

Portfolio Strategy April 2017

China: Muddling Through

The Gig Economy: Measuring Its Effects on the Labor Market

China: Fighting an Uphill Battle, with New Risks

- China's export machine has sputtered as the pressures coming from protectionism, higher wages and a stronger currency have mounted. In 2009 Chinese manufacturing wages were about a third higher than those elsewhere in emerging Asia (e.g., Indonesia, Vietnam, Thailand, Cambodia) and now the gap is approaching two-to-one. The effective exchange rate for its exports, that encompasses the currency movements in its supply chain, is up by +10% over the same span. China has responded by vertically integrating, putting many more robots in place and investing aggressively in R&D. Export industries produce multiplier effects and with that engine no longer purring it takes a concerted effort on the domestic front to prevent the economy from slowing precipitously.
- The dollar volume of China's credit creation now resembles that of the U.S. and the bang for the buck it's seeing from that debt issuance is down. The benefits from financial repression have ebbed as the nominal growth rate of the economy converged with the borrowing rate. As interest rates came down by (200) basis points and down payment requirements were eased the issuance of mortgage debt took off, and the increase in outstandings in the last two years rivals that of the entirety of the prior decade. Home inventories were cleared and prices soared, boosting construction activity. That activity amounts to almost 1.4% of global GDP, compared to a 1.8% share coming from the U.S. back in 2005. Credit is now being tightened and the stimulus from housing is waning.
- We've long thought that China was more likely to muddle through than implode, because it's a self-funded, cash flow-positive, centrally-managed and largely-closed system. The hot money has already fled the country. We still see that as our base case, although the rise in protectionism is a real risk to the status quo. The U.S. is now the destination for around a fifth of the country's exports and given that we'd expect China to retaliate to any serious protectionist volleys. Such a skirmish could pressure multiples worldwide.

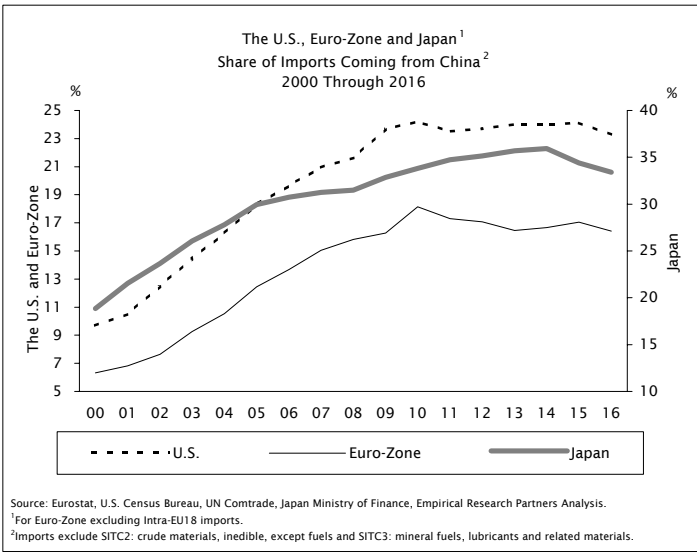
The Gig Economy: Measuring Its Effects on the Labor Market

- The Federal Reserve Banks of Boston and New York collaborated to survey households about their informal work. They were trying to gauge how many people work for Uber, Lyft, AirBnB and like organizations, the hours they devote to them, the income they earn, and the impact on the widely-followed labor market statistics. Their research suggests that about 16% of those counted as working full time also have a gig job, that they work at for 20 hours a month, earning \$16 an hour. Part-timers not surprisingly work twice as many hours. The gig participation rate for those classified as "not in the labor force" is 17%, and those people work 17 hours a month for a similar hourly wage. Those wages are comparable to those earned in on-the-books jobs in the hospitality industry.
- Given the way the numbers are put together it's likely that the participation rate is understated and the labor market is tighter than it appears at first blush. That finding is echoed in the wage data for lower-paid service positions. There's also a "non-employment index," that looks at the 40% of the population without a job, weighing their numbers by the probability they'll enter the work force. It leads us to the same conclusion. That's a positive for the financial sector, the primary beneficiary of wage growth.

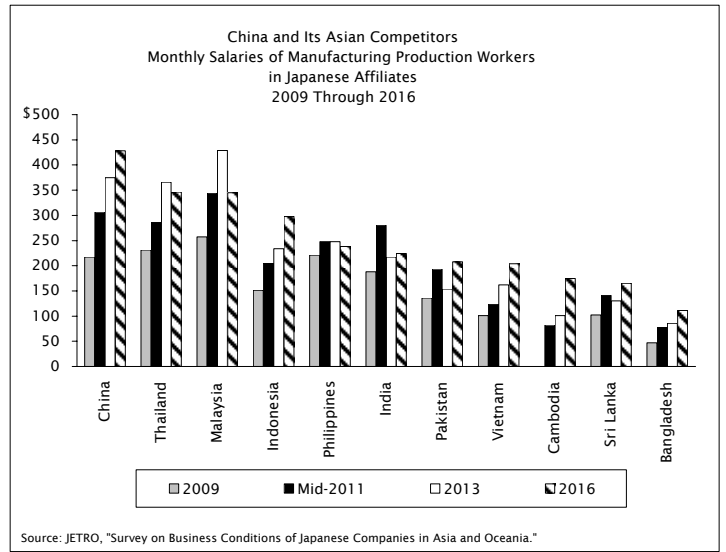
Nicole Price (212) 803-7935 Sungsoo Yang (212) 803-7925 Yi Liu (212) 803-7942 Yu Bai (212) 803-7919 Yuntao Ji (212) 803-7920 Janai Haynes (212) 803-8005

Conclusions in Brief

● Chinese export share gains have come to an end...



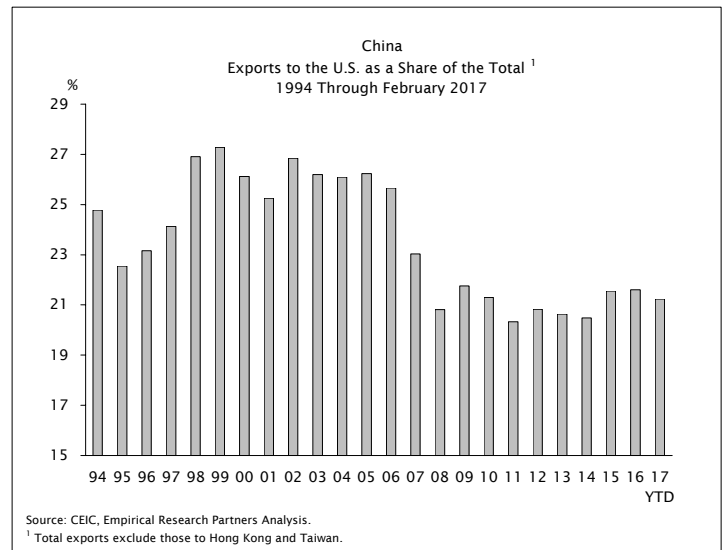
● ...As higher wages...



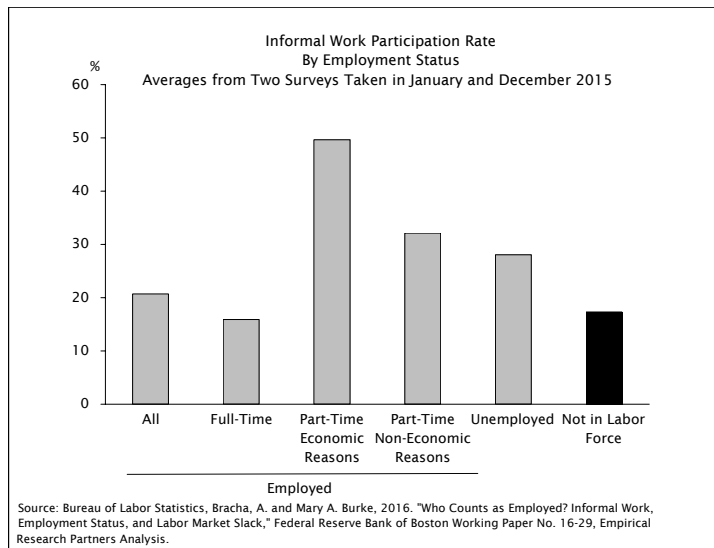
● ...And currency strength, throughout the supply chain, have weighed:



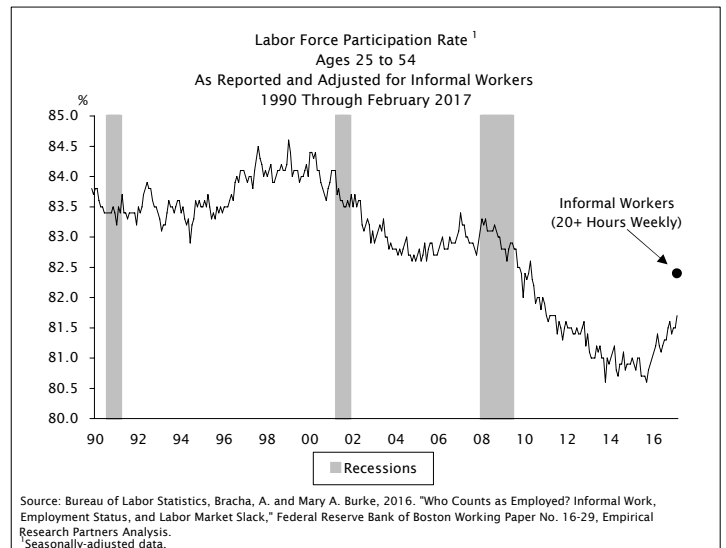
● We'd expect China to fire back in a trade war:



● The gig economy isn't captured well in the employment statistics...



