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What Happened to the Great Divergence?

Remarks by

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Beginning in 2014, we saw confident predictions of a coming strong divergence in monetary policy among the major economies. To date, there has been less policy divergence in reality than had been predicted. This observation raises the question of whether there may be limits on policy divergence in current circumstances. Such limits might reflect common forces buffeting economies around the world or the powerful transmission of shocks across borders through exchange rate and other financial channels that may have the effect of front-running monetary policy adjustments in the vicinity of the zero lower bound. Put differently, predictions that U.S. monetary policy would chart a notably divergent path have been tempered by powerful crosscurrents from abroad.<sup>1</sup>

### **How Different Are Underlying Conditions?**

Before turning to divergences in policy, it is useful to review briefly the extent of differences in the underlying economic conditions in the major advanced economies. While the recovery from the global financial crisis has been frustratingly slow in every major economy, there nonetheless have been important differences in the pace and extent of healing. Speaking loosely, among the advanced economies, the United States and United Kingdom appear farthest along in closing resource gaps, Japan is next in line, and the euro area has been somewhat slower to recover. In the United States, resource utilization has increased substantially over the past five years. The U.S. unemployment rate is now under 5 percent, compared with 10 percent at its recent peak. Even so, there is evidence that some labor market slack still remains.<sup>2</sup> The United Kingdom has experienced a rapid drop in unemployment to 5.1 percent, as low as pre-crisis levels, and

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<sup>1</sup> These remarks represent my own views, which do not necessarily represent those of the Federal Reserve Board or the Federal Open Market Committee.

<sup>2</sup> The employment-to-population ratio for prime-age individuals, for example, is nearly 2 percentage points below its 2004-07 average, while part-time work remains elevated and progress on wages has been slow.

labor force participation has remained relatively strong. In contrast, unemployment in the euro area was 10-1/2 percent in the fourth quarter, down just 1-3/4 percentage points from its recent peak and still well above pre-crisis levels. Accordingly, market participants have expected policy in the United States and the United Kingdom to become less accommodative, while remaining very accommodative over the medium term in the euro area.<sup>3</sup>

In Japan, expectations of monetary policy divergence have reflected Japan's long period of disappointments on its inflation target to a greater extent than its remaining resource gap. Japan's unemployment rate is 3.3 percent, already below the previous cyclical trough, and the International Monetary Fund estimates the output gap to have been the same in Japan and the United States in 2015 at 1-1/2 percent. However, with inflation in Japan previously having been near zero for an extended period and inflation expectations under pressure, the Bank of Japan's commitment to increasing inflation expectations and moving inflation up to its 2 percent target has led market participants to expect extremely accommodative monetary policy to persist for quite a while.

Currently, however, there are smaller differences among the major economies on measures of realized and expected inflation than there are on resource utilization. In 2015, the 12-month change in total personal consumption expenditures (PCE) inflation in the United States was 0.6 percent, while headline inflation in the United Kingdom, euro area, and Japan were 0.2 percent. All inflation rates are well below target. Of course, to the extent that the downward pressure on global inflation is due to falling oil prices, this pressure would be expected to abate if oil prices stabilize.

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<sup>3</sup> See p. 24 of the February 2016 *Monetary Policy Report* (Board of Governors, 2016).

But even after removing energy prices, core PCE inflation has come in consistently under the Federal Reserve's 2 percent target here in the United States and does not look very different from inflation in economies that are expected to maintain accommodative monetary policy for some time. Core PCE inflation, or inflation excluding food and energy prices, has remained stubbornly in the vicinity of 1-1/4 to 1-1/2 percent over the past three years in the United States, similar to the United Kingdom and not very different from the roughly 1 percent core inflation in the euro area and Japan.

We also see notable similarities in the recent deterioration in market measures of inflation expectations. While in the euro area, swaps-based inflation compensation has fallen about 3/4 percentage point since the middle of 2014 and is now around 1-1/2 percent at the five-year, five-year-ahead horizon, in the United States, swaps-based inflation compensation has fallen 1 full percentage point over the same period and is now at 1-3/4 percent. Japan has experienced a similar decline over this period, while the United Kingdom has seen a much more modest decline.

