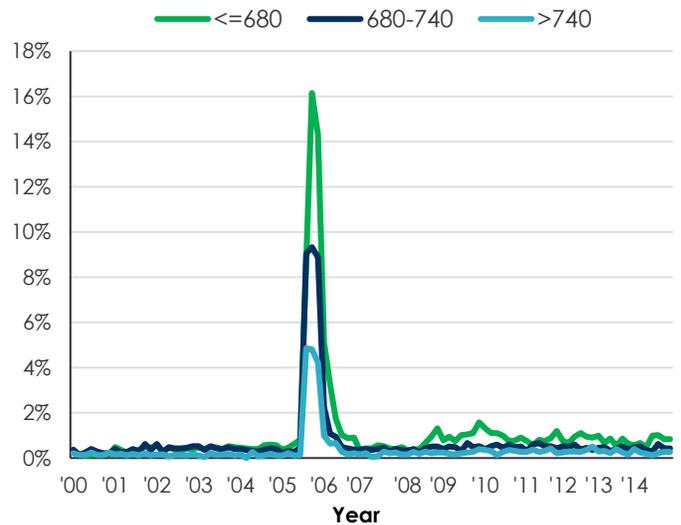
QUICK READ

- As with Katrina, loan delinquencies expected to spike in recent disaster areas
- Though Agency principal payments are guaranteed, investors are still exposed
- Fannie and Freddie response more investor-friendly than Ginnie Mae
- Ginnie MBS backed Puerto Rico mortgages are the hardest hit

After the storm blows through

It is estimated that hurricanes Harvey, Irma, and Maria have caused over \$200 billion in losses³. These losses will largely be incurred by homeowners, insurance companies, and the government. Unfortunately, some homeowners will not be able to recover from these losses, even after payments from insurance companies and assistance from the government. We expect delinquencies of loans in disaster areas to spike. After Hurricane Katrina, delinquencies in New Orleans spiked 4-16%.

Chart 1: New Orleans delinquency rates by credit score



Source: Fannie Mae, Goldman Sachs Global Investment Research

Principal payments are guaranteed to be paid to investors in Agency mortgage-backed securities (MBS) by Fannie Mae, Freddie Mac or Ginnie Mae. However, this does not mean that investors in Agency MBS have no exposure to delinquencies. When loans in an MBS become delinquent they are eventually bought out of the pool, which shows up as a prepayment to investors. Therefore, investors risk losing any premium they paid over par for the MBS. In today's market, almost all MBS pools trade at a premium to par.

³ CoreLogic & RMS estimates

MORTGAGE-BACKED SECURITIES

Over 5% of Fannie Mae and Freddie Mac MBS are made up of loans from disaster areas – not a trivial amount. To assist borrowers in these disaster areas, Fannie Mae and Freddie Mac announced that they will be providing borrowers with up to 24 months of principal forbearance. The GSEs also announced that while loans are in forbearance, they will not be bought out of pools. Ultimately, most of these loans are likely to cure, particularly in Texas/Florida where borrowers have higher credit scores. For example, after Hurricane Katrina 82% of delinquent loans started performing again after 18 months. This is good news for investors in premium mortgages.

Ginnie Mae's disaster relief policy guidance was not as friendly to investors. Ginnie Mae is allowing servicers to buyout loans in disaster areas even if they are not delinquent⁴. This allows servicers the ability to render assistance more quickly than if the loan is securitized. The caveat to this is that servicers aren't immediately compensated for buying out the loan by the guaranteeing entity (FHA, VA, etc.). Buying out loans might not be profitable for some of the weaker credit servicers with high costs of funding. In fact, if servicers are also impacted by the hurricane and unable to perform their servicing duties, Ginnie Mae can transfer the servicing from them to a more capable servicer. This is a particular problem for Puerto Rico, where over 75% of the mortgage market is dominated by regional banks⁵. While Ginnie Mae does have disaster assistance programs in place to help servicers make pass-through payments to investors, some servicers might not be able to bounce back from the hurricanes. Therefore, bonds backed by inefficient servicers with bad credit ratings might not be the safest place to hide from hurricane driven prepayments.

