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REALITY CHECK FOR THE GLOBAL ECONOMY

EDITED BY OLIVIER BLANCHARD AND ADAM S. POSEN

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PREFACE

After five years of disappointing recovery throughout the major economies, almost everyone is ready to believe the worst. Global markets have displayed the fruits of that pessimism in recent months. Many of our Peterson Institute fellows have found their assessments of economic prospects in their various areas of expertise—Europe and Latin America, the United States and China, monetary policy, oil, and global trade—simultaneously leapfrogged significantly to the downside by a majority of investors and commentators. Some of these leaps have gone significantly outside of where we believe justifiable differences of opinion lie, in contravention of basic economic facts.

Since this set of misinterpretations and even denials of reality are in danger of creating their own facts on the ground through financial panic, a group of us came together to provide a reality check for the global economy. We wish to set out briefly what is known, both about macroeconomic dynamics and policy capabilities, in a context where distrust of both mainstream economic analysis and policymakers' credibility has become excessive. In particular, we argue:

- The relative forecasting ability of financial markets for the real economy has probably gone down postcrisis (Adam S. Posen).
- The US economy remains at a relatively low, though slightly elevated, risk of recession (David Stockton).
- The positive effects of the decline in the price of oil on the US economy have taken longer to materialize than was expected, but they will strengthen looking forward (Olivier Blanchard and Julien Acalin).
- Chinese economic growth is, at a minimum, well above current fear-driven estimates, and that growth is predominantly service sector–based and therefore sustainable (Nicholas Lardy).
- The slowdown in growth of global trade reflects weak global investment and a medium-term adjustment to the past creation of global supply chains and is not a harbinger of further contraction (Caroline Freund).
- The European banking system is in transition to a stronger state, and the problems evident in Italy are not enough to throw Europe's economy off course (Nicolas Véron).
- Brazil's economy while dysfunctional is far more likely to experience years of higher inflation than any overt fiscal or balance of payments crisis (Monica de Bolle).
- Latin America more generally has run into problems of slow productivity growth but is not doomed by the commodity cycle (José De Gregorio).

- Monetary policy remains potent, with multiple possible avenues for additional stimulus if needed, starting with effective quantitative easing on private assets (Joseph Gagnon).

We will not get every forecast right, nor do we agree on all specifics; in fact, each fellow remains solely responsible for the views in his or her own essay that follows. And we certainly are not telling investors which financial assets to buy or sell. But we share a conviction that public discussion of the global economic outlook has run off the rails of late, and it is our responsibility to promote public understanding of what is a reality-based assessment and why. Global economic fundamentals today are not so grim, though there is room for improvement, and policymakers and the public should base their decisions on fundamentals, not market swings.

Adam S. Posen
Olivier Blanchard
March 2016

CHAPTER 1

WHY WE NEED A REALITY CHECK

ADAM S. POSEN

The widespread large declines in global asset prices indicate a significant divergence between what financial markets fear and what most mainstream macroeconomic forecasts are showing for the world economy. That exaggerated pessimism holds, even taking recent downgrades to official forecasts into account. It is hardly unusual for financial markets, particularly those dealing in currencies and equities, to trend well away from economic fundamentals. After all, such excesses in the other direction were a major part of what built up bubbles and led to subsequent crashes in the EU and US crises. The current divergence in views is worthy of deeper scrutiny, however, since it is driven in substantial part by distrust of the credibility and capability of economic policy to respond to bad economic news. Even during the uncertainties of the 2008–10 financial crisis, markets, academics, and officials largely agreed on the broad contours of the economic outlook, first sharply down, then recovering. Troublingly, the current large divergence seems to be feeding a self-fulfilling panic: If recent market selloffs create their own reality, ignoring both the strengths of major economies and the potential policy options to support growth, the result could be a needless, preventable recession. The immediate costs of such a self-inflicted wound would be devastating for those just recently reemployed and the many still under- and unemployed, corrosive of confidence in policymakers' ability to stabilize economies, and could further feed the ugly illiberal politics that has emerged in Europe and the United States. Thus, the world economy needs a reality check from financial panic.

Of course, such an effort could be effective only if it is in fact based on reality. The idea that greater confidence would be useful does not necessarily mean it is justified. Certainly, increased distrust of economic forecasts from the official sector, and of reassurances from mainstream macroeconomists, is understandable. The economics profession, the central banks, and bank supervisors alike missed the signs of trouble coming in 2008 (e.g., characterizing subprime mortgages in the United States or sovereign debt in Greece as too small to worry about) and repeatedly forecast a return to precrisis growth and inflation that has yet to come true. These failures have raised questions in some quarters about the ability—whether technical or political—of fiscal and monetary policymakers to deliver on their promises. Investors and traders keep looking for new information, assuming most of it to be bad, that has been obscured, intentionally hidden, or simply overlooked by more sanguine economists.

There is equally good reason to be just as distrustful of some parts of market wisdom as of official sector pronouncements or independent analyses. For all the contemporary skepticism about mainstream macroeconomics and reassurances from official sources, let us remember that some basic economic truths they (includ-

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ing many of us) professed proved far more realistic and relevant than some prominent investment predictions of recent years: Inflationary pressures did not emerge rapidly from quantitative easing and monetary stimulus; fiscal contractions and expansions worked in the real world as predicted with large multipliers in a recession; oil and commodity price declines did raise real incomes and consumption; bank recapitalization and bad loan recognition did cut back on credit availability but also reduced adverse selection in favor of more creditworthy borrowers; and, ultimately, growth and employment did bounce back in capitalist economies so long as macroeconomic policies were supportive rather than harmful. Many in the financial markets placed bets since 2008 against these realities coming to pass—by buying gold or shorting government bonds or gambling on large currency swings—and lost a lot of money doing so.

So while the absolute forecasting accuracy of mainstream economics may have declined as the Great Moderation of the 1990s and early 2000s gave way to today's more volatile world, there is little reason to think the relative forecasting advantage has shifted in favor of financial markets. There are some reasons to believe that market signals may even be less dependable now as forward indicators of the business cycle than they were before the crisis. If one were to believe, as many do, that monetary and regulatory interventions have significantly distorted (rather than stabilized) important asset prices, then one should also believe that the decline in those asset prices has a lower signal to noise ratio about underlying economic forces.[1] In fact, if one believes QE excessively pumped up American stock market valuations and squeezed emerging-market bond spreads, one must also view a correction in those "inflated" valuations as stabilizing after a short transition. (Losses incurred by investors from overreliance on government puts in that transition should be salutary lessons for the future.) Yield movements in a time of widely elevated risk aversion do not necessarily mean the same thing or speak with the same clarity as they did in a period of lower risk aversion.

At present, for example, interest rate spreads between highly rated and high-yield corporate bonds have risen to around 300 basis points in the United States, a level that has sometimes in the past indicated a potential recession. Even as one of the best financial indicators of the business cycle precrisis, however, the bond quality spread warned of twice as many recessions as actually occurred. Now in a world where regulation, scarcity, and risk aversion combine to drive down the yields on the higher-rated bonds without regard for the business cycle, its tendency to give false signals of recession has likely gone up. Other much cited data are the subject of even more dubious misinterpretation, such as denying the directly observed data (not government fabricated) on solid growth of the services sector and consumption in China; failing to benchmark the efficacy and channels of QE versus precrisis monetary policy (they show the same dependability when subject to the same types of statistical analyses); or simply overstating the banking system risks in Southern Europe or the risk of fiscal default in Brazil.

A more realistic view of our economic problems is one where a repeat of crisis on a global scale is not imminent. The world is indeed beset by economic challenges, notably many of a structural nature, involving climate change, demographics and fiscal sustainability, and, perhaps most pressing, a slowdown in productivity growth. Substantial uncertainties have also emerged in the political realm, ranging from instability in the Middle East, to the impact of migration on the European Union, to the electoral viability of populist demagogues in the United States. Combined with the wake-up call from the financial crisis that almost all asset classes and the overall business cycle are more volatile than assumed in the precrisis boom years, there is a strong case for

1. This is not to say that QE and thus policy uncertainty could not be a significant determinant of, say, temporary swings in equity valuations. It could be rational for traders to focus on that for their short-term portfolios. But that is just another way of saying that investors and households who care about the real economy should not take the current financial market gyrations as necessarily indicative of anything serious—and that policymakers should focus on the underlying economic forces and try to limit the confidence spillovers from such panicked speculation.

taking a lower trend rate of growth and thus risk-adjusted returns going forward. But even this last point is not new information revealed to investors in recent weeks or months. It has already been evident for some time.

Greater confidence in the world economy's resilience and near-term prospects is justified. Market fears about the ability of policy to stabilize growth and promote inflation, if understandable, are exaggerated or in some cases unfounded. All the more reason then not to allow ourselves to be distracted by a financial market tail wagging the macroeconomic dog. At a fundamental level, most of the major economies, starting with China and the United States, are growing more sustainably now than a decade ago, at their slower rates. That growth is not built on rising private or public leverage, with the notable exception of China—and even in China some restructuring is under way with ample savings to cushion the process. Even where the situation is not so rosy, many in the markets seem to be confusing strains and suboptimal situations with acute instability, not just for Italian banks and for Brazilian budgets but also for Latin America more generally or for trends in global trade. A more normal muddling through with poor but stable conditions is a far better bet. And where some in the markets moving prices fear that normal economic laws have been reversed—that monetary policy is ineffective or that low oil prices are on net harmful—they are likely to be proven clearly wrong, as they were previously on inflation and commodity prices. Having some clarity to distinguish between the more solid underlying economic outlook and the shadows thrown by financial puppetry is critical to making the right policy decisions to avoid an unnecessary recession.

A combination of public policies and decentralized private-sector responses to the crisis have increased our economic resilience, diminished the systemic spillovers between economies, and even created some room for additional stimulus if needed. Large parts of the global financial system are better capitalized, monitored, and frankly more risk averse than they were a decade ago, with less leverage. The riskier parts of today's global economy are less directly linked to the center's growth and financing than when the troubles were within the United States and most of Europe in 2008. Trade imbalances of many key economies are smaller, though growing, and thus accumulations of foreign debt vulnerabilities are also smaller than a decade ago. Most central banks are now so committed to stabilization that they are attacked for being too loose or supportive of markets, making them at least unlikely to repeat some policy errors from 2007–10 of delaying loosening or even excessive tightening. Finally, corporate and household balance sheets are far more solid in the US and some other major economies than they were a decade ago (though not universally), and even in China the perceptions of balance sheet weakness exceed the reality in scope and scale.

One policy vulnerability should concern us: the continued resistance of governments with both the space and arguable need to expand fiscal policy—most notably Germany—to doing so, as displayed in the just completed G-20 meeting. Thankfully, China seems to be waking up to the advantages of pursuing further stimulus through direct fiscal means. There are many familiar but still sound arguments for why fiscal stimulus should be preferred to excessive (or sole) reliance on monetary policy for stabilization, and for why governments can and should pursue public investment in today's environment of low interest rates and low private investment. No one in markets, however, should be confusing remaining fiscal reluctance in the United Kingdom or Germany with an inability to address a downturn with largely fiscal means or a hard constraint on so doing if matters worsen.

In short, the global economy on the whole remains much healthier and more resilient than today's financial panic assumes. The interaction of these risks is more limited than in 2008, and more like normal times when many unfortunate things happen but do not necessarily snowball into a systemic problem. Our reality check is an argument against focusing on financial market fears, against taking them seriously as forecasts either for planning or in the public debate, let alone having speculative asset prices drive policy decisions. It is not an argument per se against further macroeconomic stimulus, whether fiscal or monetary and whether in China, the United States, or the euro area (or even all of them at once). If anything, a realistic assessment of

the global economy's threats and strengths is an argument that such policy measures would be more effective in dealing with the limited problems and more feasible to undertake than some defeatists now claim. Market suspicions left unchallenged can make it even more difficult to pursue constructive measures, by leading to perverse reactions (as seen in the drop in inflation expectations and rise in the yen in response to the Bank of Japan's latest stimulus attempt). Such counterproductive responses to policy are not inevitable, and fear of misinterpretation or backlash should not be allowed to prevent monetary and fiscal authorities from doing the right thing.