● ...And the labor force participation rate is likely understated:



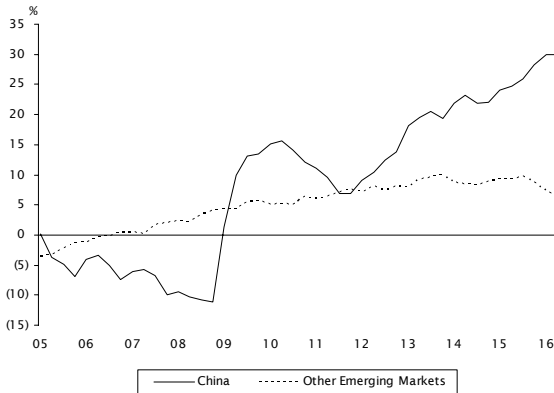
China: Muddling Through, With New Risks

A Closed System

In August 2015 the People's Bank of China (PBOC) surprised investors by devaluing the Yuan by (2)%, ending a decade of currency appreciation against the U.S. Dollar. That move left a crack in their faith in the Chinese system and triggered fears that a collapse in confidence would spur a run on the country's foreign currency reserves. The huge sum of corporate debt China has taken on in this decade affords it little wiggle room. We've been of the opinion that in all likelihood China would muddle through a multi-year transition phase, and that growth expectations would be marked down over time. Given the character and resources of its system, a collapse has seemed unlikely. We still hold that view.

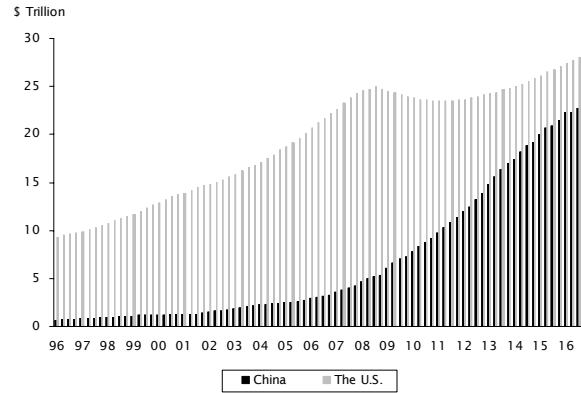
China has issued debt at an astonishing pace in the years since the financial crisis. In 2008 the credit-to-GDP ratio was (10) percentage points below the long-term trend and today it is close to 30 points above it (see Exhibit 1). By comparison, corporate borrowing in other emerging markets has been mostly on trend. Looked at another way, in 2007 Chinese private non-financial debt, including mortgages, was less than a fifth the size of that in the U.S., and now that ratio tops 80% (see Exhibit 2). The bottom line is that the impact of China on the global economic system has multiplied even as its growth rate has diminished. Broadly speaking, what's happened is that as the nominals have shrunk, the benefits from the low cost of capital engendered by financial repression have waned (see Exhibit 3). Moreover, the payoff from credit creation deteriorated as China's market share gains of the world export market, long an engine of growth, ended (see Exhibit 4).

**Exhibit 1: China and the Other Emerging Markets
Credit Overhang: The Credit-to-GDP Ratio
Compared to the Long-Term Trend
2005 Through June 2016**



Source: International Monetary Fund, Global Financial Stability Report, October 2016.

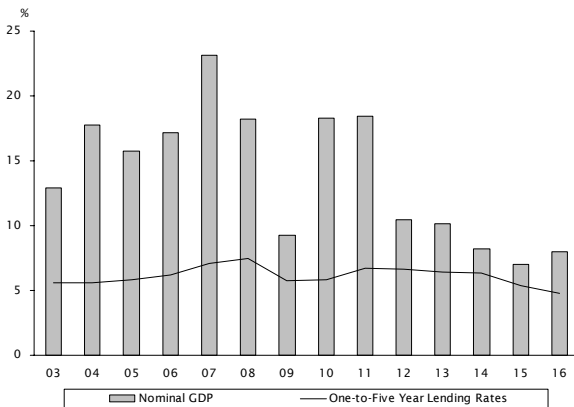
**Exhibit 2: China and the U.S.
Total Credit Extended to the Private Non-
Financial Sector¹
1996 Through Q3 2016**



Source: Bank for International Settlements.

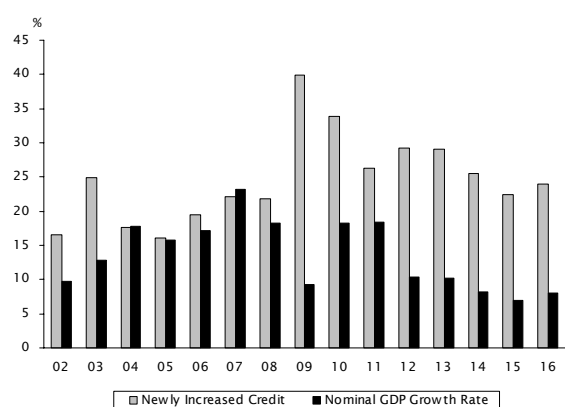
¹Non-financial private sector refers to non-financial corporations and households.

**Exhibit 3: China
Year-over-Year Changes in Nominal GDP
and One-to-Five Year Lending Rates
2003 Through 2016**



Source: CEIC, Empirical Research Partners Analysis.

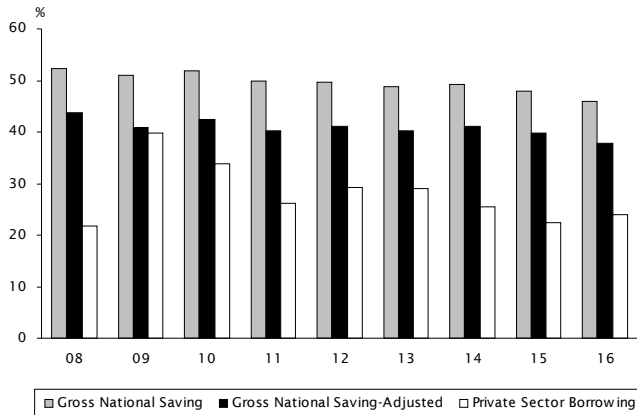
**Exhibit 4: China
Newly Increased Credit as a Share of GDP
and GDP Growth Rate
2002 Through 2016**



Source: CEIC, Empirical Research Partners Analysis.

Even absent those share gains we haven't seen China's economy as poised for a serious problem, thinking that it will take a much bigger shock to undermine what is a self-funded, cash flow-positive and centrally-managed system. What's key is that China's credit growth has been financed primarily by domestic savings and the country is still running substantial surpluses in both its current and trade accounts (see Exhibits 5 through 7). The volume of foreign-sourced deposits had soared when currency appreciation was a one-way street, and they ran down when that was no longer the case (see Exhibit 8). The CDS spread on its sovereign debt pretty well reflect the facts at hand, signaling some concern but not at an alarming level (see Exhibit 9). As expected, China has used regulations to staunch the flight of capital and there's been no run on its substantial foreign currency reserves (see Exhibit 10).

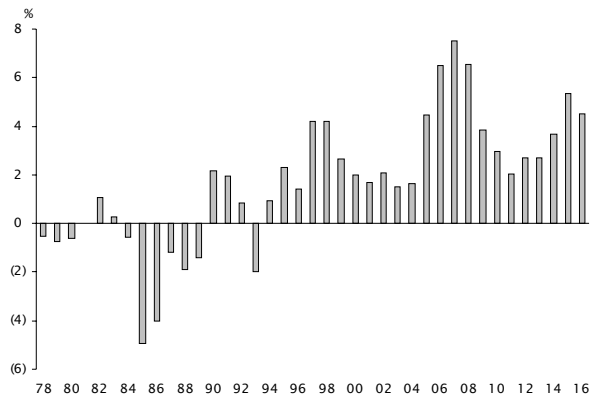
Exhibit 5: China
Gross National Saving and Total Social Financing Flows as a Share of GDP¹
2008 Through 2016E



Source: International Monetary Fund, CEIC, Zhang, J. and Tian Zhu, 2013. "Re-estimating China's Underestimated Consumption," Working Paper, Empirical Research Partners Analysis and Estimates.

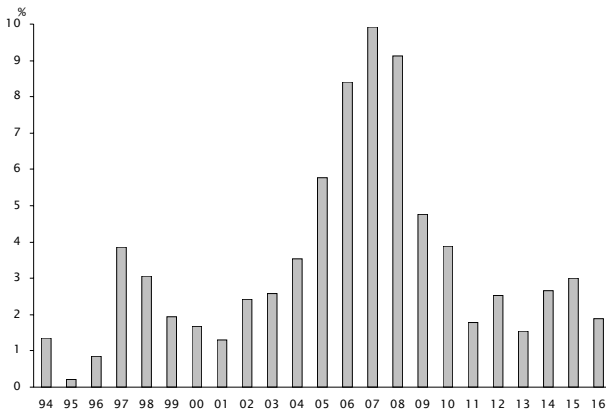
¹Gross national saving is gross disposable income less final consumption expenditure after taking account of an adjustment for pension funds.

Exhibit 6: Chinas
Trade Balance as a Share of Nominal GDP
1978 Through 2016



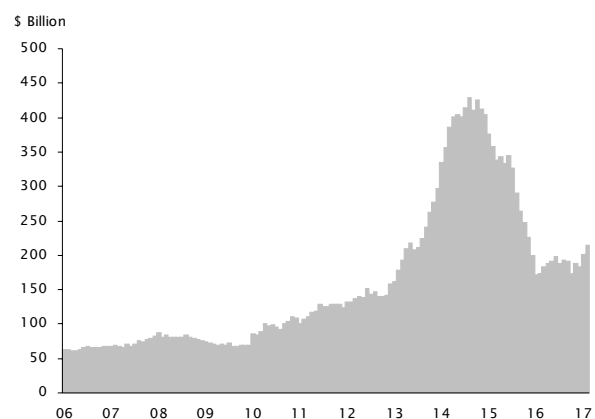
Source: CEIC, Empirical Research Partners Analysis.