While almost 10% of Ginnie Mae MBS is made up of loans from disaster areas⁶, a large portion of these loans are in large multiple issuer pools, which mitigates investors' exposure. The exception to this is Puerto Rico loans, which are typically pooled separately as they trade at a pay-up to TBA. Historically, the convexity of Puerto Rico loans has been much better than the generic non-Puerto Rico loans;

prepayment speeds have been much slower than generic loans in today's refinance environment. This is primarily due to the credit-impaired nature of FHA borrowers in Puerto Rico; 30 day-plus delinquencies are over twice as high for Puerto Rico loans.

Year	Geography	6M CPR	12M CPR	Delinq. 30+ Day
2011	Puerto Rico	19.1	20.6	5%
	Non-Puerto Rico	5.4	7.7	12%
2012	Puerto Rico	16.3	17	4%
	Non-Puerto Rico	4.1	5.6	10%

Source: eMBS

Conclusion

Looking at the disaster responses by the various agencies is key for navigating hurricane season. Given their favorable disaster policy, we recommend buying premium conventional MBS with a high percentage of loans from disaster areas – as they are likely to exhibit better convexity over the next year. Conversely, Ginnie Mae's disaster response is detrimental to mortgage investors. Puerto Rico pools are particularly at risk given the weak credit of the borrowers and severe damage that was done to the island. We recommend investors steer clear of Ginnie Mae pools with a high percentage of loans from disaster areas.

⁴ https://www.ginniemae.gov/issuers/program_guidelines/Lists/MBSGuideAPMsLib/Attachments/78/APM_17-02.pdf

⁵ Banco Popular De Puerto Rico, First Bank Puerto Rico, and Oriental Bank are 3 of the 4 largest issuers of Puerto Rico mortgages.

⁶ <https://www.ginniemae.gov/newsroom/Pages/PressReleaseDispPage.aspx?ParamID=121>

FIRST PRINCIPLES QUARTERLY

ASSET-BACKED SECURITIES



Richard Dolan
 Chief Executive Officer
 rdolan@fpcmlc.com
 212.380.2283



Rongfeng "Becky" Li, CFA
 SVP, Asset Management
 bli@fpcmlc.com
 212.380.2296

QUICK READ

- Three major used vehicle indices (Manheim, NADA, and CPI) are painting divergent price trends in recent quarters, creating confusion among market observers
- In reality, the three major indices measure different things and hence produce different trends
- Manheim measures the average price of the overall used vehicle population, with a clear upward price drift driven by a shift to light trucks
- NADA and CPI measure the average price of a consistent set of vehicles
- There is no perfect measure of used auto prices. It makes sense to review all three indices as a basket of fruit

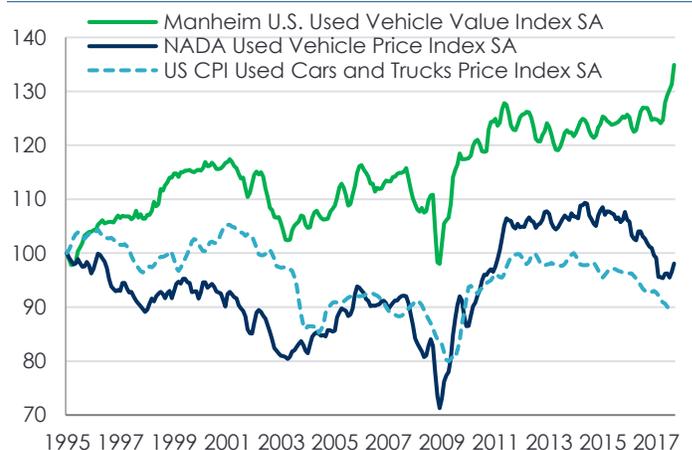
Comparing diverging used auto indices: a basket of fruit

Everyone in the auto space likes to watch used vehicle price trends. Are they going up or down? That is not so easy to discern now due to a sharp divergence among three major indices since 2016 – Manheim, NADA, and CPI. The Manheim Used Vehicle index hit a record high for the 5th consecutive month in September 2017. Does this rosy picture truly reflect used vehicle price trends in the U.S.? We think it's wise to look deeper under the hood for the Manheim index and two other major indices. A better understanding of used vehicle value is critically important in auto lending/leasing and auto ABS investing.