With realized and expected future inflation not showing large differences, the expectation of monetary policy divergence between the United States, on the one hand, and the United Kingdom and the euro area, on the other, must rest to a large extent on remaining differences in resource utilization and expectations that inflation outcomes will diverge as a result of these differences. However, it is important to note that the extent of inflation divergence generated by differences in resource utilization across countries is likely much smaller now than it has been in earlier decades. Recent research suggests a

dramatic flattening of the Phillips curve in recent decades.<sup>4</sup> If this finding continues to hold true, resource utilization would need to differ more sharply across national economies to produce a noticeable difference in inflation.

The persistence of relatively soft core PCE inflation readings in the United States, despite a substantial improvement in employment, suggests we should be cautious in relying on the historical relationship between employment gains and stronger inflation in today's economy. Moreover, the softening in market-based measures of inflation expectations and some hints of weakening in survey measures deserve our attention. This deterioration in inflation expectations and a weakened link between labor market tightening and inflation--together with the asymmetry of policy in the vicinity of the lower bound--lead me to put a high premium on evidence that actual inflation is firming sustainably.

Putting these pieces of evidence together suggests that if core inflation remains below target in all major advanced economies and inflation expectations remain under pressure in many, I might expect policy divergence to remain more limited than previously predicted.

### **Common Conditions**

To the extent that we are observing limited divergence in inflation outcomes and less divergence in realized policy paths than many anticipated, this could be attributable to common shocks or trends that cause economic conditions to be synchronized across economies. The sharp repeated declines in the price of oil have been a major common

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<sup>4</sup> In the United States, for example, Blanchard (2016) estimates that the slope of the Phillips curve has declined by more than two-thirds since the 1970s. Other recent research includes Blanchard, Cerutti, and Summers (2015) and Kiley (2015b).

factor depressing headline inflation and are also likely feeding into low core inflation, although to a lesser extent.<sup>5</sup> As noted previously, these price declines have led headline inflation across the globe to behave quite similarly over this time period. Even so, most observers expect this source of convergence in inflationary outcomes to eventually fade and thereafter not affect monetary policy paths over the medium term.

In contrast, a more persistent source of convergence may be found in an apparent decline in the neutral rate of interest. The neutral rate of interest--or the rate of interest consistent with the economy remaining at its potential rate of output and inflation remaining at target level--appears to have declined over the past 30 years in the United States and is now at historically low levels.<sup>6</sup> Similarly, longer-run interest rates appear also to have fallen across a broad group of advanced and emerging market economies, suggesting that neutral rates are at historically low levels in many countries around the world and near or below zero in the major advanced foreign economies.<sup>7</sup> Although the reasons for the declines in neutral rates are not perfectly understood and may differ across countries, there are some common drivers, such as slower productivity and labor force growth and a heightened sensitivity to risk.<sup>8</sup>

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<sup>5</sup> In five of the six quarters since mid-2014, the price of oil has decreased for a cumulative decline of 70 percent.

<sup>6</sup> See Brainard (2015b), Hamilton and others (2015), Kiley (2015a), Laubach and Williams (2015), and Johannsen and Mertens (2016).

<sup>7</sup> See Hamilton and others (2015), Del Negro and others (2015), and chapter 3 of *World Economic Outlook* (International Monetary Fund, 2014).

<sup>8</sup> While the empirical link between potential growth and the neutral rate is not precisely estimated, the evidence suggests that slower trend growth is associated with lower interest rates; see Laubach and Williams (2015) and Hamilton and others (2015). U.S. labor force growth has slowed from 1 percent from 2001 to 2004 to 1/2 percent over the most recent 4 years. Over the same periods, euro-area growth has slowed from 1.3 percent to 0.4 percent. In Japan the labor force was essentially flat from 2011 to 2015, though this was a slight improvement from a small rate of decline in the early 2000s. Productivity growth over the same periods has slowed from 3.0 percent to 0.5 percent in the United States, from 0.6 percent to 0.2 percent in the euro area, and 1.5 percent to 0.5 percent in Japan.

The very low levels of the shorter run neutral rate reflect in part headwinds from the crisis that are likely to dissipate over time. However, if many of the common forces holding down neutral rates prove persistent, then neutral rates may remain low through the medium term, implying a shallower path for policy trajectories.