CHAPTER 2

THE US ECONOMIC EXPANSION REMAINS ON TRACK

DAVID J. STOCKTON

Economic and financial developments at home and abroad have raised anxiety about the durability of the US economic expansion. The reasons are not difficult to understand. Concerns have intensified about slower growth in China, and other commodity-exporting countries have been hit badly by the accompanying fall in commodity prices. The plunge in crude oil prices has hurt oil producers and dampened investment in drilling activity in the United States. Energy-related enterprises, in turn, are under increasing financial pressure, raising questions about the financial soundness of banks and others who have lent them money. As a result, the US equity market, which softened in the second half of 2015, has declined by as much as 10 percent this year. Amid reduced appetite for risk among investors, credit spreads on lower-rated bonds have increased. Adding to general market anxiety, the Federal Reserve began the "normalization" of monetary policy late last year, raising the specter of higher interest rates down the road.

These recent developments make it possible, but not likely, that a much bleaker outlook for the US economy is in the offing. To be sure, if the recent tightening of financial conditions persists, a modest drag on aggregate demand and activity will occur, necessitating a more pessimistic economic forecast. But most of the evidence suggests the US economy's expansion remains on track and that recent pessimism in the markets and among the public may be overdone.

Perhaps the clearest signal that the expansion is proceeding at a healthy clip comes from the labor market. Gains in nonfarm payroll employment have averaged over 230,000 per month over the past three months and 215,000 per month over the past six months. Only about 100,000 per month are needed to stabilize the unemployment rate. By that standard, the recent pace of hiring has been solid, contributing to the fall in the unemployment rate from 5.3 percent six months ago to 4.9 percent in January—extending the long decline that began in late 2009. In addition, job openings as a share of employment now exceed prerecession levels, and rising quit rates suggest that workers are feeling increasingly comfortable leaving a job to pursue employment elsewhere. Initial claims for unemployment insurance show the four-week moving average of initial claims was 272,000 in mid-February—not far from recent lows but well below the 340,000 average level in the first few months of the last cyclical downturn and very far from the 695,000 weekly claims in the depths of the recession.

In another encouraging development, the household sector has remained strong this year after some softness late last year, with retail sales rebounding sharply, contributing to an anticipated increase in real consumer spending of 2½ to 3 percent in the first quarter. Likewise, the University of Michigan measure of consumer sentiment, at around 90, remains healthy. The 4- or 5-point decline in recent months has caused some concern, but that dropoff looks paltry compared with the 20- to 30-point declines often observed as the economy enters

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recession. Sales of new motor vehicles have been running around 17½ million units in recent months, a high level reinforcing a picture of positive consumer confidence.

Housing starts have been flat in recent months after a long steady uptrend—a pause in demand that may be related to the latest heightened financial volatility. But this sluggishness could also reflect statistical noise combined with supply constraints in the construction industry. Looking ahead, lower mortgage rates resulting from the recent decline in Treasury rates should boost demand. House prices have increased 5 to 6 percent over the past year, suggesting persistent strength in the demand for housing. And with household formations up sharply over the past year, prospects for continued recovery in housing remain good.

Elsewhere in the economy, developments remain relatively benign. Business investment is running behind the rest of the economy, as it has through much of the current expansion. New orders for capital goods have, on net, been lackluster. But order books do not raise an immediate concern about investment. Finally, fiscal policy is likely to be a small plus for activity in 2016 at the federal, state, and local levels.

For all these favorable developments, it pays to look for signs of emerging imbalances that could make the economy vulnerable to recessionary shocks. At various times in the past, those imbalances have been evident in financial markets, the real economy, or inflation pressures. At present, with a few notable exceptions, serious financial or economic imbalances are not readily apparent.

Judging valuations in financial markets is notoriously fraught with the potential for error, but few glaring signs of major price misalignments are evident. Indeed, fears of accumulating froth in financial markets last year should have abated this year given recent developments. In equity markets, price-earnings ratios look a little high relative to historical norms, even after the recent retreat in the valuations. But as my colleagues Olivier Blanchard and Joseph Gagnon have argued in a recent PIIE blog, when judged against the returns available on alternative assets, the so-called equity premium looks higher today than in 2005—a time of few concerns about equity valuations. Indeed, taken at face value, their results point to some potential undervaluation, not overvaluation, of equity prices.

Sharply widened credit spreads among noninvestment grade securities are perhaps more troubling. In the past, wider spreads have signaled economic weakness, so the recent jump should not be written off. Still, stresses in the energy sector rather than broad-based economic weakness, may help to explain this development. And despite the wider spreads, the yields on bonds rated Baa have moved down (though by much less than those for Treasury bonds), indicating that firms accessing these markets have not faced increased financing costs.

In the household sector, balance sheets and financial conditions are dramatically better than they were before the financial crisis. Household debt relative to income has fallen more than 20 percentage points over the past eight years, and fixed monthly financial obligations absorb just 15 percent of household disposable income—levels last seen in the early 1980s. On the asset side, the net worth of households relative to disposable income remains high, despite some recent drop back.

Clear signs of emerging imbalances in the real economy are also difficult to detect at present. There are no apparent overhangs in capital spending by the household or business sectors. Likewise, despite their recovery, housing starts have been averaging 1.1 million units per month, well below the 1.5 million to 1.6 million units most analysts consider necessary to meet normal demographic demands. So overbuilding in the housing sector is not a problem. Even with the rise in sales of motor vehicles to more than 17 million units annually, the average age of the motor vehicle stock remains historically elevated. Business investment has been so soft that the capital stock has barely increased in recent years—so an overhang of business capital is not a major concern at this point.

Yet there are forces of restraint on the US economy that bear careful monitoring. Most notably, the foreign exchange value of the dollar has risen sharply since mid-2014, dampening exports and shifting domestic

demand to foreign producers. In fact, real net exports subtracted nearly half a percentage point from growth in the second half of 2015, offsetting gains in domestic demand. The stronger dollar combined with subdued foreign activity should continue to restrain the growth of inflation-adjusted GDP by a similar amount over the next couple of years. Accordingly, US domestic demand must expand to offset the shift of US and foreign demand toward foreign producers.

This weaker foreign activity, combined with the stronger dollar, is weighing on US manufacturers. Softer demand has led to a backing up of inventories, helping to slow manufacturing industrial production to 1 percent growth last year, compared with the 3½ percent pace in 2014. Inventory investment dropped in the second half of 2015, subtracting another ½ percentage point from real GDP growth. And elevated inventory-sales ratios are likely to further restrain activity early this year. Thus far, the inventory correction process has proceeded relatively smoothly, with only modest cuts in production and little employment weakness for the manufacturing sector, but these developments warrant close watching.

Emerging inflation pressures have, at times in the past, led the Federal Reserve to tighten monetary policy by enough to trigger a downturn in the economy. Nascent signs of firming in wage and price inflation have emerged, but that trend should be welcome in light of the Fed consistently undershooting its inflation target in recent years. Nevertheless, a rapid reacceleration of inflation, which would force the Fed to put the real economy at risk to contain inflation, appears unlikely. The signs of wage pressure are very recent and faint. Some acceleration of wages would likely erode high profit shares rather than leading to higher prices. Furthermore, import and commodity prices have been falling, easing cost pressures. Moreover, inflation expectations have, at best, been stable and may have moved lower of late. Consequently, the Fed is likely to increase interest rates gradually rather than be forced to readjust aggressively and at considerable risk.

Recession risk is always with us. The average risk of recession over the next twelve months generally is in the vicinity of 15 percent. But given the darker financial and economic picture noted earlier, and the downside risks in the global economy, the risk of recession in the next year is probably closer to 25 percent—far from the most likely outcome, though not a remote possibility.

Moreover, the tightening of financial conditions—even if not fully warranted by economic fundamentals—could feed back on itself, intensifying restraint on the real economy. But an upside alternative cannot be ruled out either. If market participants have overreacted in the past month or so, and downside risks abate, some of the recent tightening could ease, boosting output and inflation, providing space for the Fed to continue comfortably along the path of policy normalization.

CHAPTER 3

LOWER OIL PRICES ARE GOOD FOR THE UNITED STATES

OLIVIER BLANCHARD AND JULIEN ACALIN

For the past few months, there has been a striking positive correlation between oil and stock prices. Since December 1, 2015, lower oil prices have typically come with lower stock prices, and higher oil prices with higher stock prices (figure 3.1).[1] The correlation between the two has been around 0.4, with both prices moving in the same direction 39 out of 56 days.[2, 3]

Such a positive correlation is not necessarily puzzling. To the extent that movements in the oil price reflect shifts in the demand for oil triggered by movements in world activity, it makes sense for a positive correlation to emerge. Bad news on output should lead to both lower oil prices *and* lower stock prices. Good news on output should produce the opposite. Under this interpretation, the oil price is just the messenger, reflecting rather than triggering the slowdown in growth. Another logical possibility is that a common factor—for example, movements in risk appetite—drives both prices. Again, in this case, lower stock and oil prices would reflect lower risk appetite.

More is at work, however. Even on days when the major news has clearly come from the supply side—for example, from lack of an agreement on reducing production at OPEC, or from Russia and Saudi Arabia agreeing to keep pumping oil—stock and oil prices have moved together.[4] This outcome is more puzzling and suggests market participants believe the decline in the price of oil is bad news for US growth. We argue that they are wrong.

Standard wisdom and a lot of previous empirical evidence suggest that for net oil importers cheaper oil increases real income and consumption, increases profits and investment, and lowers production costs. (Despite the sharp increase in shale oil production, the United States still imports about 30 percent of its consumption of petroleum.) Empirical evidence from the two large price increases in the 1970s shows that they were extremely costly, leading to both higher inflation and lower output. Evidence from the precrisis increases of the 2000s

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1. We chose December 2015 as the starting date for two reasons. The decision of the Organization of the Petroleum Exporting Countries (OPEC) not to cut supply came on December 4. Since then, oil prices have been at the center of daily commentary about stock market movements.

2. For more on the co-movements, and their interpretation, see recent blog by Ben Bernanke.

3. One might worry that this relation reflects the movement of energy-related stocks, as the energy sector is overweight in the index (6 percent) relative to the economy. The scatterplot and the regression coefficient are, however, nearly exactly the same when using the S&P index ex-energy.

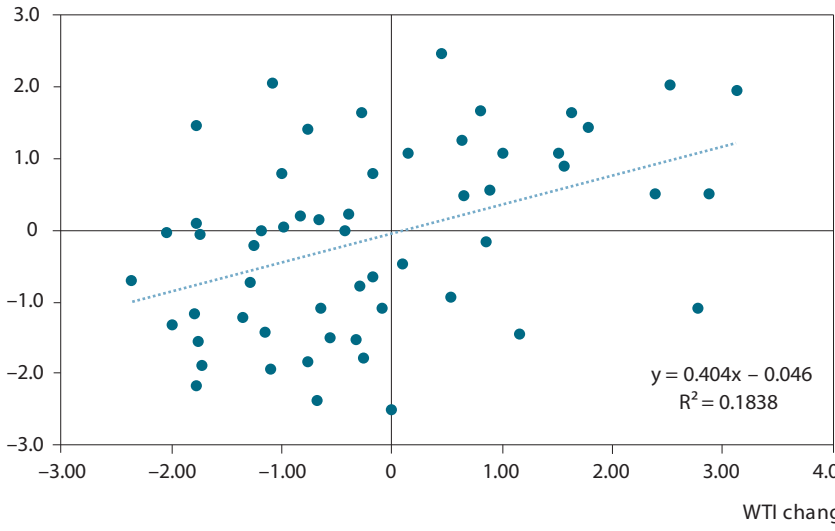
4. See, for example, the movements in the price of oil on December 4, when OPEC announced they would not cut supply, or February 23, 2016, when Saudi Arabia made a similar announcement.

shows lower but still significant costs, both in terms of inflation and output.[5]

Theory can go wrong, and econometric evidence from past episodes may not be dispositive. The effects of increases and decreases in oil prices may not be symmetric. They may be nonlinear: The effects of a decrease from $100 a barrel to $60 may differ from those of a decrease from $60 to $30. So it is important to revisit the recent evidence and look at the numbers.