In contrast to the Manheim index, the other two widely recognized used vehicle price indices are showing a very different picture. For example, in September 2017, the Manheim index showed a 6.3% year-over-year (YoY) increase, while NADA index was down 3.7% YoY and the CPI index was down 3.8% YoY.

How can one major index rise while the other two fall at the same time? This divergence has often created perplexity among market observers. Which do you believe? The reality is that Manheim and the other two indices are measures of very different things, like apples to oranges. Let's first explore how and what the three major indices measure.

Chart 1: Diverging used vehicle price trends [normalized]



Source: Manheim, J.D. Power, U.S. Bureau of Labor Statistics

ASSET-BACKED SECURITIES

Manheim computes its wholesale used vehicle price index based on what is actually being sold at its auctions. This index reflects a changing mix in vehicle population over time – more light trucks (SUV/CUV/trucks) and fewer passenger cars. The index also reflects a rising average selling price of new vehicles over time, as vehicle quality and features have continued to improve year after year. As such, there is an inherent upward drift in the Manheim index driven by both price inflation and mix shift to vehicles with higher residual value retention.

NADA Used Vehicle Price index (by J.D. Power) computes its wholesale used vehicle index based on auction records from Manheim transactions, ADESA, as well as many other large and independent auction houses nationally.

NADA follows a process of pre-indexing the price series of individual vehicles prior to taking a weighted average, largely removing upward price bias stemming from fluctuations in vehicle mix as well as vehicle quality changes over time.

CPI Used Cars and Trucks Index (by the U.S. Bureau of Labor Statistics) is a fixed basket and depreciation-adjusted retail price index. CPI uses a market basket of 480 used vehicles. This basket was last chosen in 2004 and the composition of vehicle types existing at that time has stayed largely the same till today. CPI makes quality adjustments to vehicle prices to eliminate upward price bias.

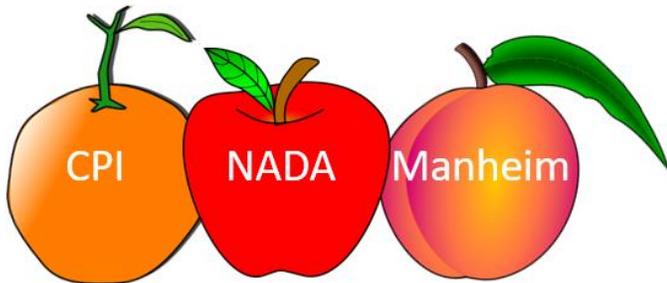
3 Major Used Vehicle Price Indices	Manheim Index	NADA Index	CPI Index
Wholesale price or retail price?	Wholesale	Wholesale	Retail
Source of price data	Manheim auction transactions	Auction records from Manheim, ADESA, ServNet, etc	NADA Clean Retail Value estimates
Number of observations	5 million auction transactions per year	7.5 million auction records per year	480 fixed vehicles per year
Age of vehicles included in the index	All ages	Up to 8 years	2 to 7 years
Seasonal adjustment	Yes	Yes	Yes
Index price based on moving average?	24-month moving average	Month-to-month change	3-month moving average
Impact of using moving average	24-month MA takes the longest to capture price changes, hence this index shows the most stability	m/m change captures more immediate price movements	3-month MA takes longer to capture price changes than NADA which calculates m/m changes
Adjustments for vehicle quality changes	No, resulting in upward price drift	Price pre-indexing removes upward price bias	Yes, removing upward price bias
Vehicle mix shift adjustment	Yes, but does not eliminate upward price drift	Price pre-indexing removes upward price bias	Yes, removing upward price bias
What is measured	A dynamic pool of vehicles actually sold at its auctions	A consistent set of vehicles	A fixed pool of vehicles
What does the index reflect	Average prices of overall used vehicle population , reflecting market vehicle mix shifts and vehicle quality upgrades through time	Average prices of a consistent set of vehicles , removing the effect of market vehicle mix shifts and impact of vehicle quality upgrades over time	Average prices of a fixed pool of vehicles , removing the effect of market vehicle mix shifts and impact of vehicle quality upgrades over time

