

## Economics Group

### Special Commentary

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# Global Influences on U.S. Growth and Employment

## Executive Summary

Fears about the global economy slipping into a recession have subsided since the start of the year. The more upbeat outlook in part reflects the FOMC's guidance that U.S. monetary policy will remain easier this year than initially indicated by committee members. Nevertheless, the FOMC continues to note that global conditions pose downside risks to the outlook.<sup>1</sup> In an earlier report, we analyzed the global effects on inflation. While the pass-through of the stronger dollar and low inflation pressure outside the United States more broadly is small, it has been a contributing factor to inflation remaining below the Fed's target for four straight years now.

In this report, we look at the global effects on the other half of the Fed's mandate—employment. We find that global growth has a significant effect on activity and employment in the U.S. industrial sector. The effect on overall employment, however, is much smaller because the service sector, which accounts for the bulk of total employment, has little overseas exposure. That said, the effect of global growth on total employment is still statistically significant. With U.S. growth weak at present, any slowdown emanating from overseas would also weigh on employment growth and make it more difficult for the economy to reach full employment. We suspect that the sluggish state of foreign economic growth will induce the Fed to continue exuding caution when looking to further normalize policy.

***Sluggish global growth has weighed on U.S. GDP and employment.***

## Why Is the Fed Preoccupied with Foreign Economic Developments?

In a recent report, we analyzed the effects that global influences have on inflation in the United States.<sup>2</sup> We showed that exchange rates and foreign prices can have significant effects on import prices. However, import prices have only a modest effect on core consumer price inflation because services, which are largely produced domestically, constitute the lion's share of consumer expenditures. That said, inflation, which is one of the Federal Reserve's objectives, is significantly below the Fed's target of 2 percent at present, and depressed import prices make it more difficult for the central bank to return inflation to target. Consequently, Fed policymakers have paid an inordinate amount of attention to foreign economic developments over the past year or so.

Not only does the Fed have a price objective but it also has a labor market objective, specifically "full employment." In the second of two reports, we turn our attention to the effects that foreign economies can have on real economic variables (*i.e.*, GDP growth and the labor market) in the United States.

## Global Effects on Exports Is One Thing, Effects on GDP Quite Another

As noted above, U.S. import prices are materially affected by foreign economic variables such as the exchange rate and foreign prices. Likewise, American exports have a high degree of sensitivity to foreign economic developments. As shown in Figure 1, year-over-year growth rates in real U.S. exports, U.S. industrial production (IP) and global IP are highly correlated. This high degree of correlation makes intuitive sense because global IP, which we use as a proxy for foreign economic

<sup>1</sup> See the minutes from the July 26-27, 2016 FOMC meeting, released Aug. 17, 2016.

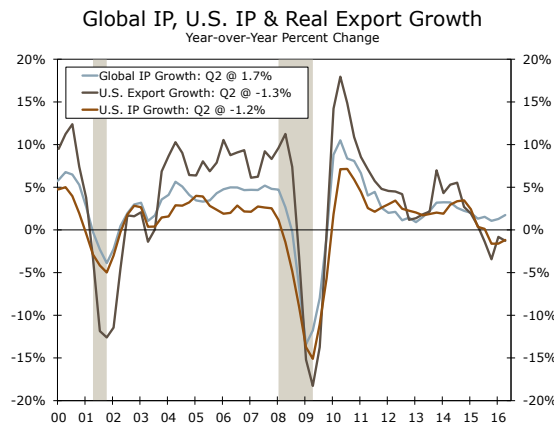
<sup>2</sup> See "Global Effects on U.S. Consumer Price Inflation" (August 9, 2016) which is available upon request.



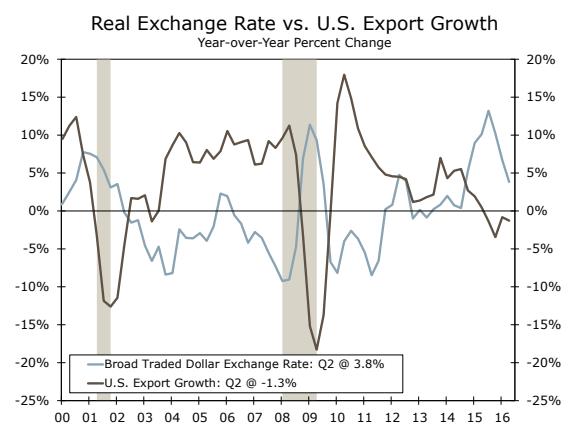
activity, is a major determinant of American IP growth. Moreover, real exports of goods are equivalent to roughly 55 percent of real value added in the industrial sector of the U.S. economy.