The price of oil started decreasing in mid-2014, from roughly $100 a barrel, reaching $35 at the end of 2015 (the last period for which we have national income data), so let us focus on the period from the second quarter of 2014 to the fourth quarter of 2015.

Figure 3.1 Correlation between changes in oil and stock prices



Note: The figure plots the daily changes in US stock prices, measured by the S&P 500 index, versus the price of oil, measured by the West Texas Intermediate (WTI).

Source: Authors' calculations.

In the short run, a decrease in the price of oil raises real income, increases profits outside the energy sector, and decreases costs of production. So let us look at each of the effects in turn.

Real Income and Consumption. The real income gain for the United States as a whole is equal to the volume of oil imports multiplied by the decrease in the price of oil. Given an import volume of 5 million barrels a day, a decrease in the oil price of $70 a barrel yields a real income gain of 0.75 percent of GDP. Not all of this gain has gone directly to consumers, but this is a reasonable number to start from.[6] For the effects of consumption, we can rely on a very good study by the JPMorgan Chase Institute, which covers five million customers and looks at the effects of the decrease in the price of gas on consumption as a function of how much these customers typically spent on gas. The study concludes that, for every dollar they saved on gas, people spent about 80 cents on other forms of consumption. This implies an increase of consumption of 0.6 percent over the period, or 0.4 percent at an annual rate.

Profit and Investment. Given the fast growth of shale oil production and alternative technologies, one must obviously distinguish between investment in the energy-producing sector and investment in the energy-consuming sector.

5. See, for example, Blanchard and Riggi (2009).

6. An often used alternative is to look at the direct effect of lower oil prices on the real income of consumers. For the six quarters considered, the average ratio of consumer spending on energy and gas to GDP was 2.1 percent. The decline in the price of the energy component of the consumer price index was 34 percent, thus leading to an increase in real income of consumers of 0.73 percent. Despite the fact that this figure is close to that in the text, this is, however, a potentially misleading computation. It does not take into account incomplete pass-through of lower oil prices to consumers: some of the additional profits resulting from incomplete pass-through eventually go to some households in the form of higher dividends and wages. It does not take into account that oil is largely produced domestically, so the decrease in the price is, in part, a transfer from oil producers (and eventually, some consumers) to consumers.

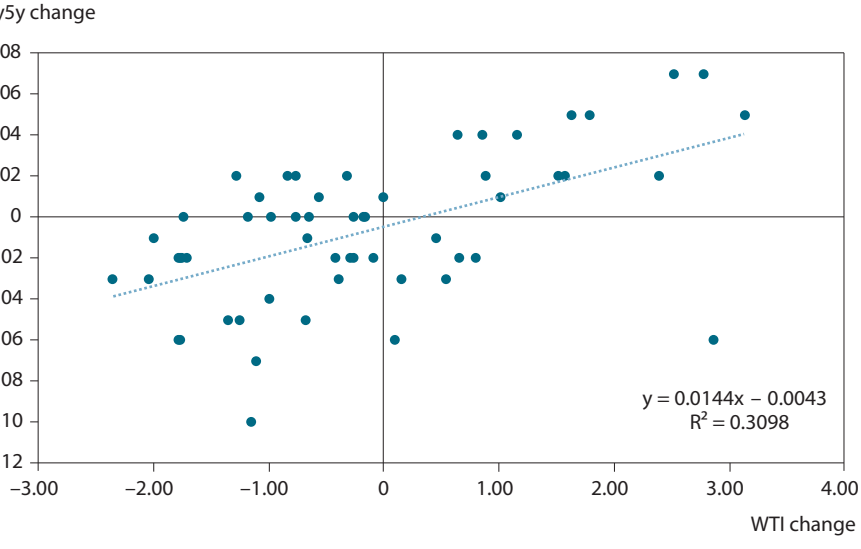
The adverse effects of lower oil prices on energy-related investment have been dramatic and highly visible. Investment in structures in the energy sector, which accounted for 25 percent of nonresidential structures investment in 2014, has halved, from $136 billion in 2014Q2 to $67 billion in 2015Q4, a decrease of 0.4 percent of GDP, or 0.27 percent at an annual rate. To this drop, one would have to add the decrease in energy sector equipment investment, but this number is small, and annual data so far show a limited decline.

The effect on investment in the rest of the economy is so far unclear. In contrast to the energy- producing sector, where adjustment is often a question of survival, firms in the energy-using sector are likely to react more slowly to the decrease in costs and resulting increase in profits. The effect on investment was likely positive, but we know of no solid number on the size of the effect.

Oil Prices and Inflation. Lower gasoline prices directly affect the consumer price index (CPI). Where energy is an input in production, lower production costs decrease other prices as well. These so-called first-round effects are nearly mechanical and are very visible in the data. CPI inflation, excluding energy (which accounts for 9 percent of US consumption), is running at 1.9 percent (year on year). Actual, "headline," inflation is running at 0.4 percent, thus 1.5 percent lower.

One major issue is whether these first-round effects are likely to be followed by further rounds. Lower prices may reduce wage growth, decreasing prices further.[7] Based on recent evidence on low pass-through, one would expect these further effects to die down quickly. But, here, there is a worrisome fact: As shown in figure 3.2, since December 2015, daily changes in the price of oil have been strongly correlated with long-run inflation expectations, measured by the 5-year, 5-year forward inflation rate. While one would expect that long-run inflation forecasts would be largely insensitive to changes in the oil price today, a 1 percent decrease in the oil price is associated with a 1.4 basis points decrease in long-run inflation.[8]

igure 3.2 Correlation between changes in oil prices and in long-run inflation expectations



ote: The figure plots long-run inflation expectations, measured by the 5-year, 5-year forward inflation rate, rsus the price of oil, measured by the West Texas Intermediate (WTI).
urce: Authors' calculations.

In normal times, this decrease in current and expected inflation would be good news, allowing for a more relaxed monetary stance. But in the liquidity trap prevailing until recently, the decrease raises current and expected future real interest rates one-for-one. A rule of thumb, which may not be quite right in

7. The price increases of the 1970s led to very large second-round effects, as expectations of inflation were poorly anchored, and rapidly increased with current inflation. The current environment is very different.

8. On the other hand, and this is more reassuring, median projections for the inflation rate over the next 10 years from the Survey of Professional Forecasters have been much less affected.

the current environment, is that a 1 percent increase in the real rate decreases demand and output by 0.5 to 1 percent within the year—a substantial adverse effect.

Oil Prices and Financial Stability. With the housing bubble and the crisis in mind, some worry that the low oil price will affect the financial system and lead to a much worse outcome. Many energy firms are indeed in trouble. The ratio of debt service to cash flow for onshore oil producers increased from 55 percent in 2014Q2 to 85 percent in 2015Q2 (the most recent available observation). Over the same period, the spread on high-yield energy bonds relative to AAA bonds increased from 300 to 1,600 basis points. The energy sector, however, is small: Mining accounts for only 1.6 percent of US GDP. The combined long-term debt of US energy firms was $139 billion in 2014 (in contrast to a multitrillion dollar mortgage market, at the core of the financial crisis). And most of this debt is held by mutual funds, domestic and foreign, rather than by leveraged institutions such as banks. The debt held by large banks is small and largely provisioned. In short, the US financial system seems more than able to handle defaults, if and when they come.

Are there other effects one should think about? Clearly, just like energy companies, oil-producing countries—Nigeria, Venezuela, and Russia, for example—are going through very difficult adjustments. Some sovereigns, and some of their banks, may be forced to default on their debt. Again, these problems seem unlikely to have systemic effects. Oil prices may also increase geopolitical uncertainty in the Middle East and elsewhere. It is difficult to think of the economic effects this may have on the United States.[9]

Where does this leave us? If we take the effects one has some qualitative handle on, one must conclude that what one of us had thought a year ago would be a "shot in the arm" turned out not to be so in the short run. In the short run, the adverse effects on energy-related investment, and the higher real interest rates, may well have dominated the positive real income effects on consumption. Looking ahead, however, the real income gains will remain, the impact on overall investment will become more strongly positive, and the effects on inflation will disappear, leading to lower real interest rates. Therefore, there is no reason to think low oil prices are bad for the United States, and good reasons to think that markets are too short-sighted, focusing on the short-run effects rather than on the medium-run implications. One remaining worry, however, is the effect of current low inflation on long-term inflation expectations, and in turn on real interest rates. If this drag continues, it could make the Federal Reserve's job a lot more difficult.

9. An interesting, but tentative, twist: As oil producers adjust partly by reducing spending and partly by reducing their net foreign asset positions, it may be that some of them, for example, through their sovereign wealth funds, are selling financial assets such as US or European stocks. These noninformational trades may be one of the factors behind the positive correlation between oil prices and stock prices documented at the start of the note.

CHAPTER 4

REALITY CHECK ON CHINA

NICHOLAS R. LARDY

Fears of a hard landing in China and the prospect that the Chinese government might allow markets to force down its currency by 20 percent or more are widely cited as a cause of global market volatility and a deteriorating global economic outlook in 2016. An even bleaker view is advanced by a growing minority that rejects the official 6.9 percent growth rate for last year, arguing that China's growth has already collapsed to the low single digits. But these pessimistic narratives focus excessively on China's industrial sector, where growth has been moderating for six years. Little noticed is the fact that services have become the major driver of China's economic growth and now account for over half of GDP. The ultra-bearish view is not consistent with the strong growth of wages, household disposable income, airline and rail passenger traffic, household outlays on entertainment, and other indicators of strong service sector growth.

A number of factors suggest that services such as wholesale and retail trade, restaurants and hotels, health, education, leasing and business services, finance, and information transmission, software, and information technology will continue to drive China's economic growth. Start with demographics. Wages have been rapidly rising in China for some time, so much so that household disposable income for several years has risen faster than GDP. Now that the working age population is actually shrinking, this trend is likely to strengthen, bolstering the growth of private consumption expenditures. Second, the World Bank now classifies China as an upper-middle-income country, a stage of development when the services share of private consumption expenditure rises inexorably while the goods share of consumption expenditure falls. The combination of these two factors will drive demand for services. A third factor will reinforce this trend: a gradual decline in China's sky high household saving rate. The Chinese government has made substantial progress in building out the social safety net over the last decade. With 95 percent of the population covered by some form of health insurance and a rapidly rising share eligible for pensions, the precautionary demand for saving is waning, bringing down the household saving rate.

A fourth important factor likely to continue driving the growth of services production is the exchange rate. For much of the 2000s the undervaluation of the renminbi constituted a subsidy for China's exports, which are overwhelmingly industrial goods, and an implicit tax on services, which are mostly nontradable. Undervaluation thus increased the profits in industrial production at the expense of services, tilting investment into industry and away from services. This began to change in 2005, when the exchange rate became more flexible. Appreciation of the currency has picked up in more recent years, as acknowledged by the International Monetary Fund (IMF) and even the US Treasury. The Fund in mid-2015 went so far as to say that "the substantial appreciation of the RMB in real effective terms this year has brought the exchange rate to a level that is no

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longer undervalued." This observation is confirmed strikingly in the allocation of investment in China. The service share of investment fell for most of the 2000s but in 2015 recorded its third consecutive annual rise, accounting for almost six-tenths of investment.

