



Economics Group

Interest Rate Weekly

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Price Determination: A Web of Interactions

One of the fascinations about economics and finance is the matrix of interactions among prices. For some time now, we have focused on the interaction of prices for goods, capital and exchange rates.

Growth and Goods Inflation: One Way Link

When we first examine the pattern of goods prices, one driver is the growth of GDP. GDP has a one-way causal link to the PCE deflator (top graph). As would be expected in the short-run, stronger economic growth tends to raise the rate of inflation as resource utilization increases, thus driving prices higher.

However, there is a problem: the PCE deflator is a mean reverting series but has an autocorrelation problem. That is, the process of the series returning to its long-run mean is painfully slow. The autocorrelation problem suggests that if the PCE deflator series deviates from the long-run mean, then the series will take an extended period of time to return to the mean. Unfortunately, the same conclusion is true for the core PCE deflator series as well. In fact, both series have, to some extent, shifted downward in the last decade. The average for the 2009-2017 period is just 1.3 percent for the PCE deflator and 1.5 percent for the core PCE deflator.

Domestic Demand and the Price of Capital

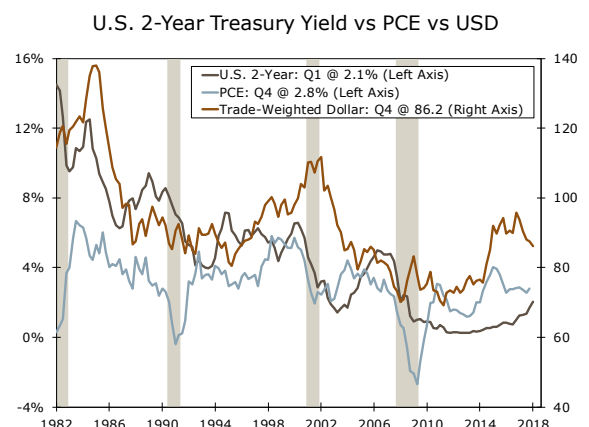
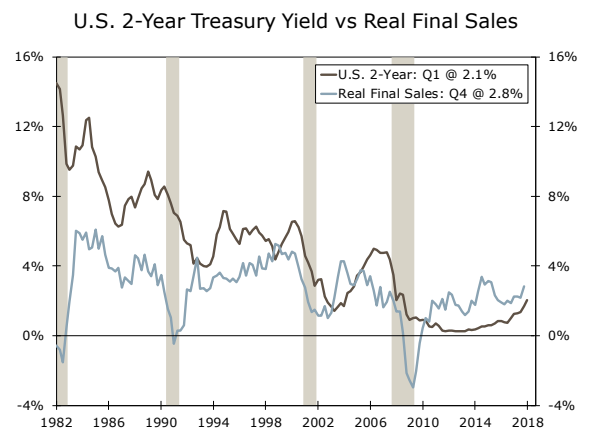
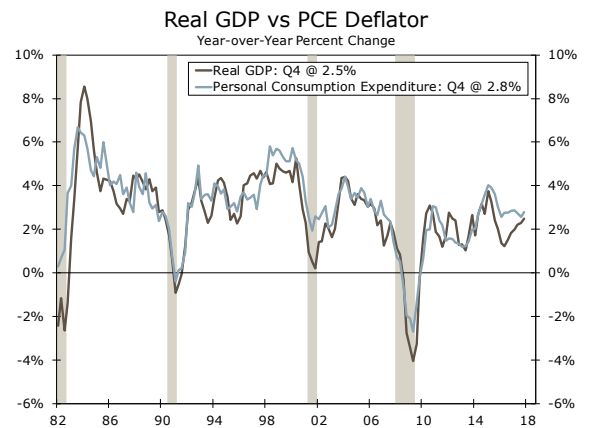
A second critical price in the economy is the cost of capital, i.e., interest rates. Consider the relationship in the middle graph between real final sales and the two-year Treasury rate. Here, real final sales have a one-way causality link to the two-year benchmark Treasury rate. This may not be surprising in recent months as the rise in economic strength has been accompanied by a rise in the two-year rate. However, this relationship is based upon data over the entire 1982-2017 period—not upon a short/one-time phenomenon.