Exhibit 7: China
Current Account Surplus as a Share of GDP
1994 Through 2016



Source: CEIC, Empirical Research Partners Analysis.

Exhibit 8: China
Foreign Liabilities of Depository Corporations
2006 Through February 2017

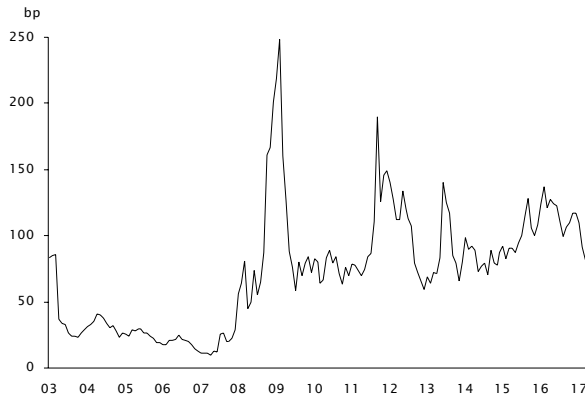


Source: CEIC, Empirical Research Partners Analysis.

China's nominal growth rate has picked up lately as producer prices began to surge in the middle of last year (see Exhibit 11). Longstanding concerns about deflation abated, giving the PBOC room for policy tightening. The government lowered its GDP and M2 growth targets this year with the intention of controlling leverage. The PBOC has entered a tightening mode, raising rates through open market operations and medium-term lending facilities twice this year, without changing the benchmark lending and deposit rates. That step is aimed at reducing credit growth and the disruption to the Renminbi that would come from tightening on the other side of the Pacific Ocean (see Exhibit 12).

Exhibit 9: China

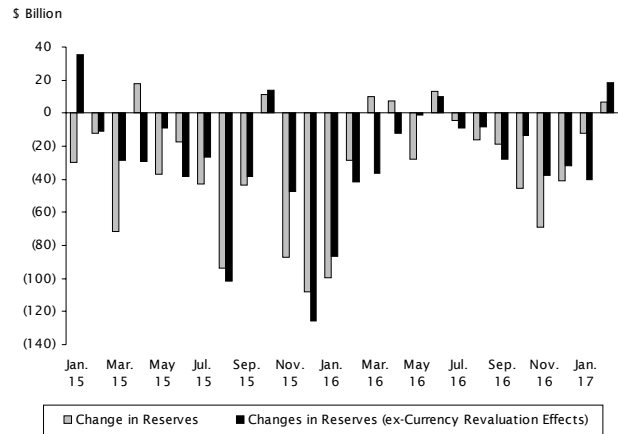
**Sovereign CDS Spreads
2003 Through Late-March 2017**



Source: Bloomberg L.P.

Exhibit 10: China

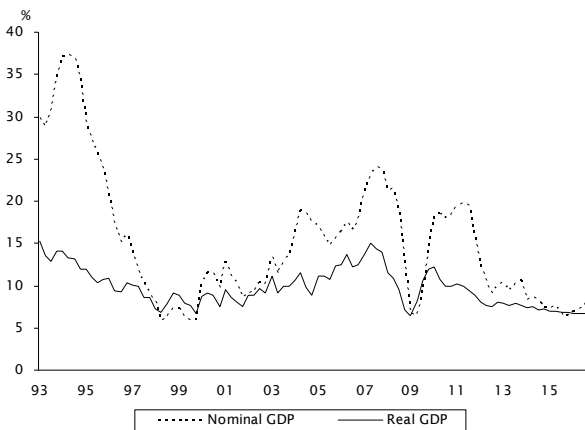
**Foreign Currency Reserves
Month-over-Month Changes
2015 Through February 2017**



Source: CEIC, International Monetary Fund, Empirical Research Partners Analysis.

Exhibit 11: China

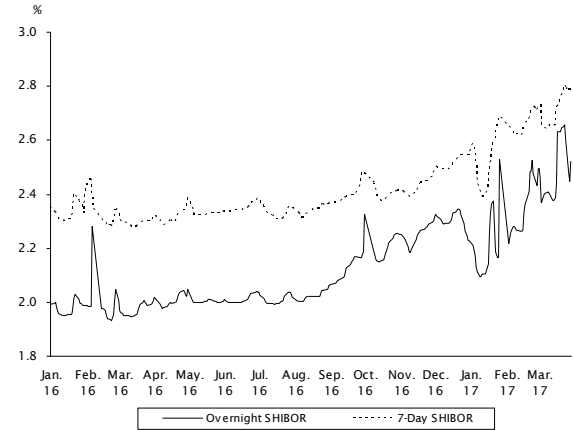
**Year-over-Year Growth Rates in Nominal and Real GDP
1993 Through 2016**



Source: CEIC, Empirical Research Partners Analysis.

Exhibit 12: Shanghai Interbank Offer Rates:

**Overnight and 7-Day
2016 Through Late-March 2017**



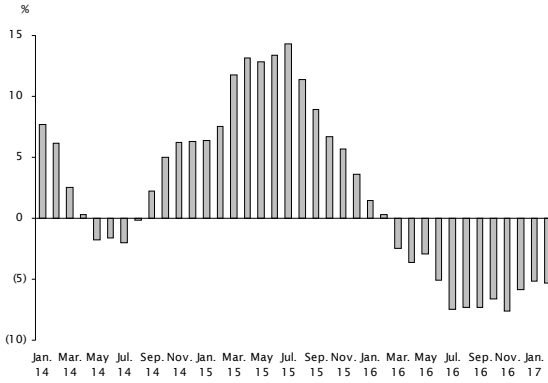
Source: CEIC.

Exports, Less Bad

The outlook for China’s exports has improved, at least marginally, as global growth has picked up. Moreover, the currency backdrop is favorable as the trade-weighted Renminbi is (5)% lower than it was a year ago (see Exhibit 13). Higher global economic growth and a weaker Renminbi should be positives for Chinese exports and the growth rate of export *volume* turned positive in the middle of last year (see Exhibit 14). In the first two months of this year Chinese exports grew by +4% year-over-year when measured in U.S. dollars, and by +11% when measured in local currency. Although we can’t put much weight on those two months of data due to distortion by the Spring Festival, we think growth is possible. The results of the past couple of years make clear though that a lot has to go right for China’s exports to advance at all, as evident in the chart of their long-term growth (see Exhibit 15).

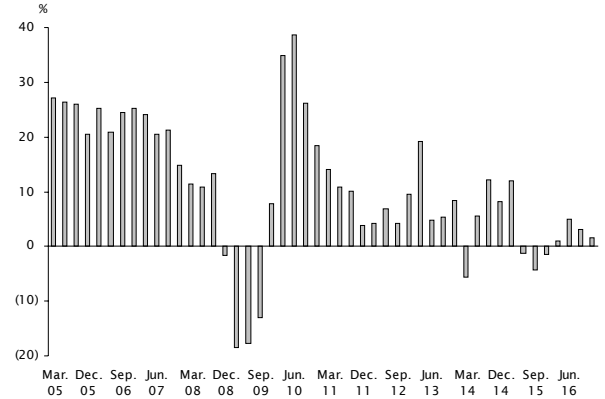
Stepping back, since the early part of the 2000s Chinese export growth was largely a story of it gaining market share by adeptly exploiting its cost advantages and considerable acumen in logistics and manufacturing (see Exhibit 16). Since the financial crisis globalization has stagnated and so have the imports of the G3 countries, creating headwinds for Chinese export industries. Last year it lost market share for the first time since it joined the World Trade Organization 15 years ago (see Exhibit 17). It’s sought to mitigate the pain from weaker demand by vertically integrating and using fewer imported components in its production (see Exhibit 18). There’s room to continue to do that because China has the longest supply chain of any major economy. With greater vertical integration the economy will benefit if global demand accelerates further.

**Exhibit 13: The Trade-Weighted Renminbi
Year-over-Year Changes
2014 Through February 2017**



Source: Bank for International Settlement, CEIC, Empirical Research Partners Analysis.

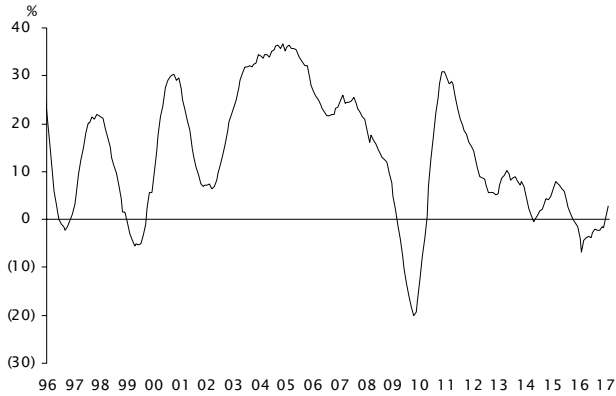
**Exhibit 14: China
Year-over-Year Changes in Export Volumes¹
2005 Through 2016**



Source: CEIC, Empirical Research Partners Analysis.

¹Three-month average.

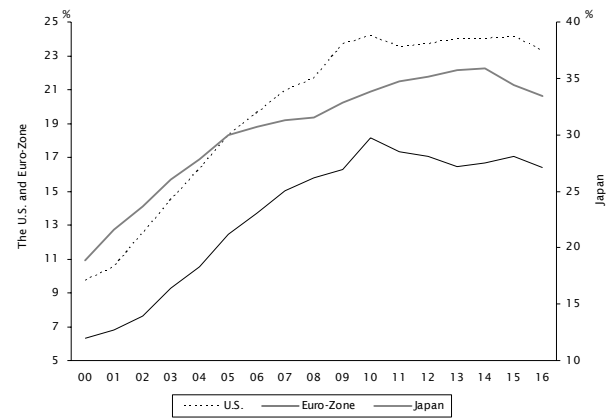
**Exhibit 15: China
Exports Measured in Local Currency
Year-over-Year Growth Rates
1996 Through February 2017**



Source: China Customs, Empirical Research Partners Analysis.