Finally, services production is more labor intensive than industrial production, so the rising share of services in GDP leads to stronger growth of urban employment than in the earlier pattern of development. This growth then feeds back into the labor market, contributing to the further growth of household income.

Each of these factors driving the growth of China's service sector, with the possible exception of a strengthening social safety net, is structural. Their influence will persist, independent of the skill of China's economic policymakers. And the authorities are hardly likely to dial back their decade-long policy of building a stronger safety net, which is not only politically popular but also has contributed importantly to the leadership's goal of generating growth more through domestic consumption demand than through investment.

The moderation in industrial growth over the last five years largely reflects a slowing in investment in property. Growth of property investment declined from 33 percent in 2010 to 1 percent last year, dragging down the growth of demand for steel, cement, and other building materials. Indeed, an absolute decline in production of crude steel and cement last year is the foundation of the analysis of the ultra-bears. The declining demand for construction materials has slowed overall industrial growth from 13 percent in 2010 to only 6 percent last year. But property sales picked up noticeably in 2015, reversing the decline recorded in 2014. However, given the still large overhang of unsold inventory, especially in third and fourth tier cities, property investment is likely to shrink in absolute terms this year, slowing industrial growth further. But for the reasons outlined above, service sector growth is likely to hold up relatively well and limit the deceleration of GDP growth this year to less than a percentage point. Growth this year should be at least 5.9 percent. Looking further ahead, if sales continue to recover this year, property investment is likely to bottom out or even recover slightly in 2017, ending that source of the drag on China's growth.

It is easy to exaggerate the adverse impact of China's slowing growth on the global economy via declining commodity prices. The collapse of global commodity prices, which clearly has had a negative impact on most commodity-exporting countries, in some cases is largely caused by expanding supply of materials rather than falling Chinese demand. The importance of increased supply in driving down prices is particularly obvious in the case of crude oil. Chinese imports of crude oil rose by 9 percent in both 2014 and 2015, actually ahead of the pace of growth of imports in 2011–13. China is a much larger factor in the global market for iron ore. But last year China's iron ore imports actually expanded by 2 percent. Yes, that was a deceleration from the average growth of 8 percent over the previous five years, but record levels of global iron ore production probably contributed more to the sharp decline in the price of iron ore in 2015 than the modest deceleration in Chinese import demand.

Finally, the bears wonder whether China's leadership is up to the complex task of guiding the Chinese economy away from its reliance on excessive credit expansion and super elevated levels of investment to more sustainable and balanced growth that must rely on an even greater role for the market. This narrative often characterizes economic decision making over the last three or more decades as close to flawless, in contrast to the obvious mistakes of the last few quarters. But China's economic reform process has always been marked by trial and error. The key point to observe is that China learns from its policy mistakes. Direct government intervention in the stock market by buying up shares in the summer of 2015 is now seen as a mistake. One of the architects of this policy has been eased from his job as the chief securities regulator and further sharp declines in the Shanghai and Shenzhen markets this year have not led the government to buy equities and prop up prices. Messaging on the evolution of China's exchange rate policy starting in August last year fell short in the estimate of most observers, but this is now being rectified by clear and detailed guidance by the central bank governor and other high-level officials.

The strength of its service sector likely will allow China to avoid a hard economic landing in the next couple of years. Hopefully the leadership will use this opportunity to deleverage its highly indebted firms, most of which are state-owned, and more generally to implement the far-reaching economic reform agenda that the Communist Party of China outlined more than two years ago. That is the most realistic basis for sustaining growth and moving China ultimately into the ranks of the high-income countries.

CHAPTER 5

GLOBAL TRADE GROWTH: SLOW BUT STEADY

CAROLINE FREUND

Global trade growth has been unusually weak since 2010 for reasons that are unclear. A debate has intensified over whether the decline is part of a normal cyclical pattern, a product of a deeper structural change in the global economy, or is foreshadowing a coming recession. Some government interventions, such as buy local measures, and increasing demands for protectionism also cast a shadow over global outlook, despite the prospects for new free trade agreements.

While a better understanding will require more time, existing evidence suggests that the decline in global trade growth largely results from sluggish global growth, especially investment, in the wake of the global financial crisis of 2007–09. The decline is particularly pronounced because it follows an unprecedented expansion of trade in the 1990s and early 2000s, when China was integrated into the world economy and global supply chains were formed. That boom was not going to last indefinitely, however.

Little evidence supports the more serious concerns. Protectionism by itself is not depressing trade. Most economies remain open, and trade, while weaker than in the past, still helps drive the global economy. The trade slowdown does not portend a global recession; trade tends to boom and bust, not stagnate, in anticipation of a recession. This cautiously hopeful outlook should remain provided that existing liberalization is not significantly rolled back and ongoing liberalization efforts continue. Indeed successful completion and ratification of the Trans-Pacific Partnership (TPP) and the Trans-Atlantic Trade and Investment Partnership (TTIP) would likely revive trade. Liberalization by developing countries, particularly Brazil and India, could generate a new wave of supply chain formation.

THE DECLINE IN TRADE GROWTH

From 1990 to 2007, world trade grew over 6 percent annually, more than twice as fast as world real income. It plummeted in 2008 and 2009 after the financial crisis, rebounding sharply in 2010—a typical V-shaped recovery. But since 2010, this resurgence has weakened, falling to 3 percent a year, only slightly faster than income growth. In 2015, estimated real trade growth fell just below income growth.

No fundamental law holds that trade grows twice as fast as income. In fact the record shows significant variation over many decades. The 1990s were strong, so even the recent slowdown leaves the trade-GDP ratio slightly above long-run trend (figure 5.1). Global recessions are especially disruptive, typically causing trade to

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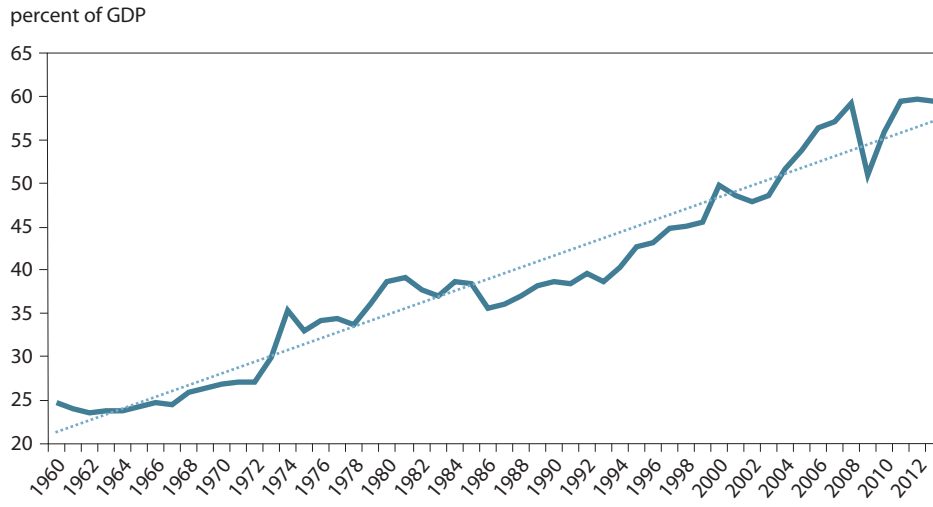
Figure 5.1 World trade relative to GDP, 1960–2013



Note: The ratio is calculated from trade and GDP measured in current US dollars.
Source: World Bank, *World Development Indicators*.

drop more than four times as much as income.[1] The relationship between trade and growth also depends on whether growth is above or below potential, and whether it is driven by investment or consumption.

POTENTIAL CAUSES FOR THE SLOWDOWN

The recent lag in trade growth compared with income growth has been studied extensively.[2] Increased protectionism is generally ruled out as the main cause. Countries are not systematically raising trade barriers. In fact, some have subsidized export credit, which obviously *boosts* global trade growth.[3] A closer look shows that among the sectors where trade has slowed, few, if any, new trade barriers have arisen. This is not to say that the slowdown in trade liberalization has not impeded trade expansion.

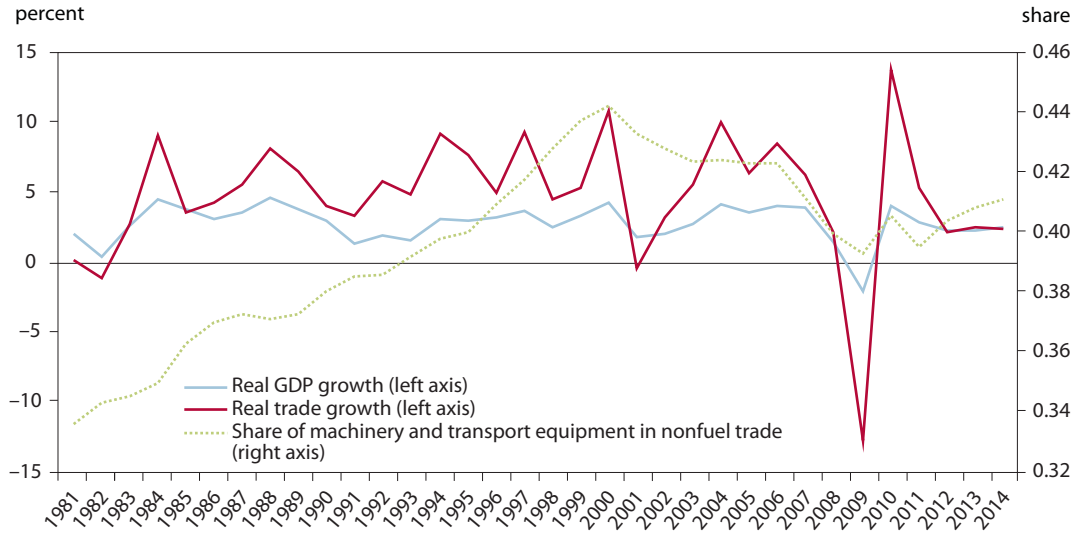
Cyclical factors explain much of what is going on. Trade is more volatile than income (figure 5.2) because 80 percent of it is in goods; services is the more stable component of GDP. Machinery and transport equipment, the largest component of goods trade, is especially cyclical. Strong global investment supported trade growth in this sector from 1990 to 2007, and its decline has impeded growth in the postcrisis years. Investment is down because of stagnation in Europe, which accounts for roughly one-third of trade, and slower growth in China. Despite better (but below potential) economic performance in the United States, investment remains weak. Researchers find that trade movements are affected more by changes in investment than in consumption

1. Caroline Freund, "The Trade Response to Global Downturns" in *The Great Trade Collapse: Causes, Consequences, and Prospects*, a VoxEU.org eBook, November 2009.

2. VoxEU, for example, produced an eBook in 2015 titled *The Global Trade Slowdown: A New Normal?*, which compiles 19 such papers examining potential explanations in detail.

3. The Global Trade Alert worries about increased trade distortions, but the new interventions are primarily in export promotion. Underpriced government export credit or even direct subsidies may harm competing exporters but, all else equal, would boost trade not generate a contraction.

Figure 5.2 Relationship between trade and income, 1981–2014



Sources: World Trade Organization; World Bank, *World Development Indicators* and *World Integrated Trade Solution*.

or government spending.[4] The reliance of trade on investment helps explain why overall GDP growth in the absence of strong investment has dimmed trade growth prospects.

Structural changes in the global economy have also impeded trade. The development of global supply chains in recent decades has boosted trade as producers and exporters took advantage of trade liberalization and technological developments in the 1990s to lower their costs. Trade grew as intermediate inputs traveled across borders to be assembled into goods and exported to consumers. New data compiled by the Organization for Economic Cooperation and Development (OECD) and the World Trade Organization (WTO) show that global value chain exports and imports have grown from 40 percent of world trade in 1995 to 52 percent in 2008.[5] Evidence suggests that this trend was weakening even before the Great Recession.