The real final sales series underwent a downward break in October 2008 so that the period of “low” interest rates since then is perfectly consistent with the downward shift in its driver—real final sales.

Completing the Web: Dollar, Rates and Inflation

Interrelationships between economic and financial factors are fascinating. Consider that both the US dollar and the two-year Treasury rate have one-way causality link to inflation. That is, both the dollar and the two-year Treasury rate influence the behavior of the PCE deflator but the deflator does not drive the behavior of the dollar nor the two-year rate. Yes, there is some influence as you might expect but the link is not statistically significant and thereby unreliable in the forecasting sense.

For the PCE, growth in GDP is the main driver. For our work, the link from the dollar and the two-year Treasury to inflation reinforces our imperative to focus on a broader model of economic behavior than the linear non-recursive behavior that so dominates popular commentary. Moreover, these statistical results remind us to focus on the significant links and not be distracted by the myriad of minor forces in the economy.



Wells Fargo U.S. Interest Rate Forecast

	Actual				Forecast							
	2017				2018				2019			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Quarter End Interest Rates												
Federal Funds Target Rate	1.00	1.25	1.25	1.50	1.75	2.00	2.25	2.25	2.50	2.50	2.75	2.75
3 Month LIBOR	1.15	1.30	1.33	1.69	1.90	2.15	2.40	2.40	2.65	2.65	2.90	2.90
Prime Rate	4.00	4.25	4.25	4.50	4.75	5.00	5.25	5.25	5.50	5.50	5.75	5.75
Conventional Mortgage Rate	4.20	3.90	3.81	3.94	4.25	4.25	4.35	4.45	4.55	4.60	4.72	4.77
3 Month Bill	0.76	1.03	1.06	1.39	1.60	1.85	2.10	2.15	2.35	2.40	2.60	2.65
6 Month Bill	0.91	1.14	1.20	1.53	1.70	1.95	2.20	2.25	2.45	2.50	2.70	2.75
1 Year Bill	1.03	1.24	1.31	1.76	1.90	2.05	2.25	2.30	2.50	2.55	2.75	2.80
2 Year Note	1.27	1.38	1.47	1.89	2.20	2.30	2.45	2.55	2.70	2.80	2.93	3.00
5 Year Note	1.93	1.89	1.92	2.20	2.60	2.70	2.80	2.88	2.93	2.97	3.10	3.17
10 Year Note	2.40	2.31	2.33	2.40	2.80	2.85	2.95	3.05	3.15	3.20	3.32	3.37
30 Year Bond	3.02	2.84	2.86	2.74	3.15	3.25	3.35	3.45	3.52	3.55	3.66	3.70

Forecast as of: February 7, 2018

Wells Fargo U.S. Economic Forecast and FOMC Central Tendency Projections

	<u>2017</u>	<u>2018</u>	<u>2019</u>
Change in Real Gross Domestic Product			
Wells Fargo	2.5	2.9	2.9
FOMC	2.4 to 2.5	2.2 to 2.6	1.9 to 2.3
Unemployment Rate			
Wells Fargo	4.1	3.8	3.7
FOMC	4.1	3.7 to 4.0	3.6 to 4.0
PCE Inflation			
Wells Fargo	1.7	1.9	2.1
FOMC	1.6 to 1.7	1.7 to 1.9	2.0
"Core" PCE Deflator			
Wells Fargo	1.5	1.9	1.9
FOMC	1.5	1.7 to 1.9	2.0

Forecast as of: February 7, 2018

NOTE: Projections of change in real gross domestic product (GDP) and in inflation are from the fourth quarter of the previous year to the fourth quarter of the year indicated. PCE inflation is the percentage rate of change in the price index for personal consumption expenditures (PCE). Projections for the unemployment rate are for the average civilian unemployment rate in the fourth quarter of the year indicated.

Fed Data as of: December 13, 2017

Source: Bloomberg LP, Federal Reserve Board, IHS Global Insight and Wells Fargo Securities

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