¹Expressed in local currency. January and February number are combined. Data smoothed on a trailing one-year basis.

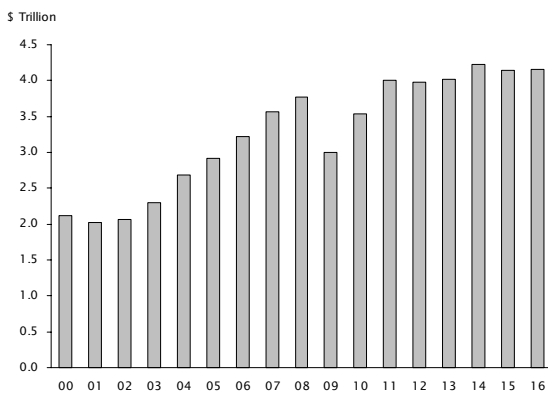
**Exhibit 16: The U.S., Euro-Zone and Japan¹
Share of Imports Coming from China²
2000 Through 2016**



Source: Eurostat, U.S. Census Bureau, UN Comtrade, Japan Ministry of Finance, Empirical Research Partners Analysis.

¹For Euro-Zone excluding Intra-EU18 imports.
²Imports exclude SITC2: crude materials, inedible, except fuels and SITC3: mineral fuels, lubricants and related materials.

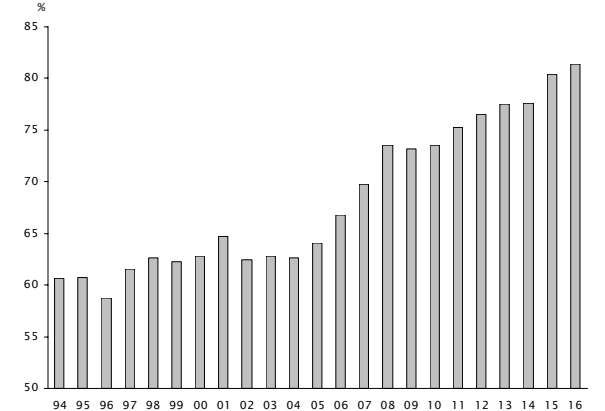
**Exhibit 17: The U.S., Euro-Zone and Japan¹
Total Imports²
2000 Through 2016**



Source: Eurostat, U.S. Census Bureau, UN Comtrade, Japan Ministry of Finance, Empirical Research Partners Analysis.

¹For Euro-Zone excluding Intra-EU18 imports.
²Imports exclude SITC2: crude materials, inedible, except fuels and SITC3: mineral fuels, lubricants and related materials.

**Exhibit 18: China
Domestic Value-Added Share of Exports
1994 Through 2016**

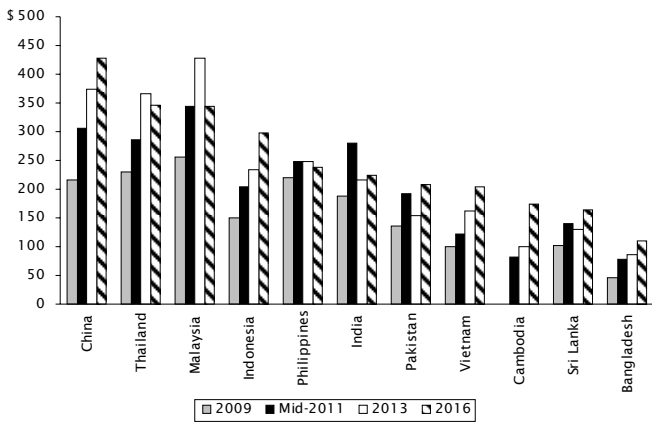


Source: CEIC, Yuqing Xing, 2014. "Measuring Value Added in the People's Republic of China's Exports: A Direct Approach," ADBI Working Paper Series.

Wages: A Reversal of Fortunes

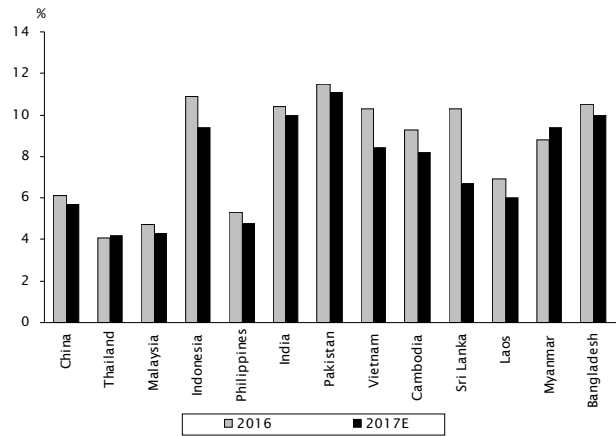
We came across a survey conducted by Japan External Trade Organization that details the labor costs of around 5,000 Japanese-affiliated companies throughout Asia. By last year the wages of production workers in China had climbed to a level that put them at the top of the heap, a far cry from its standing back in 2009 (see Exhibit 19). We're seeing convergence and many of the lower-cost countries have around +10% wage growth, almost double the pace in China (see Exhibit 20). On the other hand the gap relative to the developed world remains large, and salaries paid to Chinese engineers are only around a quarter of those in South Korea. While China has lost competitiveness to the ASEAN competitors in lower value-added industries (i.e., apparel), its advantages in logistics and quality of human capital make it competitive in higher value-added categories. Dealing with the new reality, it's also deployed robots at a faster pace than any other country and has made R&D spending a priority.

**Exhibit 19: China and Its Asian Competitors
Monthly Salaries of Manufacturing Production Workers
in Japanese Affiliates
2009 Through 2016**



Source: JETRO, 2016. "Survey on Business Conditions of Japanese Companies in Asia and Oceania."

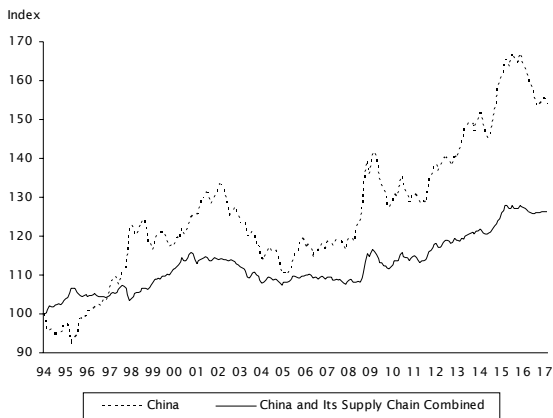
**Exhibit 20: China and Its Asian Competitors
Monthly Salaries of Manufacturing Employees
in Japanese Affiliates
Year-over-Year Growth Rates
2016 and 2017E**



Source: JETRO, 2016. "Survey on Business Conditions of Japanese Companies in Asia and Oceania."

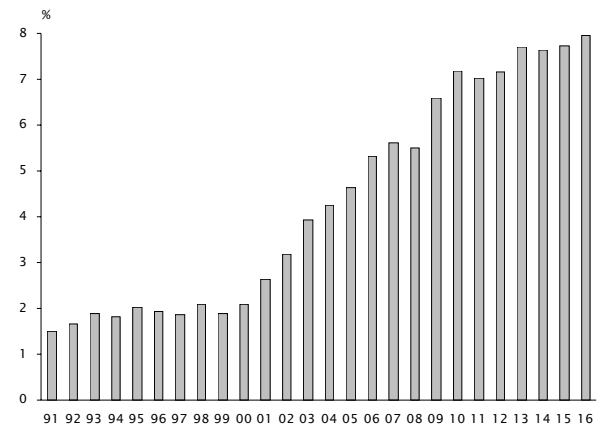
Movements in exchange rates affect the behavior of the export statistics and from May 2014 to November 2015, the trade-weighted Renminbi appreciated by +15%, while the effective supply-chain exchange rate increased by a little more than +6% (see Exhibit 21). Since then, the Renminbi has depreciated (8)% and the effective supply-chain exchange rate declined by only around a point. That gap helps explain why export growth was disappointing in 2016.

**Exhibit 21: China and Its Supply Chain¹
Composite Nominal Effective Exchange Rates
(January 1994=100)
1994 Through February 2017**



Source: Bank for International Settlements, CEIC, Empirical Research Partners Analysis.

**Exhibit 22: The U.S.
Goods Exported to China as a Share of the Total
1991 Through 2016**

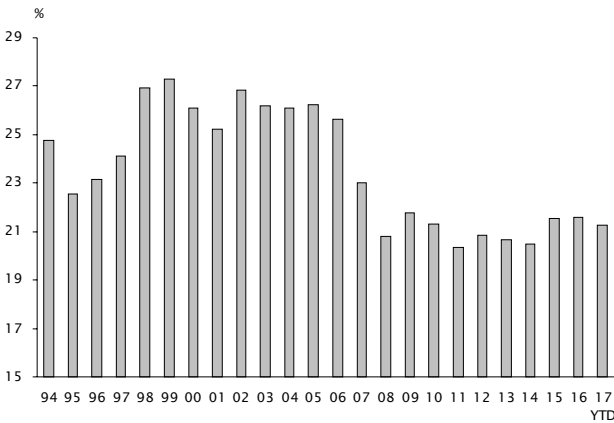


Source: Census Bureau, Empirical Research Partners Analysis.