The fragmentation of production generated some measurement issues that also magnified trade growth compared with GDP growth during this period. The effect of supply chain development on trade, which is measured in gross value terms, is bigger than the effect on growth, measured in value added. Recorded in the trade statistics are parts shipped to one country for assembly and then embodied in final goods shipped to consumers. Put simply, trade boomed during the 1990s and early 2000s in part because intermediate goods began globetrotting. By extension, trade growth would be expected to moderate once the new supply chains were established.

China, the largest exporter in the world, achieved its basic integration in the global economy in the 1990s and early 2000s. Trade rose from 30 percent of its GDP in 1990 to 62 percent in 2007. Chinese value added in exports is estimated at about 60 percent in the 2000s.[6] Although domestic value added was rising over this

4. Matthieu Bussière, Giovanni Callegari, Fabio Ghironi, Giulia Sestieri, and Norihiko Yamano, "Estimating Trade Elasticities: Demand Composition and the Trade Collapse of 2008-2009," *American Economic Journal: Macroeconomics* 5, no. 3 (2013): 118–51.

5. Byron Gangnes, Alyson C. Ma, and Ari van Assche, 2015, "Global value chains and the trade-income relationship: Implications for the recent trade slowdown" in *The Global Trade Slowdown: A New Normal?*, a VoxEU.org eBook.

6. Robert Koopman, Zhi Wang, and Shang-Jin Wei, 2014, "Tracing Value-Added and Double Counting in Gross Exports," *American Economic Review* 104, no. 2: 459–94.

period, as China moved away from pure assembly and into more advanced stages of production, trade grew so rapidly that China remained a major supporter of global trade growth in intermediates. Over the last three years, however, China has relied less on exports and more on consumption, especially services, for its growth. This reorientation, if it continues, is likely to slow China's export and import growth, which is largely in goods, as domestic demand becomes increasingly based on services.

SERVICES TRADE HAS DONE BETTER

Trade in services and data flows provide a little-noticed basis for some optimism in the world trade outlook. Services grew twice as fast as world income in 2013 and 2014.[7] Cross-border data flows surged in recent years, and there is little evidence they are slowing. McKinsey estimates that the total transfer of data across borders increased from 2 trillion megabytes per second in 2005 to over 40 trillion megabytes in 2012, with half of the rise taking place since 2010.[8] Over time trade will increasingly be concentrated in services, especially areas connected to data and technology. Though slow to materialize, this shift has been anticipated for many years because the small share of services traded implies that large welfare and productivity gains remain available. In addition, greater trade in services and digital goods would especially benefit advanced economies, which specialize in these areas.

LOOKING FORWARD

The general concern that the trade slowdown is an indicator of recession is probably unwarranted, at least if past patterns are any guide. The decline in trade typically comes well into the recession, not in advance of it. In all six recessions in the United States since 1965, exports and imports grew more rapidly than average before the recession. During the US recession starting in December 2007, trade did not decline until well into 2008. Other indices related to trade, such as the Baltic Dry Index (BDI), have fallen sharply, attracting some attention as potential indicators of recession. But the BDI drop largely reflects falling oil prices and a shipping glut. And again, history does not support the BDI as a good indicator of recessions, predicting 8 of the last 2 recessions, as Paul Samuelson might say.

To be sure, the slowdown in trade is worrisome. The opportunities for countries with weak domestic demand to expand exports is now limited. The benefits of growing trade in encouraging specialization and technology adoption, and allowing the most productive firms to grow especially fast, are also restricted by sluggish trade. But because economies remain open, this channel could return.

To revive the virtuous cycle of trade and growth, policymakers should do more to open markets. Brazil, India, and other large emerging-market economies have much to do to remove their significant trade barriers, opening their markets to trade and foreign investment and starting a new cycle of global value chain development. The WTO could build on agreements in new and growing areas like services and ecommerce. A unified effort toward more open economies would build confidence and provide firms with greater incentives to invest.

7. Using World Bank data in current US dollars, for income and services, deflators for services are unavailable.
8. McKinsey Global Institute, *Global Flows in a Digital Age*, April 2014.

CHAPTER 6

EUROPEAN BANKS: BUMPY TRANSITION TO A NEW POLICY REGIME

NICOLAS VÉRON

Concerns about the solidity of Europe's banks have contributed to the recent turmoil in global financial markets. Bank shares have been hammered on both sides of the Atlantic by fears that a new period of negative (or in the United States, prolonged low) interest rates, not to mention the possibility of another major economic downturn, will eat into banks' profitability. But to these general worries, investors have added specific concerns about European banks. This is justified: European banks suffer from problems that their US counterparts don't. None of the issues that have caught the market's attention of late, however, are new systemwide threats. The radical change of policy framework that was initiated in mid-2012 with the inception of Europe's banking union is delivering positive results, and the uncertainties associated with this change are gradually, if too slowly, being lifted.

Both sides of the Atlantic suffered similarly from the financial shock of 2007–08, but European and American policymakers have addressed their banking problems very differently. The United States applied a comparatively logical sequence: first, the combination of forceful recapitalization and well-timed stress testing restored confidence in the core of the system by mid-2009; second, legislative reform (the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010) framed the policy response; and third, this legislation was implemented through rulemaking by federal agencies in the years that followed. No indication of systemic fragility in the United States has emerged since then, despite the recent energy sector weakness. By contrast, the European Union has remained embroiled in banking system fragility, even as it was rolling out a stream of new legislative and regulatory initiatives.

Europe has lagged behind the United States on financial reform for several reasons. Europe's financial system is dominated by banks, whereas the US system is cushioned by the variety of its financial markets and other nonbank financial channels. Consequently, Europe has a harder time addressing large banking crises. Starting in 2009, the bank-sovereign vicious circle, in which problems in a country's public finances and banks feed each other, aggravated the situation greatly. Pervasive banking nationalism—the tendency of governments to protect their own national banking champions—and the occasional instance of regulators being captured by banks they were supposed to regulate prevented adequate action by national bank supervisors, until euro area leaders, with their backs against the wall, eventually initiated the supranational pooling of banking sector policy known as banking union in mid-2012. The diverging paths of nonperforming loans (NPLs) in Europe and the United States summarize this contrast (figure 6.1).

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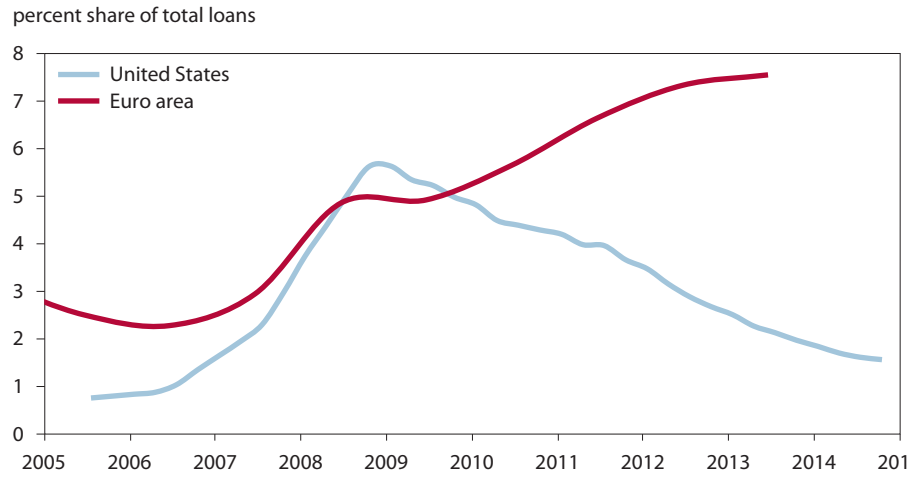
Figure 6.1 Nonperforming loans in the United States and euro area, 2005–15



Sources: Federal Reserve Economic Data (FRED) from Federal Reserve Bank of St. Louis; International Monetary Fund; and calculations by Christian Odendahl, Centre for European Reform.

With this context in mind, the recent market volatility can be seen as a belated acknowledgment by investors of risks that had been insufficiently recognized until now, rather than adjustment to the emergence of new risks. This is true of the three main issues that have driven uncertainty.

UNTESTED CONTINGENT CONVERTIBLE SECURITIES

CoCos, a new form of debt that may be converted into equity, faced their first test under adverse market conditions. They were first issued in 2013 by Credit Suisse and have become widespread in Europe, though not in the United States, where their tax treatment is unfavorable. They typically yield a higher rate than senior debt, but coupon payments can be stopped and the debt may be converted into equity if a preagreed trigger is crossed. The Basel Committee on Banking Supervision has excluded them from its preferred Core Equity Tier One (CET1) yardstick of regulatory capital. Depending on the contractual trigger, they form part of Additional Tier One (AT1) or Tier Two capital.

CoCos issued by Deutsche Bank lost significant value when they came close to missing coupon payments. But in spite of all the alarm, the experience with CoCos remains inconclusive. When a bank approaches the trigger point, there is (destabilizing) additional volatility and uncertainty but also a (stabilizing) incentive for that bank to quickly reinforce its balance sheet. Deutsche Bank did exactly that by buying its own debt at a discount. More investors now realize that despite their loose labelling as "capital," CoCos do not absorb losses in an orderly manner like common equity and may thus weaken financial stability. But whether CoCos serve their intended purpose can be known only when a CoCo conversion is triggered, which has not happened yet. CoCos are thus untested as a potential protection against sudden balance sheet deterioration, and it is too soon to conclude that they create their own major problems.

UNFINISHED BANKING SYSTEM CLEANUP

Markets continue to reflect concerns about the soundness of euro area banks, and by implication about the ability of banking union to address the problem. Supervisory efforts center on the Single Supervisory Mechanism (SSM), which has been granted authority over all banking licenses in the euro area since November 2014. The SSM simultaneously assumed direct supervisory authority over the 130 largest institutions (known as "significant institutions"), while national authorities remain supervisors of around 3,500 so-called less significant institutions. Just before its takeover, the SSM had conducted a comprehensive assessment of the 130 larger banks, adding nine more in late 2015, and since then has ramped up its capital requirements. Many investors quickly considered the entire system sound.

Developments in Italy recently appeared to contradict this picture. It had actually been singled out in the 2014 assessment. One-ninth of all banks assessed (15 of 130) were Italian, but Italy accounted for a third of banks found to be undercapitalized by end-2013 (9 of 25) and even after additional capital raising in 2014 (4 of 13). Later media reports suggested that the SSM and Bank of Italy disagreed on capital requirements. The Italian government hesitated over what to do, and its welcome reform of bank cooperatives was riddled with loopholes. In November 2015, Italy hastily introduced an ad hoc scheme to bail out four tiny failed banks, with funding provided by larger (and presumably sounder) Italian banks, but at an ostensibly high cost. Italian authorities added uncertainty when they advocated a delay in implementing the EU Bank Recovery and Resolution Directive (BRRD, see below), even though this legislation was enacted in May 2014 with Italy's assent, is now fully in force, and cannot be modified without majorities in the European Parliament and Council, which are unlikely to materialize. Meanwhile, Italian banks have more than €300 billion in NPLs. Long negotiations between Italy and the European Commission to create a "bad bank" scheme intended to relieve banks of these troubled loans have led to a scheme that will have only limited impact, because EU competition authorities have (appropriately) insisted that transfers not be made at above-market price.

A thorny problem derives from the fact that Italian banks have sold much of their own debt to retail clients who saw this debt—estimated at €200 billion—as safe while prudential and market authorities looked the other way. In the event of a bank's failure, the 2014 BRRD implies that these savings will be bailed in (i.e., losses will be imposed on creditors), but the political fallout might be disruptive. Thus Italy, the third-largest country in the euro area, is saddled with large NPL stocks, discord among public authorities, and hard-to-price political and financial risks, in addition to its longstanding high stock of public debt.