The global economy is also experiencing a downshift in emerging market growth momentum led by China, which may prove somewhat persistent. Whereas earlier in the recovery there was a striking divergence between the relatively buoyant growth in major emerging economies and depressed growth in advanced economies, lately the extent of divergence has diminished noticeably.<sup>9</sup> China is undergoing a challenging set of economic transitions. Trend growth has slowed substantially and is expected to slow further, and the composition of growth is shifting away from resource-intensive manufacturing and exports toward a greater share for consumption and services. China's investment has slowed sharply recently after accounting for nearly one-third of global investment over the past three years and about one-half of global consumption in certain metals such as iron ore, aluminum, copper, and nickel. Commodity exporters and close trading partners in Asia will be most affected, but the changes in the composition and rate of growth in a country that has accounted for about one-third of the growth in world output and trade will likely ripple through the global economy much more generally.

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Regarding sensitivity to risk, the risk premium for capital investment appears to have increased since the crisis; see Del Negro and others (2015). A higher risk premium requires a lower risk-free rate to generate an equivalent level of investment.

<sup>9</sup> From the end of 2009 to the end of 2013, growth in important U.S. emerging market trading partners averaged 4.7 percent, while growth in advanced economies averaged 1.8 percent. However, in 2014 emerging country growth slowed to 3.3 percent, compared with 1.6 percent in advanced economies, and for the first three quarters of 2015, annualized growth was 2.5 percent and 1.1 percent, respectively.

## **Amplified Spillovers**

Of course, policy divergence among major economies could be limited by rapid and strong transmission of foreign shocks across borders. In particular, although the U.S. real economy has traditionally been seen as more insulated from foreign trade shocks than many smaller economies, the combination of the highly global role of the dollar and U.S. financial markets and the proximity to the zero lower bound may be amplifying spillovers from foreign financial conditions. By one rough estimate, accounting for the net effect of exchange rate appreciation and changes in equity valuations and long term yields, over the past year and a half, the United States has experienced a tightening of financial conditions that is the equivalent of an additional increase of over 75 basis points in the federal funds rate.<sup>10</sup>

The transmission of divergent economic conditions across borders typically occurs through a couple of different channels. First, a decline in demand in one country reduces its demand for imports from other countries. Second, the fall in economic activity would be expected to trigger a more accommodative monetary policy, which helps offset the effect of the shock by both supporting domestic demand and weakening the exchange rate. The weaker exchange rate in turn leads domestic consumers to switch their expenditures away from more expensive foreign imports to cheaper domestic products while increasing the competitiveness of exports. The extent to which monetary policy offsets the shock by dispersing it to trade partners as opposed to strengthening

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<sup>10</sup> These estimates are based on rough rules of thumb regarding the effects on output of changes in long-term interest rates, equity prices, the exchange rate, and the federal funds rate from the FRB/US model and assume a highly persistent change in the federal funds rate. Some private-forecaster estimates of financial tightening--expressed in terms of the federal funds rate--are larger, which may reflect an assumption of a less persistent funds rate change. An alternative estimate from the Federal Reserve Bank of New York's DSGE model, which explicitly includes a financial sector, suggests the tightening in financial conditions since mid-2015 is equivalent to an increase in the federal funds rate of roughly 100 basis points.



domestic demand depends on the responsiveness of domestic demand relative to the exchange rate. The exchange rate channel, by raising the price of imports in domestic currency, also pushes up domestic inflation and exerts downward pressure on foreign inflation.

The strength of spillovers across countries and the extent to which that affects policy divergence across countries depend on a foreign economy's openness to these different channels. The recent experience of Sweden suggests that for highly open economies, the effect of foreign shocks can be extremely powerful.<sup>11</sup> Sweden's economic growth has been relatively rapid recently, reaching nearly 4 percent over the most recent four quarters. Moreover, the employment gap is estimated to be nearly closed, and there are signs of financial excess in the housing market. In ordinary times, these conditions would be consistent with relatively tight monetary policy. However, inflation has run persistently well below the central bank's 2 percent inflation target. Given the relative openness of Sweden's economy, moving the inflation rate back up to target has been greatly complicated by the sensitivity of Sweden's exchange rate and financial conditions to developments in the euro area, where domestic economic conditions are consistent with much more accommodative policy. As a result, the Riksbank has been pursuing extremely accommodative monetary policy, most recently lowering the interest rate on deposits to minus 0.5 percent and authorizing the Governor and Deputy Governor to intervene in foreign currency markets.