¹Supplier countries include Germany, Japan, Malaysia, the Philippines, Singapore, South Korea, Taipei, Thailand and the U.S.

The present risk is from protectionism, and China is a target because its trade surplus with the U.S. is the largest among all trading partners. In 2016 it was \$347 billion in goods, making up almost half of the overall deficit. The methodology of subtracting U.S. goods exports to China by imports from China significantly overstates the gap because Chinese exports still contain many components sourced elsewhere. Based on data from OECD TiVA Database, in 2011, China's share of domestic value-added in its exports was 68% and it is only 60% in its manufactured goods exports. Our estimate of the U.S. value-added trade deficit with China is around (40)% lower than the stated value. U.S. exports to China account for 8% of its total exports and the share of Chinese exports to the U.S. is about 21.5%, (4) percentage points lower than in 2006. Although the U.S. is still one of China's large trading partners, its importance as an end market has declined, and as a result the chance of retaliation by China to a protectionist initiative looks high (see Exhibits 22 and 23).

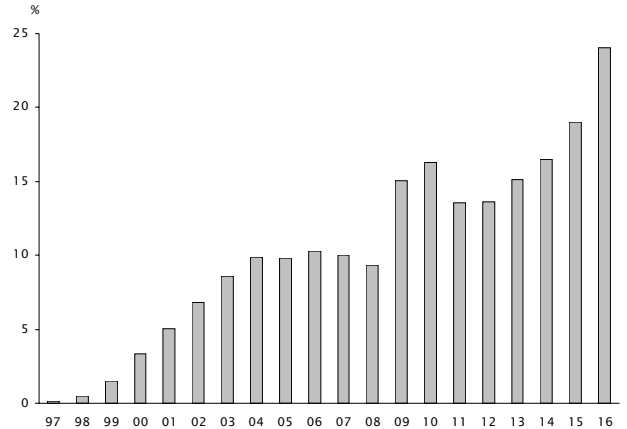
Exhibit 23: China Exports to the U.S. as a Share of the Total¹ 1994 Through February 2017



Source: CEIC, Empirical Research Partners Analysis.

¹Total exports exclude those to Hong Kong and Taiwan.

Exhibit 24: China Residential Mortgage Debt Outstanding-to-GDP 1997 Through 2016

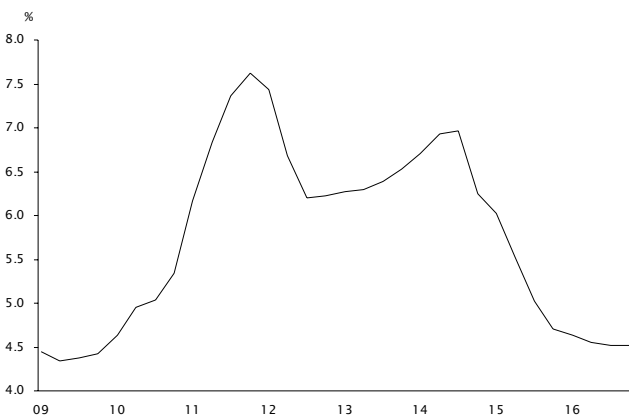


Source: CEIC, Empirical Research Partners Analysis.

Chinese Housing, Another Boom Nears an End

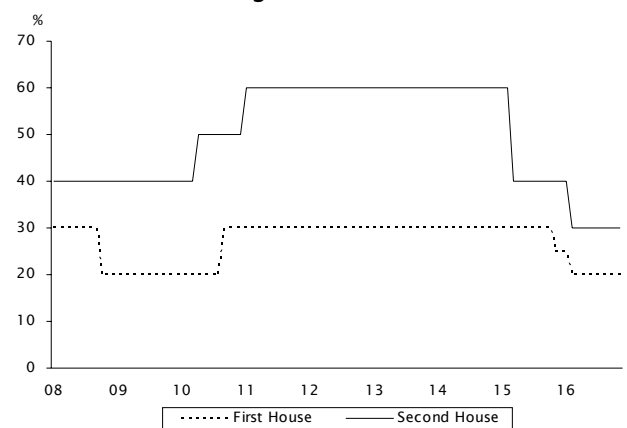
The Chinese government helped engineer another boom in housing that began in the second-half of 2015, fueled by a dramatic build-up in mortgage debt. It increased at a +30% annual rate in the last two years, double that of the prior five (see Exhibit 24). The lending boom was fueled by falling mortgage rates and down payment requirements, as the tightening of the prior four years was reversed (see Exhibits 25 and 26). Inventories were cleared and home prices soared with an average gain of more than +11% in 2016 (see Exhibits 27 and 28). The latest spike reversed half of the previous five-year's efforts to stabilize prices and measured relative to income they're back to where they were in 2011 (see Exhibit 29).

Exhibit 25: Chinese Mortgage Rates 2009 Through 2016



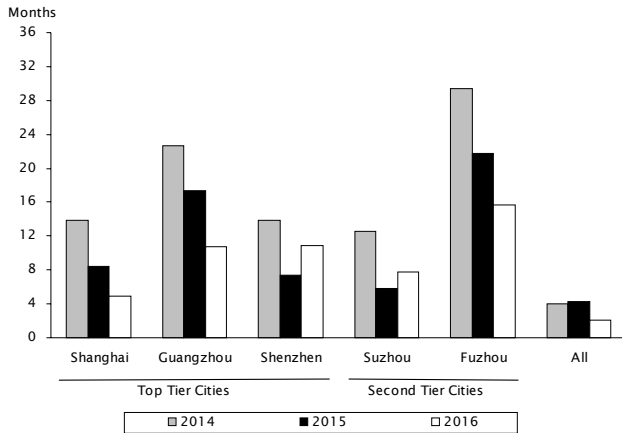
Source: CEIC, Empirical Research Partners Analysis.

Exhibit 26: China Minimum Home Down Payment Ratios For Cities With No Buying Restrictions 2008 Through November 2016



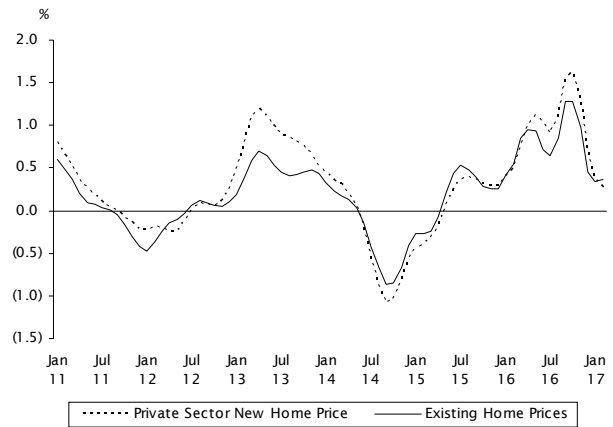
Source: PBOC, CBRC, Ministry of Land and Resources.

**Exhibit 27: Select Chinese Cities
Inventories Measured in Months of Sales Volume
2014 Through 2016**



Source: CEIC, Empirical Research Partners Analysis.

**Exhibit 28: China
Home Prices Changes¹
Measured on a Month-Over-Month Basis
2011 Through February 2017**



Source: Soufun.com, National Bureau of Statistics of China.

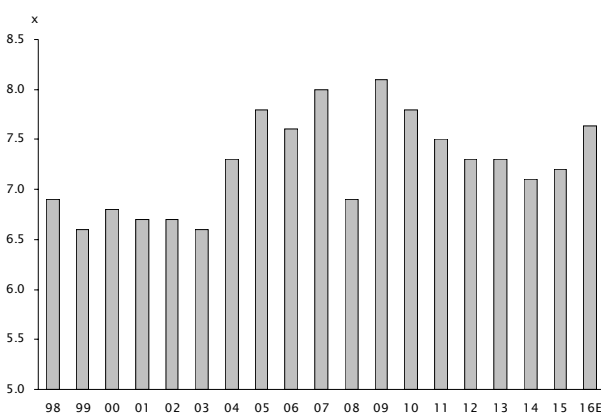
¹Data smoothed on a trailing three-month basis.

Supply has picked up, although developers have been cautious and the growth rate in the space under construction advanced at only a low-single-digit rate (see Exhibit 30). Even so last year China's residential construction spending, measured relative to *global* GDP, was in the same ballpark as that of the U.S. was in the early-2000s (see Exhibit 31). The Chinese housing market exerts a material influence on the global metals markets.

Over time, what's driven price appreciation is a combination of income gains and urbanization, and China is still less urbanized than Japan in 1990 (see Exhibit 32). The authorities have continued to encourage migration into the cities, betting that service industries can take the baton from the stalled manufacturing economy.

It's hard to know where the breaking point in Chinese housing lies due to the unusual structure of the economy. The situation doesn't look directly comparable to that in Japan because with few investment alternatives, housing has been the default investment of wealthy Chinese, making it a key lever to pull in a managed economy. Still, just like in the U.S. in the mid-2000s, the expectations for further appreciation have driven some of the price action. Over time, borrowed money has figured more in turning those expectations into reality. Recently the government has put in place additional regulations in the hot markets to curb activity. We don't think the tightening measures will lead to a crash but it's clear that this debt-financed run is ending.

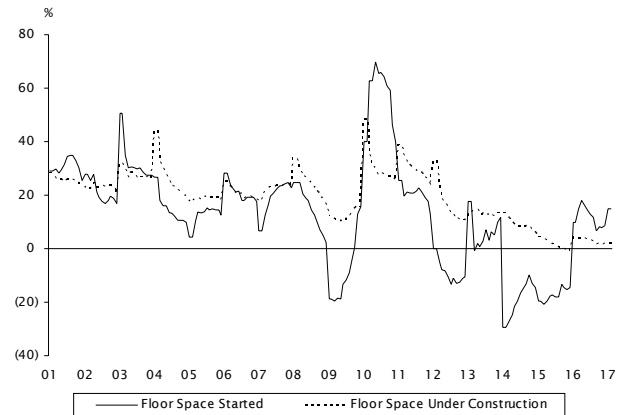
**Exhibit 29: China Urban Areas
The Home Price-to-Income Ratio
1998 Through 2016E**



Source: E-House China R&D Institute, Empirical Research Partners Analysis.