The Italian situation does not reflect a failure of the SSM, however, because most of the uncertainty (and all four recent bank failures) concern less significant banks still supervised by the Bank of Italy. Germany and Austria also have lots of small banks, but most of them are covered by so-called institutional protection schemes, which entail their bailout and absorption by local peers in case of sudden weakness. While such schemes create supervisory challenges of their own (on which the SSM has just started a consultation), their viability in Austria and Germany is not a short-term concern. Italy's banking sector situation is thus uniquely precarious. While it undeniably requires a more decisive approach (and the sooner the better), it does not portend a broader weakness on a pan-European scale.

UNCERTAINTY ABOUT FUTURE CRISIS MANAGEMENT AND RESOLUTION

The euro area's future bank crisis management regime remains blurred. In theory, things are clear. BRRD dictates future resolution processes. In the euro area, these processes are managed by the second leg of banking union, the Single Resolution Mechanism (SRM), centered on a Single Resolution Board (SRB) in Brussels, itself endowed with a Single Resolution Fund (SRF). As the saying goes, however, in theory there is no difference between theory and practice, but in practice there is. The combination of BRRD and SRM represents a com-

plete change of regime. The automatic bail-in or losses imposed on failing banks' senior unsecured creditors (up to 8 percent of total assets), and the transfer to the supranational SRB of decision-making authority over resolution schemes, are radical and untested innovations that came into force on January 1, 2016.

Even fundamentally healthy transitions produce uncertainty. The old European regime of taxpayer-financed bailouts was politically unsustainable and aggravated the bank-sovereign vicious circle. In the absence of a European budget, authorities had to impose costs on debtholders to underpin banking union and preserve the integrity of the euro area. But the long transition towards full mutualization of resolution funding at the euro area level (not envisaged before 2024) and the fact that deposit insurance remains purely national have deepened that uncertainty. In November 2015 the European Commission published a project to create a European Deposit Insurance Scheme (EDIS) as a third leg of banking union, complementing the SSM and SRM. But negotiations among member states have barely started, and Germany is so far less than supportive. The discussion on EDIS now also includes proposals to reduce the current high home bias in many euro area banks' sovereign debt portfolios. If adopted, these proposals would harden market discipline for sovereign issuers. Some of the more indebted euro area countries, including Italy, resist them.

Europe's SRM framework remains a work in progress. National authorities, not the SRB, are to oversee the implementation of resolution schemes. The legal requirement in BRRD, that no creditor should be worse off in a resolution than if the bank had gone through a court-ordered insolvency, prevents the resolution processes from being consistent across countries as long as bank insolvency frameworks remain different, or even increasingly divergent from one another following several recent national law changes.

The contentious end-2015 decision by the Bank of Portugal to bail in some but not all senior creditors of Novo Banco has put all these challenges into focus. It was made before the SRM entered into force and thus has no precedent value in a narrow sense. But by highlighting the new reality of losses incurred on senior debt, it acted as a wake-up call. It is a good thing that many investors were thus shaken out of their complacency and became better aware of the current European bank resolution framework, warts and all. These uncertainties will not all be removed any time soon. But as the new resolution regime sets in, markets can be expected to become gradually able to better price in Europe's new willingness to let weak banks fail.

CHAPTER 7

HOW MUCH TROUBLE IS BRAZIL REALLY IN?

MONICA DE BOLLE

Brazil is no stranger to economic crises. But this time really is different. Despite a deep economic slump, rising inflation, and major political dysfunction, Latin America's largest economy is not facing a debt crisis, nor is it on the verge of default.

Nevertheless, analysts have split into two camps: One views current problems as the result of crumbling confidence in the political system due to the graft scandal at oil company Petrobras and believes restoring confidence would revive growth. The other thinks Brazil is on the brink of a messy default. The much more probable middle ground, in which the country painfully muddles through with high and possibly rising inflation, is mistakenly overlooked, though some analysts have started considering this possibility. That said, Brazil's evolving corruption investigations and widening political crisis could yet lead to a dangerous power vacuum, which would provoke a more severe and acute economic crisis.

Brazil's relative economic isolation protects other countries, such as the United States, from its current problems. But already troubled neighbors such as Argentina and Venezuela may not be so immune. Brazil's development bank has lent US$3.2 billion to the government of Venezuela, so a default by Venezuela could have serious consequences for both the bank and Brazil's government, adding to the country's fiscal problems. In the case of Argentina, Brazil accounts for 21 percent of its exports and 29 percent of its imports. Therefore, the ongoing recession in Brazil could hinder Argentina's recovery, following the recent change in government and policy reorientation there.

Given the gravity of Brazil's economic and political woes, why isn't it facing a balance of payments crisis? Simply put, there are no strains due to foreign currency imbalances. Brazil has a floating exchange rate regime and the central bank is providing currency hedges to companies that have debts in US dollars.[1] Moreover, international reserves are still relatively high at US$370 billion (compared with a current account deficit of $58 billion annually). In fact, the improvement in Brazil's current account deficit—which has narrowed from 4.5 percent of GDP in 2014 to about 3 percent in 2015 and is likely to further narrow with imports declining due to the recession—and continuing foreign direct investment (FDI) inflows suggest a benign external outlook,

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1. This said, the central bank is also intervening to stem currency devaluation and its potential negative effects on inflation. These operations have cost the budget the equivalent of 2 percent of GDP in 2015 alone. They have also become quite large: The notional stock of foreign exchange swaps is currently estimated to be about US$ 115 billion. Since the transaction is settled in domestic currency, there is a risk that some investors may decide to exchange their reais for US dollars after settlement, putting pressure on reserves.

despite the drop in commodity prices. Although falling commodity prices have certainly not helped Brazil recently, the country's woes are more directly related to policy mismanagement and political paralysis.

Foreigners remain attracted to fixed income assets given the country's high interest rate differential with the rest of the world. Brazil currently pays about 15 percent interest on its most liquid one-year instrument, up from 13 percent at the end of 2014, but lower than the historical average that prevailed between 1996 and 2015 (17.5 percent). Hence, although high interest differentials are a drag on the budget and on the economy, Brazil has an established track record of sustaining them for a long time.

Why is no debt default imminent either, despite a ballooning nominal government deficit and rising debt-to-GDP ratios? Unlike Greece or some other economies with which it is mistakenly compared in markets today, Brazil's debt is denominated in its own currency—only 5 percent of the outstanding stock is denominated in currencies other than the real. As a result, failure to achieve political consensus on fiscal adjustment still leaves the option of letting inflation rise to improve public sector stocks and flows, much like the country did prior to the macroeconomic stabilization of the mid-1990s. This does not necessarily mean a return to chronically high inflation seen in the 1980s and early 1990s, but it does mean that inflation is likely to remain much above the current consensus forecast of an 8 to 9 percent annual rate over the next three years.

A simple debt projection exercise illustrates the argument.[2] Using some moderate assumptions for the evolution of GDP growth and the government's primary balance,[3] I further assume that:

- Inflation rises from its current level of 10 percent to 20 percent annually by 2018 and remains at that level thereafter.
- Interest rates evolve in line with inflation, such that real interest rates converge to zero between 2017 and 2020.[4]
- There is no portfolio rebalancing, i.e., investors do not shift their holdings of fixed rate bonds, inflation-indexed bonds, and variable rate bonds.

Under these conditions, the debt-to-GDP ratio would rise to 85 percent in 2017, dropping to about 80 percent of GDP by 2020.

A more realistic scenario, however, would assume investors start to gradually shift away from fixed-rate debt into inflation-indexed or variable rate bonds as a result of rising inflation. In the process investors would likely give up about half of their holdings of fixed rate bonds between 2017 and 2020. The debt-to-GDP ratio could then stabilize, albeit at a dangerously high level.[5] In this scenario, inflation would still rise to 20 percent over time, but portfolio rebalancing would render it less effective in bringing down the debt ratio. These two scenarios are compared with a baseline case where inflation remains constant at its current level of 10 percent annually, and interest rates also stay close to their current levels of 15 percent—assumptions for growth and for the primary budget balance (excluding debt interest payments) are the same for all scenarios.

In Brazil and elsewhere, past use of the "inflation tax"—a lowering of the debt through a currency weakening that saps consumers' purchasing power—suggests the government cannot raise inflation without households and investors responding. Currently, less than half of the debt stock (41 percent) has a fixed rate and is relatively short in duration (about 2 years), with the remainder being either inflation-indexed (34 percent) or variable rate debt (25

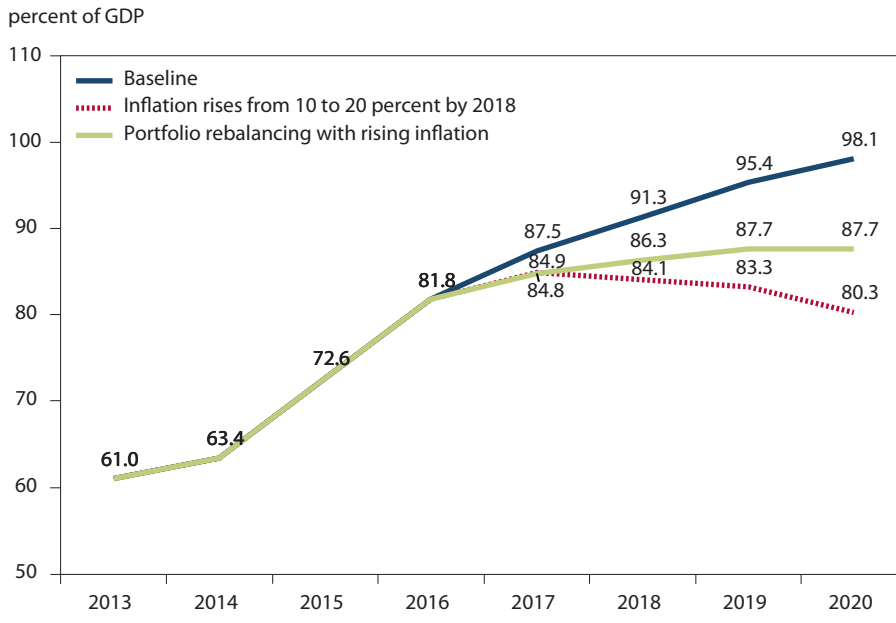
2. The gross debt methodology used is that adopted by the IMF, not the one used by the Brazilian central bank—the central bank excludes from the debt stock part of its own holdings of government debt.

3. Growth is assumed to be –4 percent in 2016, zero in 2017, and 1 percent from 2018; the primary deficit is assumed to remain at 2 percent in 2016, fall to 1 percent in 2017, and balance out by 2018, remaining at zero thereafter.

4. It should be noted that the government could also attempt to keep rates lower than in inflation, in which case the effects on the debt would be more pronounced. Of course, that might induce investors to switch to inflation-indexed bonds even faster.

5. Hence, although this scenario is more attuned to reality, once inflation reaches high levels it is unlikely to stop rising. There is thus a nonnegligible probability that inflation would continue to rise, rather than settle at 20 percent annually.

Figure 7.1 Brazil: Gross public debt projections, 2013–20



Sources: Central Bank of Brazil and author's calculations.

percent).[6] Over time, investors would likely shift away from fixed-rate debt towards other instruments, and rising inflation would also induce markets to demand shorter maturity paper, further limiting the benefits to government balances beyond the period contemplated in this exercise.

As mentioned above, a realistic forecast is thus the middle line in figure 7.1, by which Brazilian debt to GDP does stabilize versus the ever rising baseline projection. Absent inflation, the debt stabilizing primary surplus would need to be in the neighborhood of 4 percent of GDP, implying an adjustment of 6 percentage points of GDP relative to current conditions (a primary deficit of 2 percent of GDP). Such a large adjustment in the midst of the country's worst recession on record is not politically feasible, nor is it economically advisable. Finally, about 60 percent of public spending is directly indexed to inflation, meaning that the reduction in government outlays gained from the inflation increase would probably be lower than contemplated in this exercise.