Figure 2 shows that growth in U.S. exports is inversely correlated with changes in the real exchange rate. A regression analysis confirms the negative relationship between changes in the value of the dollar and export growth.<sup>3</sup> Global growth, however, is even more influential for real exports, with a 1 percent increase in global IP growth boosting real exports by a total of 1.6 percent over two quarters.

**Figure 1**



**Figure 2**



Source: IHS Global Insight and Wells Fargo Securities

The foreign effects on IP growth in the United States are not as meaningful as they are on real export growth. Global IP growth has a significant positive relationship with U.S. IP growth, but the dollar has little bearing on industrial output here at home.<sup>4</sup> The lower sensitivity makes sense given that some of the output of the U.S. industrial sector is consumed domestically and does not depend, at least not directly, on foreign factors.

The relationship between foreign growth and the American economy breaks down even further when we look at U.S. real GDP growth, although the relationship remains significant (Figure 3). The industrial sector accounts for only 15 percent of value added in the U.S. economy, leading to a weaker correlation between global IP growth and U.S. real GDP growth. Services account for the bulk of U.S. production (about 70 percent of value added) and tend to be consumed largely at home; real exports of services are equivalent to only 6 percent of real value added in the service sector. Nevertheless, a one percent decline in global IP shaves 0.3 percentage point from U.S. GDP growth, indicating that a marked slowdown overseas can potentially have a meaningful effect on U.S. growth, especially when GDP growth in the United States is already sluggish.<sup>5</sup>

***A one percent decline in global IP shaves 0.3 percentage point from U.S. GDP growth.***

<sup>3</sup> See section A in the appendix for details.

<sup>4</sup> See section B in the appendix for details.

<sup>5</sup> See section C in the appendix for details.

Figure 3

Global Industrial Production and U.S. GDP  
Year-over-Year Percent Change

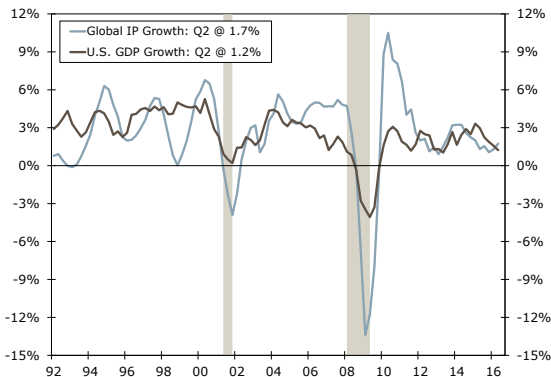
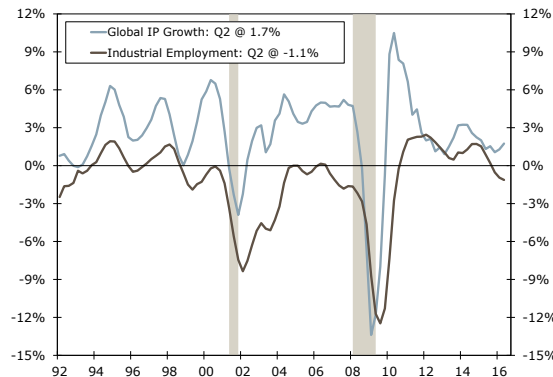


Figure 4

Global IP and Employment in U.S. Industrial Sector  
Year-over-Year Percent Change



Source: U.S. Dept of Commerce, U.S. Dept of Labor, IHS Global Insight and Wells Fargo Securities

### Labor Market Effects from Slower Global Growth Rather Limited

Slower GDP growth could in turn dampen hiring, putting the employment side of the Fed’s mandate at risk. How concerned should the Fed be about the impact on the labor market? The most direct impact would be on hiring in the industrial sector due to its higher reliance on exports. While there is a fair degree of correlation between employment growth in the U.S. industrial sector and global IP growth, employment growth has tended to be weaker over time (Figure 4).<sup>6</sup> Indeed, since 1991, when our sample begins, employment in the U.S. industrial sector has declined nearly 30 percent on balance. Over that same period, global industrial production has risen more than 80 percent. There is still a meaningful relationship, however, between IP and related employment in the United States. Not surprisingly, U.S. IP has had a larger influence than global IP on employment growth in the American industrial sector, but both variables have been significant.<sup>7</sup>