¹Based on average price of commodity housing and the average household disposal personal income.

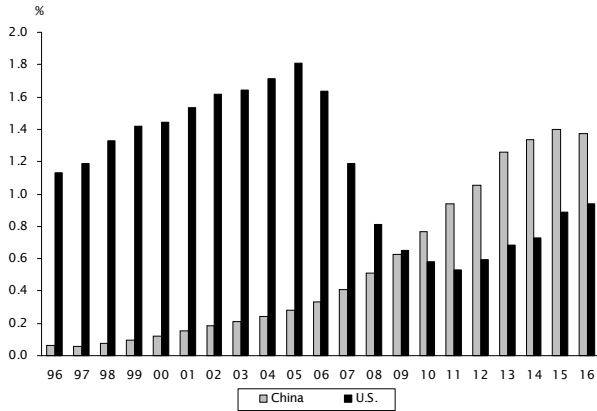
**Exhibit 30: Chinese Residential Housing
Floor Space Started and Under Construction¹
Year-over-Year Changes
2001 Through February 2017**



Source: CEIC, Empirical Research Partners Analysis.

¹Based on year-to-date data.

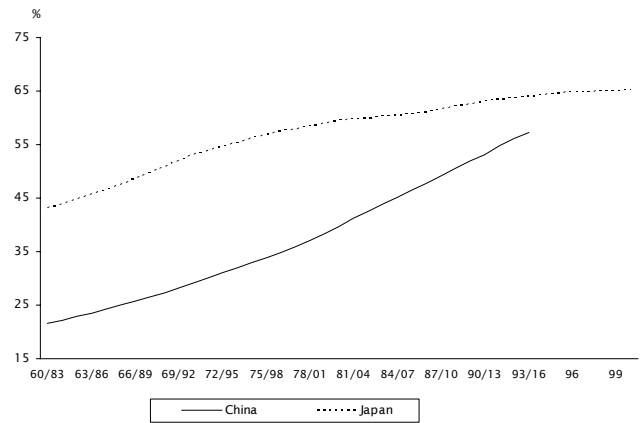
**Exhibit 31: China and the U.S.
Residential Construction as a Share of *Global GDP*¹
1996 Through 2016**



Source: CEIC, U.S. Department of Commerce, International Monetary Fund, Empirical Research Partners Analysis.

¹Chinese data excludes activities in pure land transactions.

**Exhibit 32: China and Japan
Urban Population as a Share of the Total
1960 Through 2016**



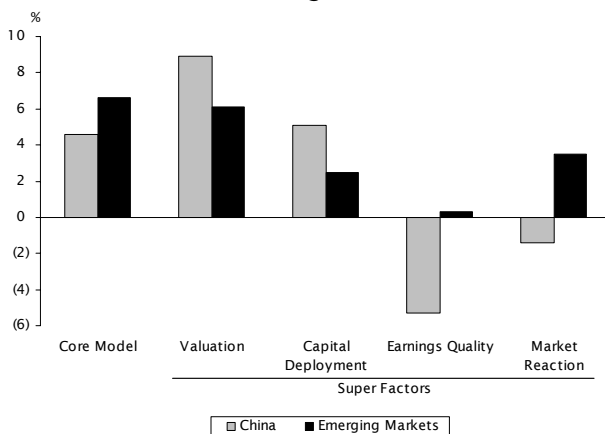
Source: World Bank.

Conclusion: A Muddle, With New Risks

We’ve long thought that the Chinese economy wasn’t susceptible to collapse because the system is centrally-managed, largely closed and cash flow positive. Its leadership wisely sought to cut out the middle man and vertically integrate once it became obvious that its business model was under attack from competitors in less-developed economies and protectionism in the developed ones. There’s been little positive momentum in its exports and there’s every reason to think that concerns about the viability of its economic model will reemerge if there’s a serious protectionist volley from the Trump administration. With the U.S. comprising only about a fifth of its exports, retaliation could be in the cards.

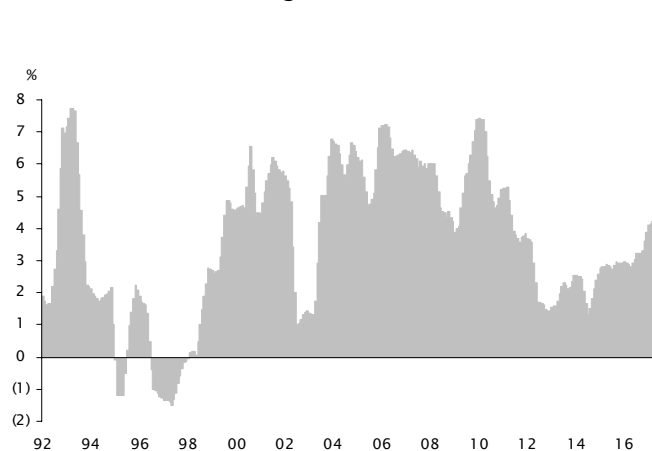
Trade frictions aside, we remain in the muddle-through camp, and we don’t see developments in China as deterministic for most developed-world investors. Rather, it looks like the best base case is one of gradual deceleration and a marking down of growth targets. The dynamic within the Chinese equity market tells us something about what’s going on. More than in other emerging markets the deployment of capital has been key to relative returns, as investors have rewarded reaping over sowing (see Exhibit 33). The average “core” public-held Chinese company has a free cash flow margin of +4%, lower than it was prior to 2011 but still at a reasonable level (see Exhibit 34). What we’re worried about at the moment is protectionism.

**Exhibit 33: China and the Emerging Markets
Relative Returns to the Top Quintiles
of Our Super Factors
Monthly Data Compounded
Three Years Ending Late-March 2017**



Source: Empirical Research Partners Analysis.

**Exhibit 34: Chinese Public Core Stocks
Free Cash Flow Margins¹
1992 Through Late-March 2017**



Source: Corporate Reports, Empirical Research Partners Analysis.

¹Based on onshore and offshore-listed Chinese stocks. The core excludes financials, utilities and capital equipment. Data smoothed on a trailing three-month basis.

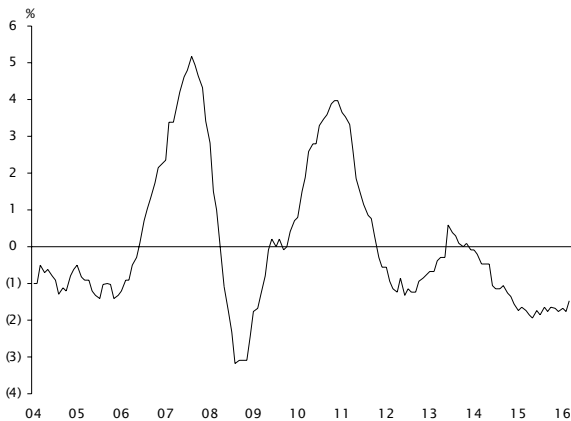
The Gig Economy: More Going On Than Meets the Eye

Informal Labor Market: Real Work?

One of the debates in the market centers on the character of this business cycle. Does it resemble those of the past, or is it an entirely different beast, as globalization, the internet and robotics have changed the rules of the game (see Exhibits 35 and 36)? Certainly bond investors think something is fundamentally different, judging by both the term premium and the level of real yields (see Exhibits 37 and 38). The moment of truth is fast approaching as current yields are close to the cost basis for the multitude of bond and ETF investors, who've poured record sums into those vehicles since 2009 (see Exhibit 39). Their enthusiasm is undiminished and beginning in December, they bought the dip in prices (and rise in yields). Since then inflows have been at twice the rate that's prevailed following the financial crisis (see Exhibit 40). What's different today is the unemployment rate is almost (3) percentage points below the average level of the entire eight-year period.

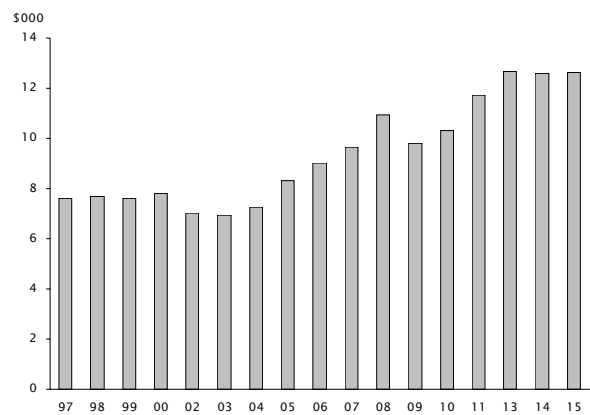
Retail investors have a poor record as market timers, and over the long run it's been worse in bond funds than in equity funds as they chase yields. More than three decades of falling rates have compounded that problem as investors in bond index funds have only *felt* losses in 10 of the past 326 months, none of them were significant. It's not surprising that they enthusiastically bought the latest dip. Having enjoyed a bump-free rise their tolerance for turbulence is probably low.