The bottom line is that Brazil's fiscal situation is not good. The government is likely to resort to some inflation tax, which would possibly fend off a debt crisis for a few years, even absent political will to address budget shortfalls. Furthermore, the holders of Brazil's public debt are mainly local banks, including public financial institutions, and local pension funds. These investors would be unlikely to sell off or even fail to buy the country's debt given the impact of a default on their own balance sheets. Interactions between government and financial sector balance sheets in Brazil are reminiscent of the bank-sovereign debt loop evident in Southern Europe.

6. Variable rate and inflation-indexed debt have longer maturities. The average duration of Brazil's public debt is about 4 years. Data comes from the Central Bank of Brazil and the National Treasury.

The stage thus seems set for a modified reenactment of Brazil's past, with ever shortening maturities and increasing risk premia on government issuances until the underlying problems are addressed. Fiscal shortcomings could exacerbate inflation pressures because so many prices and wages in Brazil are indexed to the official inflation rate. Still, this would not be a crisis of the sort many in markets are predicting for Brazil at present.

A real problem that markets have overlooked is the distortions in Brazil's financial system. Public banks have been at the center of worsening fiscal conditions in Brazil. Indirect subsidies from the Treasury to BNDES, the state-owned development bank, have amounted to over 5 percent of GDP in cumulative terms over the last four years. Public lending programs championed by BNDES have adversely affected real interest rates and productivity growth.

The risks of an acute full-fledged financial crisis in Brazil appear to be contained for the next couple of years. Yet the severity of the country's challenges on the fiscal and financial sector fronts should not be underestimated. Even under the rashly optimistic assumption that political gridlock might suddenly disappear and governing capacity magically restored—under President Dilma Rousseff or with a different administration—the current problems would take many years to be fully resolved. A long-term resolution requires not only a major fiscal adjustment, but serious financial sector reforms that diminish the role of public lending and improve private credit markets.

CHAPTER 8

FOR LATIN AMERICA, DISAPPOINTMENT BUT NOT DOOM

JOSÉ DE GREGORIO

Latin American economies proved remarkably resilient, if not immune, to the global financial crisis of 2008–10 and rebounded fairly rapidly and robustly. Latin America and the Caribbean grew at an annual average of 4.7 percent in 2010–12, and growth was firm across most countries in the region. Expansionary policies, a sturdy financial system, and tailwinds from the commodity price boom explain this unprecedented bout of good performance.

However, a sharp deceleration started in 2013 and has continued without much sign of a sustained recovery (figure 8.1). The region's largest economy, Brazil, is reeling from an especially toxic mix of political and economic crises and is projected to contract more than 3 percent per year in 2015–16, a two-year slump more severe than during the debt crisis of the early 1980s. Growth started slowing early in Brazil and came to a halt in 2011. Excluding Brazil, which accounts for about 40 percent of Latin American economic activity, average growth for entire region in 2015–16 is still expected to be dismal, registering about 1.4 percent.[1]

The other critical case is Venezuela, which is facing a frightening economic and political implosion after riding the oil price boom without taking any action to prepare for an eventual reversal.

In the most successful and stable countries among the largest ones, Chile, Colombia, Mexico, and Peru, growth is still low. Colombia was the last to enter deceleration mode in late 2014, coinciding with the decline in oil prices. The depreciation of the Colombian peso with respect to the US dollar has been sharp and rapid, reaching more than 80 percent last year. Annual inflation has risen from 3.8 percent in early 2015 to 7.5 percent in January 2016. Consequently, and facing rising inflationary expectations, the authorities have increased interest rates by 1.75 percentage points since September 2015 to 6.25 percent. At the other end of the spectrum is Mexico. It already has raised rates by 75 basis points but is the only country with inflation below the target of 3 percent. Both year-on-year headline and core inflation are about 2.5 percent, their historical lows. Inflationary expectations have also been stable. The fear of financial turbulence and further depreciation of the Mexican peso have prompted monetary policy reaction.

Despite the gloomy outlook for these countries, their spillovers on the region are limited. Financial linkages are fairly small and intraregional trade is quite low. The country most affected by Brazil's recession could be Argentina because of the countries' strong trade ties through Mercosur. Under a new president, Argentina

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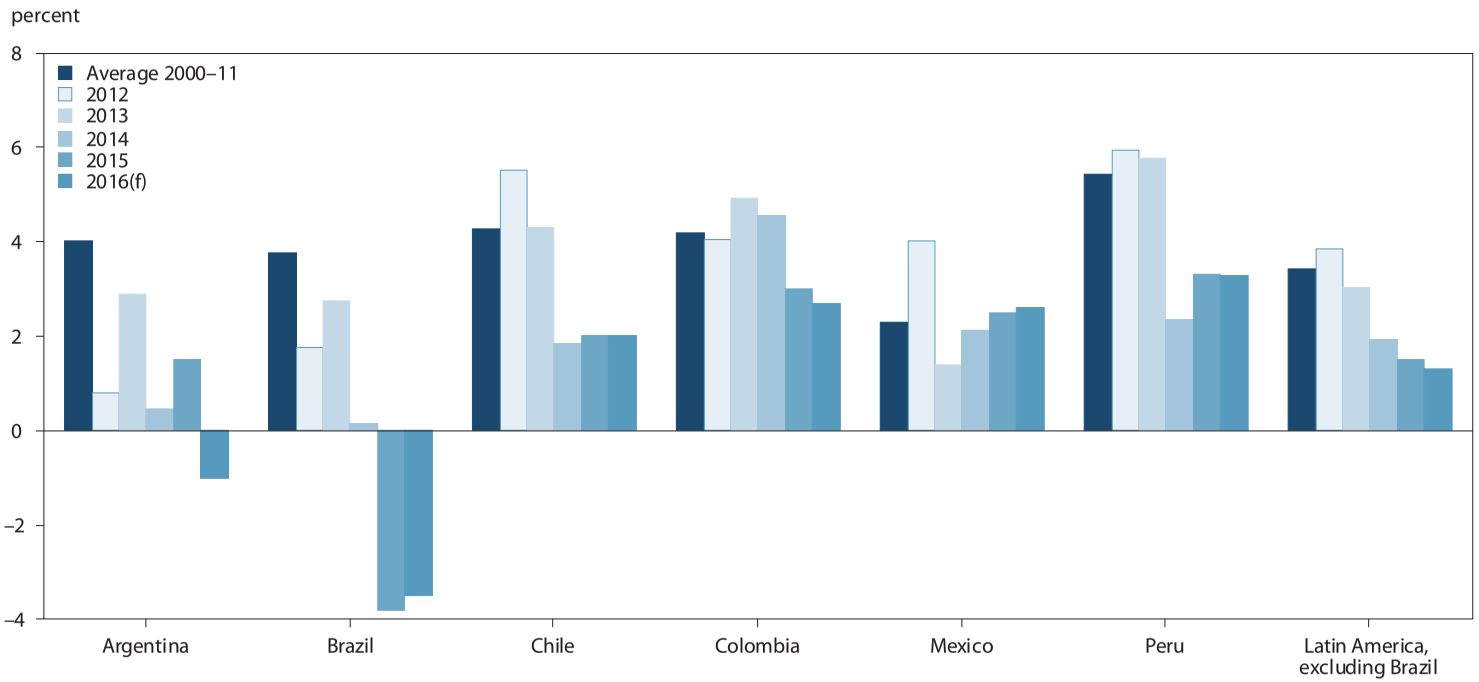
1. Peru's 3.3 percent growth in 2015 is largely explained by the significant increase in copper production in the last quarter. Nonprimary-sector GDP grew at 2.4 percent in 2015. Growth is expected to be above 3 percent in 2016 as well due to new copper mines starting production.

Figure 8.1 Growth deceleration in Latin America

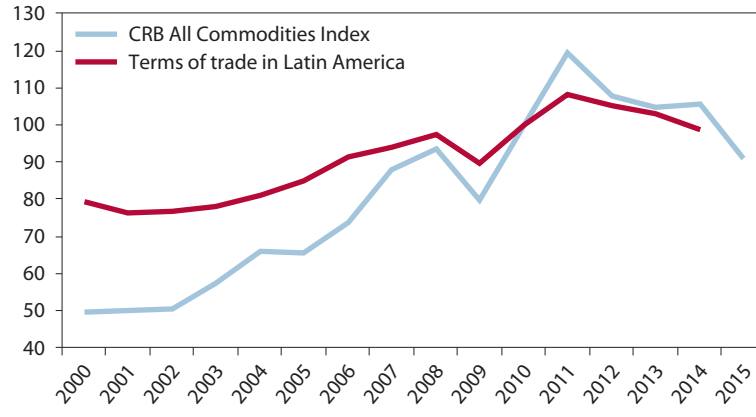


f = forecast

Note: For scale reasons Venezuela is excluded from the figure. IMF estimates indicate that growth for 2015 was -10 percent and for this year a contraction of 8 percent is expected.

Sources: IMF, *World Economic Outlook*, October 2015, updated January 2016; Consensus Forecasts.

Figure 8.2 Terms of trade in Latin America and commodity prices



CRB = Commodity Research Bureau

Sources: Bloomberg and Economic Commission for Latin America and the Caribbean.

is attempting a transition away from populist policies that have left it struggling with high inflation, fiscal imbalances, and low growth.

Brazil will most likely muddle through the next few years trying to return to a primary budget surplus and to control inflation with no scope for monetary policy easing—and addressing big corruption cases that are ongoing and have enveloped the highest echelons of government. This does not leave too much room for the economic reforms needed to restart growth

Chile, Colombia, Mexico, and Peru have significantly improved monetary and fiscal policies over the years, have flexible exchange rates—although Peru's authorities are reluctant to tolerate more relevant adjustments—and have strong financial systems, which puts them on a sounder footing for recovery. Still, there are challenges and risks. A further deterioration of the global economy could impede the return to growth, even if an old-fashioned Latin American economic and financial crisis is unlikely.

The decline in commodity prices has played a major role in the deceleration of growth in the region, dimming prospects for improvement. However, this drag goes beyond the shock of declining terms of trade (price of exports over price of imports). Indeed, the worsening in the region's terms of trade has not been as dramatic as the fall in commodity prices (figure 8.2). More importantly, the economic softness started in most countries in 2013, and the commodity price bust came later. There are important investment and fiscal effects. Suppose a country produces a given commodity and has balanced exports and imports of it. A commodity price boom may significantly increase investment, an accelerator effect, which once completed triggers a slowdown in economic activity and reduces fiscal revenues, in particular when the investment is made by a public company.[2] Thus, the presence of a dominant commodity sector would exacerbate business cycle fluctuations.

According to the United Nations' Economic Commission for Latin America and the Caribbean (ECLAC), terms of trade in the region in 2014, the latest available year, stand 8.5 percent below their peak in 2011 and only 1.2 percent lower than in 2010. Among the largest economies, only Brazil, Chile, and Colombia have had

2. For the case of Chile this has been calibrated in a dynamic stochastic general equilibrium model by Fornero et al. (2016) and found to be a relevant effect driving the business cycle.

cumulative declines between 10 and 20 percent.[3] The main reason is that few Latin American countries are large net commodity exporters. Only Venezuela, Bolivia, Ecuador, Colombia, and Trinidad and Tobago are net exporters of oil. Brazil and Mexico are big producers of oil but also consumers.[4] Chile and Peru, the two largest copper producers, are also net importers of oil.