*The impact of global growth on U.S. employment is quite small.*

Figure 5

Global IP and U.S. Employment  
Year-over-Year Percent Change

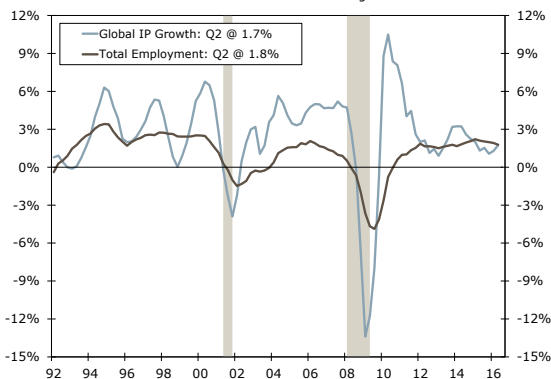
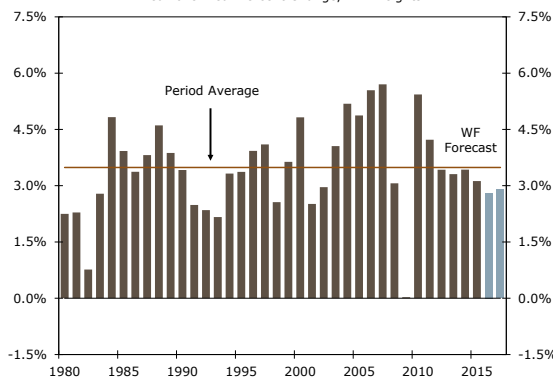


Figure 6

Real Global GDP Growth  
Year-over-Year Percent Change, PPP Weights



Source: U.S. Dept of Labor, International Monetary Fund, IHS Global Insight and Wells Fargo Securities

Yet, how do foreign factors affect total employment? As illustrated in Figure 5, there is a positive, but rather low correlation between total employment growth in the United States and global IP growth. This is confirmed with formal regression analysis, which shows a 1 percent rise in global

<sup>6</sup> We include the manufacturing, mining and utilities industries in our measure of “industrial employment.”

<sup>7</sup> See section D of the appendix for details.

IP would boost U.S. employment by less than 0.1 percent.<sup>8</sup> The modest impact stems from the fact that similar to output, the industrial sector accounts for only a small share of total employment in the economy. Services, for which demand is more closely tied to domestic conditions, account for 84 percent of private employment.

### **Global Growth Has Delayed, but Shouldn't Prevent Further Fed Hikes**

Our analysis shows that the slowdown in global economic growth over the past two years has been a significant contributor, at least in a statistical sense, to the weakness in both U.S. industrial production and GDP growth more broadly. The negative effect on employment, however, has been quite small, and largely limited to hiring in the industrial sector.

If the United States is not overly sensitive to foreign economic developments, why has the Fed been so concerned about recent weakness overseas? Like inflation, domestic economic growth is slow right now. Any deceleration emanating from foreign sources is therefore concerning since, if large enough, it could cause the economy to stall. We anticipate global growth will remain weak over the next couple of years (Figure 6), which suggests the Fed will remain cautious in tightening policy. That said, the domestically oriented service sector matters much more for inflation and employment. By both measures, the service sector has been resilient despite the slowdown overseas. CPI inflation for core services has strengthened to more than 3 percent this year while growth in service sector employment has remained above 2 percent. Therefore, while sluggish global growth has delayed the pace of Fed policy normalization, it is unlikely to entirely prevent the Fed from raising rates again later this year.

***The U.S. service sector matters much more than global growth for inflation and employment.***

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<sup>8</sup> See section E of the appendix for details.

## Appendix

### A. Real Exports

Using quarterly data from 1999-Q2 to 2016-Q2, we estimated a number of regressions. First, we regressed the log change of U.S. real exports of goods, on global industrial production, which serves as a proxy for global economic activity, and the real exchange rate of the U.S. dollar. Our regression yielded the following results:

<u>Variable</u>	<u>Coefficient</u>	<u>t-statistic</u>	<u>Prob.</u>
Constant	-0.001	-0.73	0.468
$\Delta\log(\text{globalip})_t$	1.13	7.00	0.000
$\Delta\log(\text{globalip})_{t-1}$	0.52	3.56	0.001
$\Delta\log(\text{real})_t$	-0.24	-2.83	0.006

$$R^2 = 0.77$$

$$DW = 1.87$$

where exp = real U.S. exports

globalip = global industrial production (IP)

real = real U.S. exchange rate as measured by the Fed's real "Broad" exchange rate index.

The regression results show that a 1 percent rise in global IP is associated with a 1.6 percent increase in real exports over the current and subsequent quarter. A 1 percent rise in the real exchange rate reduces real exports by 0.24 percent. Both global IP and the real exchange rate are statistically significant.