**Exhibit 35: U.S. Imports from China
Year-over-Year Price Changes
2004 Through February 2017**



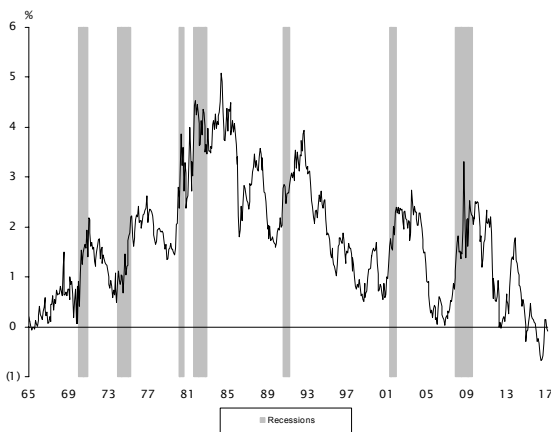
Source: Bureau of Labor Statistics.

**Exhibit 36: U.S. Manufacturing Plants
Capital Spending on Equipment per Employee
1997 Through 2015**



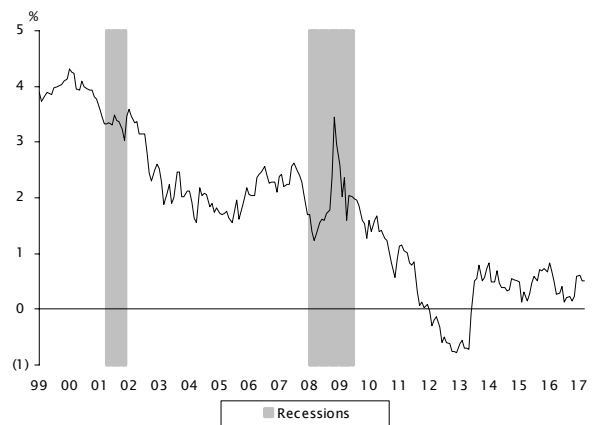
Source: Census Bureau, Empirical Research Partners Analysis.

**Exhibit 37: Ten-Year Treasury Bond Term Premium
1965 Through Late-March 2017**



Source: Adrian, T., Crump R. K. and Emanuel Moench, 2008. "Pricing the Term Structure with Linear Regressions," National Bureau of Economic Research.

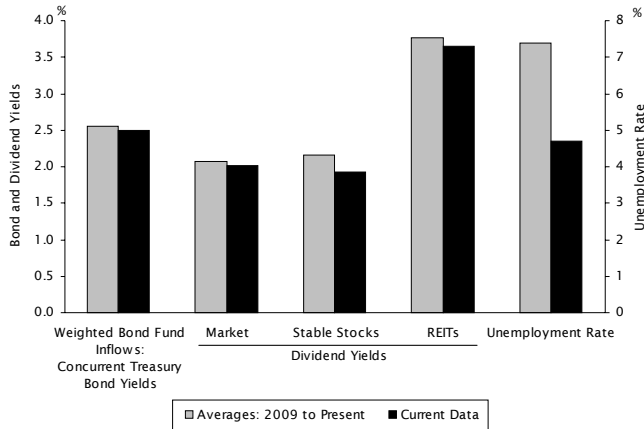
**Exhibit 38: Real Ten-Year Treasury Bond Yields¹
1999 Through Mid-March 2017**



Source: Gürkaynak R. S., Sack B. and Jonathan H. Wright, 2007. "The TIPS Yield Curve and Inflation Compensation." FEDS Working Paper 2008-05, National Bureau of Economic Research.

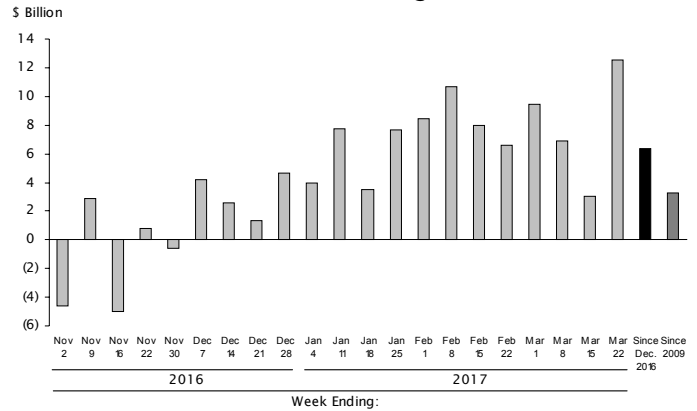
¹Zero-coupon continuously compounded Treasury Inflation Protected Security.

**Exhibit 39: The Yield Sweepstakes
2009 Through Late-March 2017**



Source: Bureau of Labor Statistics.

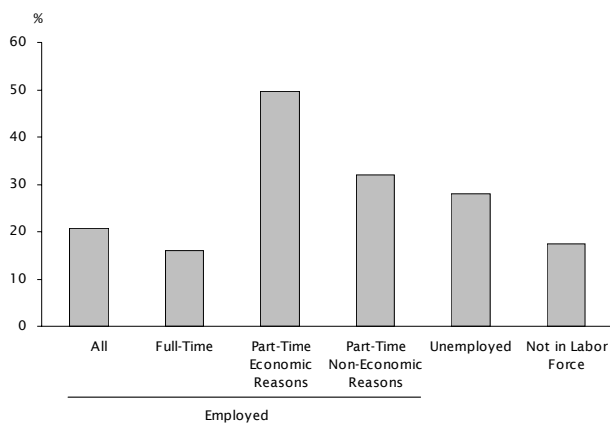
**Exhibit 40: Taxable Bond Mutual Funds and ETFs
Weekly Net Flows
November 2016 Through Late-March 2017**



Source: Investment Company Institute.

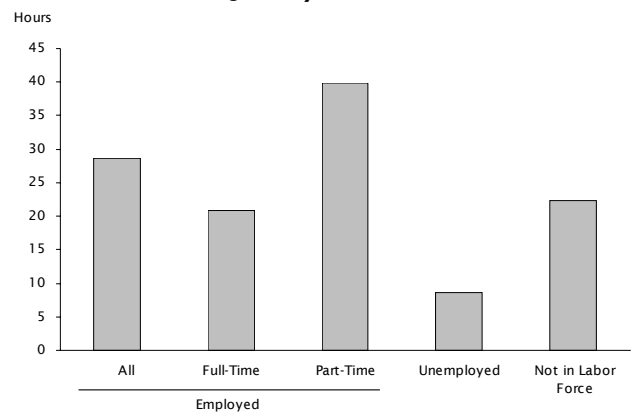
We read a couple of interesting papers that address the difficulty in measuring the state of the labor market. The first looked into how informal work (e.g., Uber, Lyft, AirBnB, TaskRabbit, etc.) gets captured in the labor statistics.¹ In the Household Survey respondents are asked if they did any work for pay or profit in the previous week. In an informal work arrangement they typically have irregular hours and may not have worked in that particular week, or, they may not consider what they do “off the books” as real work. To get to the bottom of this issue two economists at the Federal Reserve Bank of Boston put together a Survey of Informal Work Participation, that was administered within the Federal Reserve Bank of New York’s Survey of Consumer Expectations on three separate occasions: in December 2013, January 2015 and December 2015. They concluded that roughly 20% of the people in their sample were engaged in some sort of informal work. Importantly, many of them were classified in the statistics as working part-time for economic reasons, while others were in the unemployed and not-in-labor-force buckets (see Exhibit 41). They found that on average the part timers worked informally for about 40 hours a month, while for those working full time or classified as not in the labor force at all the average was around 20 hours (see Exhibit 42). The earnings of the part timers were around \$600 a month, or in the ballpark of \$16 an hour (see Exhibit 43). In comparison, average hourly earnings were \$26 in the latest jobs report. For this subset of the population the \$16 per hour wage is competitive, topping what’s paid in the leisure and hospitality industries.

**Exhibit 41: Informal Work Participation Rate
By Employment Status
Averages from Two Surveys
Taken in January and December 2015**



Source: Bureau of Labor Statistics, Bracha, A. and Mary A. Burke, 2016. “Who Counts as Employed? Informal Work, Employment Status, and Labor Market Slack,” Federal Reserve Bank of Boston Working Paper No. 16-29, Empirical Research Partners Analysis.

**Exhibit 42: Informal Work Hours per Month
By Employment Status
Averages from Two Surveys
Taken in January and December 2015**

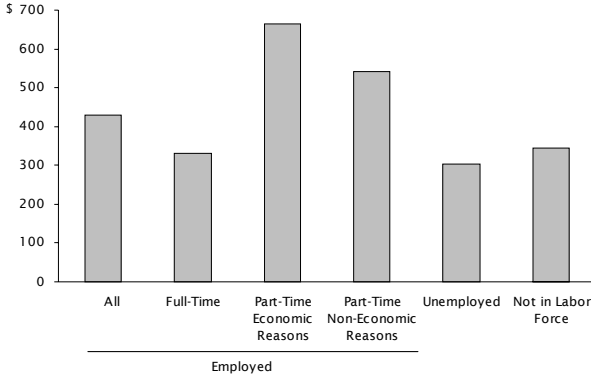


Source: Bureau of Labor Statistics, Bracha, A. and Mary A. Burke, 2016. “Who Counts as Employed? Informal Work, Employment Status, and Labor Market Slack,” Federal Reserve Bank of Boston Working Paper No. 16-29, Empirical Research Partners Analysis.

¹Bracha, A. and Mary A. Burke, 2017. “Who Counts as Employed? Informal Work, Employment Status and Labor Market Slack,” Federal Reserve Bank of Boston, Working Paper No. 16-29.