FIRST PRINCIPLES QUARTERLY
ASSET-BACKED SECURITIES

Since CPI uses NADA prices and both indices follow a fixed basket approach, CPI and NADA used vehicle price trends generally track closely. However, the diverging Manheim vs. NADA/CPI indices in recent years are driven by mix shifts in vehicle population. Manheim is based on average prices of overall used vehicle population sold at its auctions with mix shifts, while NADA and CPI are based on average price of a consistent pool of vehicles that do not shift in vehicle mixes. Naturally, when there are more light trucks (with higher residual value retention rates than passenger cars) in the mix going through the auction lanes, average prices as measured by Manheim index would go higher.

The other driving factor in the divergence between Manheim and NADA/CPI is quality adjustments. The Manheim index does not make quality adjustments and simply measures the average prices of vehicle population over time. Given the generally rising average selling prices of new vehicles due to quality and feature upgrades, the Manheim index in fact has a clear upward drift.

In contrast, NADA and CPI indices are a measure of the price of the same vehicle over time. They are more a measure of the value of a fixed pool of vehicles over time, rather than a measure of the average prices of vehicle population over time. In other words, NADA/CPI measure price movements on a consistent set of vehicles.

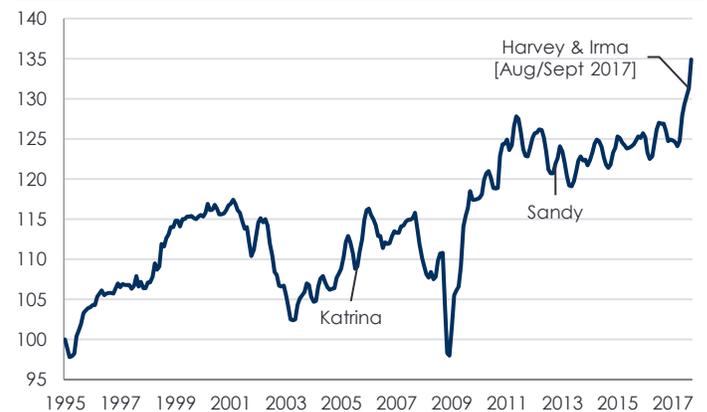


Which of the three indices is the best measure? Since each index is a measure of something unique, there is actually no perfect index measure of used auto prices. Each index has its own strengths and limitations. While NADA and CPI indices reflect the truer price changes for a fixed pool of used vehicles over time, they lack the dynamic nature for reflecting a changing mix in the auto market that will likely witness further mix changes. The Manheim index has this dynamic market nature built into it, but it lacks an apple to apple comparison for a fixed vehicle pool's value changes.

We think it makes sense to look all three indices in totality in order to gain a deeper understanding of used auto price trends. Looking at one index is necessary but insufficient to see the whole picture. When viewed together, we can better discern changes occurring in subsectors of the auto market. The Manheim index's clear upward trend reflects a relentless shift to light trucks resulting from consumers' changing preference for light trucks over cars since oil price's plunge in 2014. Not surprisingly, new car sales and used car values have suffered in tandem.

Manheim index's 6.3% YoY increase in September 2017 is driven in part by temporarily greater demand for used vehicle replacement following Hurricanes Harvey and Irma. This special demand could continue to drive the index higher in the near term. However, we think the upward price effect will be transitory, just as what occurred in the aftermath of Hurricanes Katrina and Sandy.

Chart 2: Manheim US used vehich value index hit a record again



Source: Manheim