### B. U.S. Industrial Production

To ascertain what effects foreign variable have on U.S. industrial production, we regressed the log change of U.S. IP on the log change in global IP and the log change in the real exchange rate of the U.S. dollar. Our regression results follow.

<u>Variable</u>	<u>Coefficient</u>	<u>t-statistic</u>	<u>Prob.</u>
Constant	-0.004	-4.77	0.000
$\Delta\log(\text{globalip})_t$	0.63	8.90	0.000
$\Delta\log(\text{globalip})_{t-1}$	0.33	5.17	0.000
$\Delta\log(\text{real})_t$	0.03	0.69	0.491

$$R^2 = 0.82$$

$$DW = 1.11$$

Similar to real export growth, global IP has a positive, statistically significant relationship with U.S. IP over two quarters. However, U.S. IP is less sensitive than real exports to global IP with a 1 percent increase in global IP raising US IP by 0.99 percent over the current and subsequent period. Changes in the real exchange rate, on the other hand, do not have a statistically significant effect on U.S. IP growth.

### C. U.S. GDP

To determine the effect foreign factors on U.S. GDP growth, we regressed the log change of U.S. real GDP on global IP growth and changes in the real exchange rate and found the following results:

<u>Variable</u>	<u>Coefficient</u>	<u>t-statistic</u>	<u>Prob.</u>
Constant	0.003	4.62	0.000
$\Delta\log(\text{globalip})_t$	0.31	6.65	0.000
$\Delta\log(\text{real})_{t-1}$	0.04	1.18	0.243
	$R^2 = 0.43$	$DW = 2.16$	

The regression results show that a 1 percent drop in global IP is associated with a 0.3 percentage point decline in U.S. GDP growth, which is statistically significant. The real exchange value of the dollar does not have a significant relationship with U.S. GDP growth, however, even when allowing for a lagged effect.

### D. Employment in the U.S. Industrial Sector

To evaluate the effect of foreign factors on employment growth in the United States, we ran two regressions. The first looks at the relationship between industrial employment (combined employment in the manufacturing, mining and utilities industries) with U.S. IP, global IP and the real exchange rate of the U.S. dollar.

<u>Variable</u>	<u>Coefficient</u>	<u>t-statistic</u>	<u>Prob.</u>
Constant	-0.007	-11.93	0.000
$\Delta\log(\text{usip})_t$	0.18	2.84	0.006
$\Delta\log(\text{usip})_{t-1}$	0.32	4.43	0.000
$\Delta\log(\text{globalip})_{t-1}$	0.18	2.61	0.010
$\Delta\log(\text{real})_t$	0.06	2.42	0.017
	$R^2 = 0.81$	$DW = 0.54$	

where usip = U.S. industrial production.

The results show that a 1 percent increase in U.S. industrial production is associated with a 0.5 percent increase in industrial employment by 0.5 percent over the concurrent and following period. Global IP also has a positive relationship, although the association is more modest; a 1 percent increase in global IP raises U.S. industrial employment by 0.18 percent. The effect of the dollar is smallest of all. Although it may seem a rise in the dollar would weigh on industrial sector employment, the relationship in fact appears to be positive. Periods of strong employment growth historically have led to Fed tightening, which tend to be dollar supportive, everything else equal. All variables are statistically significant.

**E. Total Employment**

Our second regression for the labor market looks at the effects of global factors on total U.S. nonfarm employment from 1999-Q2 to 2016-Q2. We regressed the log change of total American employment on U.S. GDP growth and global IP growth and generated the following results:

<u>Variable</u>	<u>Coefficient</u>	<u>t-statistic</u>	<u>Prob.</u>
Constant	-0.003	-5.28	0.000
$\Delta\log(\text{usgdp})_t$	0.19	3.42	0.001
$\Delta\log(\text{usgdp})_{t-1}$	0.16	2.39	0.020
$\Delta\log(\text{usgdp})_{t-2}$	0.13	2.06	0.049
$\Delta\log(\text{usgdp})_{t-3}$	0.15	2.74	0.008
$\Delta\log(\text{usgdp})_{t-4}$	0.11	2.01	0.049
$\Delta\log(\text{globalip})_{t-1}$	0.09	2.69	0.009

$R^2 = 0.74$

DW = 0.61

where usgdp = U.S. real GDP.

U.S. GDP growth has a significant and positive relationship with employment growth. A 1 percent rise in GDP leads a 0.7 percent rise in employment that is spread out over five quarters. Global growth, measured by global IP, also has a positive and significant relationship with U.S. employment growth, but the relationship is much weaker. A 1 percent rise in global IP is associated with just a 0.09 percent increase in total U.S. employment.

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