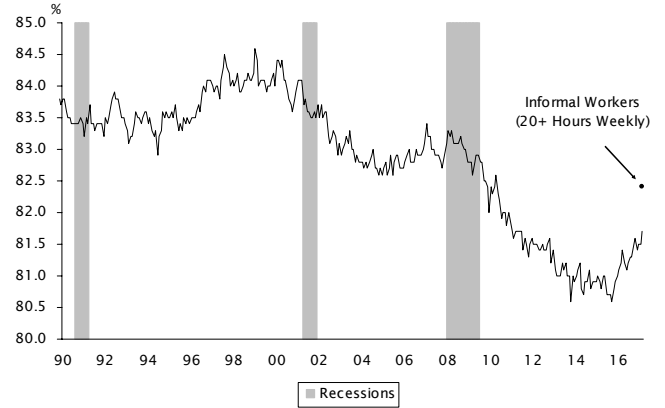
If informal work had been fully captured in the statistics the share of the population working full time would rise by about four percentage points and the work force participation rate would be roughly a point higher than that reported (see Exhibit 44). All of this makes us think that the labor market may be tighter than it appears at first blush.

Exhibit 43: Informal Work Monthly Earnings By Employment Status Averages from Two Surveys Taken in January and December 2015



Source: Bureau of Labor Statistics, Bracha, A. and Mary A. Burke, 2016. "Who Counts as Employed? Informal Work, Employment Status, and Labor Market Slack," Federal Reserve Bank of Boston Working Paper No. 16-29, Empirical Research Partners Analysis.

Exhibit 44: Labor Force Participation Rate¹ Ages 25 to 54 As Reported and Adjusted for Informal Workers 1990 Through February 2017



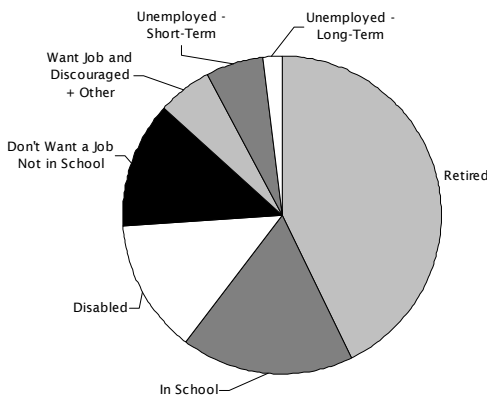
Source: Bureau of Labor Statistics, Bracha, A. and Mary A. Burke, 2016. "Who Counts as Employed? Informal Work, Employment Status, and Labor Market Slack," Federal Reserve Bank of Boston Working Paper No. 16-29, Empirical Research Partners Analysis.

¹Seasonally-adjusted data.

The Flip Side: The Non-Employment Index

A second paper, by an economist at the Federal Reserve Bank of San Francisco, presented a "non-employment index."² It draws upon the population of people that aren't employed, discriminating between those that are retired, disabled, in school, discouraged or unemployed for a long stretch (see Exhibit 45). The index multiplies the number of people in each category by the probability of them eventually becoming employed, drawing upon data from 1994 through 2016 for the probabilities. A critical component of the exercise involves distinguishing between the short- and long-term unemployed, with the cut-off set at 27 weeks. The odds of the long-term unemployed entering the work force are only 50:50, while almost all those in the short-term bucket return.

Exhibit 45: The U.S. Make-Up of the Non-Employed Population 2016



Source: Maroanna Kudlyak, 2017. "Measuring Labor Utilization: The Non-Employment Index," FRBSF Economic Letter 2017-08.

Exhibit 46: The U.S. Non-Employment Index and Unemployment Rate 1994 Through February 2017



Source: Maroanna Kudlyak, 2017. "Measuring Labor Utilization: The Non-Employment Index," FRBSF Economic Letter 2017-08.

Exhibit 46 presents the non-employment index, the black line, compared to the standard unemployment rate below and to a broader index that includes people working part time involuntarily. All three measures tell roughly the same story, that the employment market today looks much as it did in the mid-2000s.

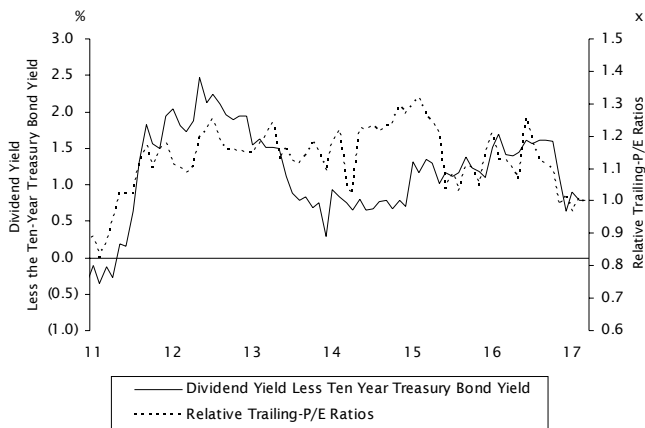
² Maroanna Kudlyak, 2017. "Measuring Labor Utilization: The Non-Employment Index," FRBSF Economic Letter 2017-08.

Conclusion: There's Still a Cycle

The state of the labor market is always critical to equity investors and it seems like once again that will be the case in this cycle. What's unusual is that a significant slice of the market, that represents around a tenth of capitalization, has been cast as bond surrogates, and those stocks' relative-P/Es have been directly linked to their dividend yield advantage over Treasury bonds (see Exhibit 47). The coherence of the bond surrogates group began to break down in early-2016, and did so in earnest after the election (see Exhibit 48). The correlations of relative returns for their opposite numbers, the stocks most anti-correlated with the bond market, have stayed high (see Exhibit 49). What motivated the change was evidence of tightness in the labor market. Wage growth for low-skill service positions took off in the second-quarter of last year, after coming in at 2% or below for the entirety of the post-Crisis period (see Exhibit 50). We estimate that about +35 basis points of the increase was the byproduct of minimum wage increases in some large states. That was the turning point in the battle for the bond market. The availability of competitive "informal work" makes spare capacity a tougher concept to measure than before, and leads us to believe the labor market could tighten more rapidly than the official statistics suggest. The service industry wage data is probably reliable as those on-the-books positions compete with those of the informal variety.

There's still a business cycle to exploit and we're now in the phase that produces labor market tightness and favors the anti-bond market plays.

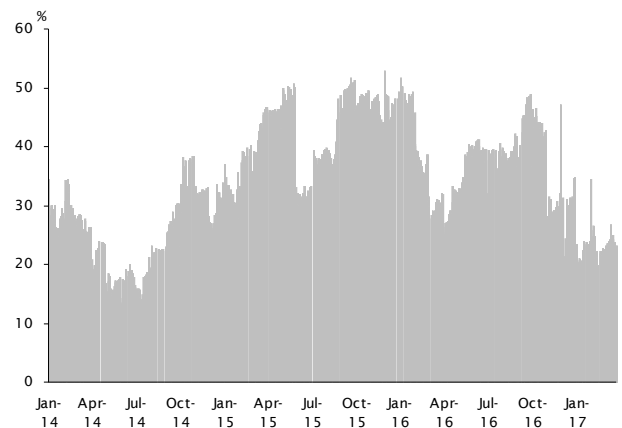
**Exhibit 47: Large-Capitalization Bond Surrogates'
Dividend Yields Less the Ten-Year Treasury Bond Yields
and Relative Trailing-P/E Ratios
2011 Through Late-March 2017**



Source: Empirical Research Partners Analysis, Federal Reserve Board.

¹The bond surrogates are the 10% of the market with relative returns that are most correlated with the performance of ten-year Treasury bonds. Capitalization-weighted data.

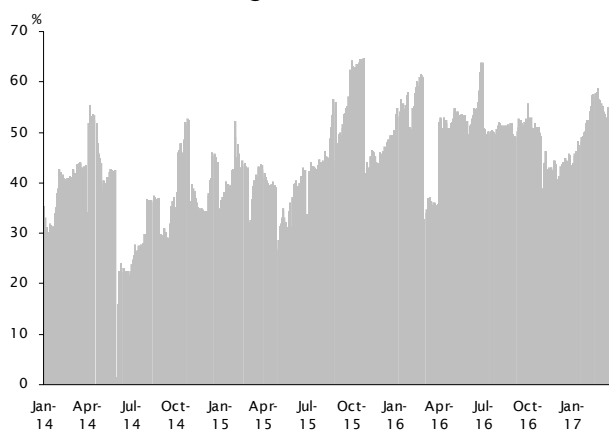
**Exhibit 48: Large-Capitalization Stocks
Bond Surrogates'
Daily Return Correlations
2014 Through Late-March 2017**



Source: Empirical Research Partners Analysis.

¹The bond surrogates are the 10% of the market with relative returns that are most correlated with the performance of ten-year Treasury Bonds.

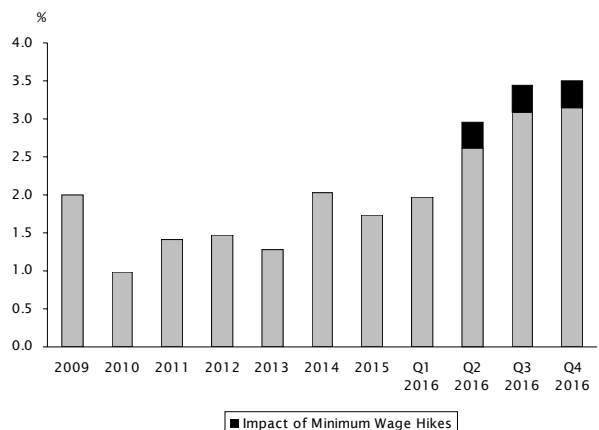
**Exhibit 49: Large-Capitalization Stocks
Stocks Most Anti-Correlated with the Bond Market'
Daily Return Correlations
2014 Through Late-March 2017**



Source: Empirical Research Partners Analysis, Federal Reserve Board.

¹The anti-bond surrogates are the 10% of the market with relative returns that are least correlated with the performance of ten-year Treasury bonds.

**Exhibit 50: Lower-Paid Services Positions
Year-over-Year Change in Employment Costs
2009 Through 2016**



Source: U.S. Bureau of Labor Statistics.