Even in the much larger United States economy, with imports accounting for a little over 15 percent of gross domestic product (GDP), spillovers can be quite strong, in

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<sup>11</sup> Imports and exports each account for a little under one-half of Sweden's GDP.

part reflecting the international role of U.S. financial markets and the dollar. Since the middle of 2014, with a reassessment of demand growth in the euro area and subsequently in emerging markets and other commodity exporters, the real trade-weighted value of the dollar has increased nearly 20 percent. As a result, in 2014 and 2015, net exports subtracted a little over 1/2 percentage point from GDP growth each year, and econometric models point to a subtraction of a further 1 percentage point this year.<sup>12</sup> In addition, the dollar's appreciation is estimated to have put significant downward pressure on inflation: Non-oil import prices fell 3-1/2 percent in 2015, subtracting an estimated 1/2 percentage point from core PCE inflation.<sup>13</sup>

Financial channels can powerfully propagate negative shocks in one market by catalyzing a broader reassessment of risks and increases in risk spreads across many financial markets. Since the beginning of the year, U.S. financial markets have reacted strongly to adverse news on emerging market growth, even though the news on the U.S. labor market has remained positive. In this regard, although China's direct imports from the United States are modest, uncertainty about changes to its exchange rate system and financial imbalances, together with changes in the composition of its growth, have had broader global spillovers that may pose risks to the U.S. outlook.

Recent events suggest the transmission of foreign shocks can take place extremely quickly such that financial markets anticipate and indeed may thereby front-run the expected monetary policy reactions to these developments. It also appears that the exchange rate channel may have played a particularly important role recently in transmitting economic and financial developments across national borders. Indeed,

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<sup>12</sup> See Gruber, McCallum, and Vigfusson (2016).

<sup>13</sup> See pp. 8-9 of the February 2016 *Monetary Policy Report* (Board of Governors, 2016).

recent research suggests that financial transmission is likely to be amplified in economies with near-zero interest rates, such that anticipated monetary policy adjustments in one economy may contribute more to a shifting of demand across borders than a boost to overall demand.<sup>14</sup> This finding could explain why the sensitivity of exchange rate movements to economic news and to changes in foreign monetary policy appear to have been relatively elevated recently.

Financial tightening associated with cross-border spillovers may be limiting the extent to which U.S. policy diverges from major economies. As policy adjusts to the evolution of the data, the combination of heightened spillovers from weaker foreign economies, along with a lower neutral rate, could result in a lower policy path in the United States relative to what many had predicted.

## **Policy**

In circumstances where many economies face common negative shocks or where negative shocks in one country are quickly transmitted across borders, it is natural to consider whether coordination can improve outcomes. Under certain conditions--such as flexible exchange rates, deep and well-regulated financial markets, and flexible product and labor markets--policies designed for the domestic economy can readily offset any spillovers from economic conditions abroad, and policies designed to address domestic conditions can achieve desirable outcomes both within the national economy and more broadly.<sup>15</sup>

In some circumstances, however, cooperation can be quite helpful. If, for example, economies face a common challenge, coordination can communicate to markets

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<sup>14</sup> See Caballero, Farhi, and Gourinchas (2015).

<sup>15</sup> See Brainard (2015a).

that policymakers recognize the challenge and will work to address it. Reducing uncertainty about the direction of policy and addressing concerns about policies working at cross-purposes can boost the confidence of businesses and households. With intensified transmission effects in the vicinity of the zero lower bound, there is a risk that uncoordinated policy on its own could have the effect of shifting demand across borders rather than addressing the underlying weakness in global demand. The difficult start to the year should be a prompt for greater policy coherence and clarity. This might be a good time for policymakers to reaffirm their commitment to work toward the common goal of strengthening global demand.

Similarly, with anemic global demand and interest rates near zero, in some economies there is scope for monetary policy to be more effective with fiscal policy working in the same direction. With potential growth and nominal borrowing rates both low, public investment that increases potential in the longer run and demand in the shorter run could make an important contribution. A joint determination by policymakers across major economies to better deploy policy tools to provide support for global demand could be beneficial.

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