The commodity price surge had triggered a significant investment boom across most countries in the region, in particular in oil and metals. The end of the commodity investment cycle has hurt many sectors that had benefited from that boom, such as construction and services. The portfolio of investment projects in commodities is limited, which may slow investment even if prices manage to recover some ground. This investment cycle has amplified the normal business cycle downturn that is usually observed after a rapid recovery. And with the more recent declines in commodity prices, prospects remain subdued.

From the fiscal point of view, initial conditions and commodity-price dependence vary from country to country. However, the fall in commodity prices is having relevant effects across all countries in the region. Fiscal buffers were not rebuilt after the large expansions in the aftermath of the global financial crisis, and primary budget deficits (excluding debt interest payments) did not return to original levels, mostly due to permanent increases in government expenditure.[5] This severely limits fiscal room for maneuver for all major countries in the region, even if the urgency of budget consolidation depends on each particular case. Chile and Peru are the only two countries with almost no net public debt, although both must adjust to the new reality of much lower copper prices. If economic activity deteriorates and an expansionary policy is needed, it will not come from the fiscal front. Already several governments have announced some fiscal restraints. Others, like Brazil, have not, and this is creating a host of problems. A related, but limited, problem is the impact of the collapse of commodity prices on state-owned enterprises in these sectors, in particular oil and gas, with potential effects on government budgets.

Against this backdrop, currencies have depreciated significantly since 2013 (figure 8.3). This is what should happen for economies to adjust to the new environment. What economies need to resume growth is to reallocate resources from commodity-producing sectors to other tradable goods sectors, and the exchange rate provides the price signals to induce this shift. There is some skepticism about the effectiveness of depreciations, and, indeed, exports have not been growing robustly and current accounts deficits have narrowed only in few countries, mostly due to a fall in investment. However, the implication of this concern is not to ignore the exchange rate mechanism. On the contrary, in the context of weak trade and depreciation in countries that compete in third markets, further or more persistent depreciation may be needed to return to higher rates of growth. Fighting against depreciation may not only delay the recovery but also encourage speculation against artificially strong currencies.

In this context monetary policy is going through a difficult challenge. Weakening economic activity should reduce inflationary pressures, but the currency depreciation is pushing up inflation beyond target. Exchange rate depreciation should have transitory effects on inflation, but their effects could be longer-lasting if they bolster inflation expectations of consumers and businesses.

One potential risk and concern for monetary authorities is the impact of possible additional Federal Reserve interest rate increases in the next months, following the first rate hike in nearly a decade in December. But this is no time to fear Fed's monetary policy tightening. The region has endured a much more complicated external environment in recent years and has shown to be resilient, if not entirely impervious. Financial systems in the region have demonstrated they are resistant to massive exchange rate depreciation. Since 2013

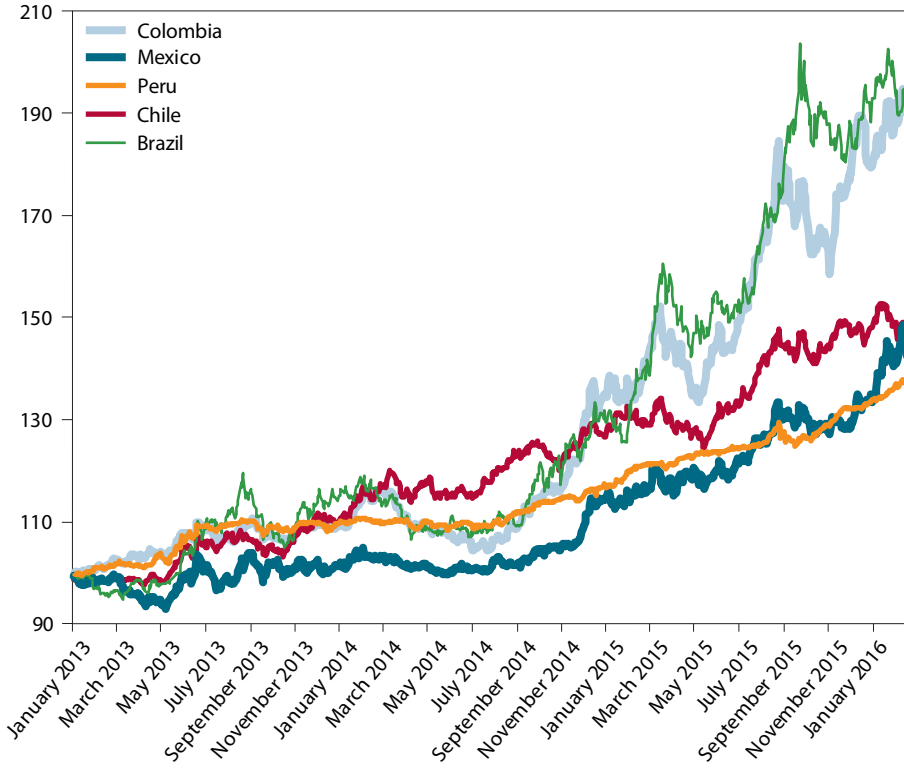
3. Official data for Chile, for example, show a cumulative decline of 12 percent in terms of trade from 2011 to 2015. Copper prices fell by 38 percent in the same period.

4. Mexico did not enjoy a significant terms of trade gain during the commodity price boom.

5. See Celasun et al. (2105) and De Gregorio (2014).

Figure 8.3 Depreciation of Latin American currencies against US dollar

domestic currency per US dollar, index (January 2013 = 100)



Source: Bloomberg.

currencies have experienced large depreciations and the financial as well as the corporate sectors have been able to absorb these changes without major problems. Therefore, there is no financial reason to fear floating exchange rates.

Domestic conditions are also volatile. Most countries in the region have been subject to serious institutional and political crises. Events like the corruption scandal in Brazil's state-owned oil company Petrobras and the repercussions on the Brazilian government as well as the disappearance of 43 students in Mexico in September 2014 are mind-boggling. But even in more circumspect countries like Chile and Peru there have been worrisome instances of corruption and unlawful political financing. This undermines the ability of governments to properly implement sound policies, even if they possess the political will to try. There is also the temptation of implementing populist policies to improve much-deteriorated public support. This may further weaken economic activity and business confidence.

It is a difficult time for Latin America, but the countries that have pursued sound macroeconomic and financial policies are well prepared to face the headwinds from the global economy. The current challenge is to restart solid growth, which can be sustained in the long run only by increasing productivity, something that has proven elusive in the region.

CHAPTER 9

CENTRAL BANKS HAVE LOTS OF AMMUNITION

JOSEPH E. GAGNON

The financial press now routinely states that central banks have little scope to provide any further macroeconomic stimulus in the event of a downturn or shock as the world struggles with the aftereffects of the Great Recession. Central bank officials reject this argument, but many observers believe that officials are covering up their concerns with a façade of confidence.[1]

It is easy to understand how the perception of monetary impotence took root. Central banks have taken unprecedented measures since the Great Recession, buying massive amounts of bonds and in some cases pushing interest rates into negative territory, yet the recovery proved disappointingly slow everywhere. Skepticism about the impact of these actions abounds. Nevertheless, the evidence shows that these policies have helped to boost economic growth and central banks retain the capacity to do far more than they have already done.

Central banks that wish to ease policy currently have three options: (1) large-scale asset purchases, or quantitative easing (QE), (2) negative interest rates, and (3) commitments on future inflation rates. Negative interest rates have gotten much attention lately, and they are a source of some confusion. (A positive interest rate leads to a small addition to your bank balance each month and a negative interest rate leads to a small subtraction.) A problem with negative interest rates, however, is that they are limited by the fact that paper currency yields a return of 0 percent. In other words, anyone can withdraw money from their bank account and hold it in paper currency to avoid paying a monthly interest fee. However, modest negative interest rates and a commitment to allow higher inflation in the future may be able to provide meaningful amounts of stimulus, particularly when combined with QE. This note focuses on QE because it provides the greatest opportunity for near-term macroeconomic stimulus either on its own or in conjunction with the other options.[2]

Why aren't central banks using this ammunition? In the United States and the United Kingdom, central banks are comfortable with the economic outlook and, if anything, believe their next move is likely to withdraw stimulus, by raising interest rates. In Japan and the euro area, central banks are excessively timid in using the ammunition they have, mainly because the tools are so unconventional and the required magnitudes of

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1. Haruhiko Kuroda of the Bank of Japan recently said that there is "no limit" to monetary policy options to achieve targeted inflation in Japan. Ben Bernanke and Mario Draghi made similar statements over the past few years.

2. There are also options for fiscal stimulus through tax cuts or spending programs. A central bank could make fiscal stimulus more politically palatable and economically potent by offering to purchase all the increase in debt associated with the fiscal program. Such a combined monetary-fiscal program is commonly described as "helicopter money." This note is focused only on what central banks can do on their own.

asset purchases are so large. They need to learn the lesson the Fed learned, that insufficient initial action will needlessly delay recovery and may force a central bank to take remedial action later.

POTENCY OF QUANTITATIVE EASING

Conventional monetary policy works by reducing the short-term interest rate, which encourages consumption and investment. QE works by reducing the long-term interest rate, which also encourages consumption and investment.

In responding to the Great Recession, QE operated through three channels: (1) reducing risk spreads associated with market panics, (2) reducing expectations of the future short-term policy interest rate, and (3) reducing the term premium in bond yields by reducing the supply of long-term bonds in the market. At this stage, with reasonably well-functioning markets and market expectations of future policy rates in line with—or even lower than—rates suggested by central bank announcements, only the third channel remains potent, giving rise to the perception that QE has a diminishing effect. But the evidence suggests that there is no tendency for the third channel, known as the portfolio balance effect, to diminish.[3] Indeed, there are grounds to believe that the portfolio balance effect may be increasing, as additional QE bond purchases remove bonds from investors who are more reluctant to sell them and thus who demand ever higher prices (and lower yields). No central bank has pursued QE to an extent that would allow for a test of the "increasing potency" hypothesis.

Many economists are skeptical about the portfolio balance effect, having learned in graduate school that the Fed's attempt to lower bond yields in the early 1960s by a procedure akin to QE (Operation Twist) was a failure. In reality, the bond purchases under Operation Twist were quite small and quickly reversed, so it is not surprising that they had no lasting effect on bond yields. However, a 2011 study finds that Operation Twist did have a significant effect on bond yields while it lasted, and that effect is roughly comparable, when scaled by the size of the purchases and the size of the bond market, to the effects of QE in recent years.

Since 2010, an outpouring of research has focused on the financial market effects of QE. The nearly unanimous conclusion is that QE lowers bond yields significantly, even when focus is limited to the portfolio balance effect and not the other channels. Moreover, the results are similar for all the four major advanced economies.[4] Central banks are still learning about how to make QE a standard part of their policy toolkit, but there is little doubt among policymakers that QE does operate in many ways like conventional monetary policy.

Federal Reserve economists estimate that the Fed's QE purchases in 2009 had a stimulative effect on the US economy similar to a 1 percentage point cut in the federal funds rate. This was helpful at a time when the Fed believed it could not lower the funds rate below its target range of 0 to 0.25 percent. However, considering that many macroeconomic models called for a rate cut of 5 percentage points or more, the Fed's QE policy was woefully underpowered.[5] It is no surprise, therefore, that the economy took so long to return to full employment. Over time, cumulative rounds of Fed QE had the equivalent effect of a 2.5 percentage point cut in the federal funds rate—substantially helpful, but hardly overwhelming force.

Unfortunately, because the Fed did not use QE as aggressively as it should have, the recovery was slow and a popular misconception arose that QE did not work. If the Fed had done enough QE at the beginning, this misconception could have been prevented.

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3. Some observers have argued that QE cannot push the term premium below zero. However, the term premium has been significantly below zero at times, and there is no theoretical lower bound. For some classes of investors (life insurance companies, pension funds) long-term bonds may be less risky than short-term bonds and thus can have a lower expected rate of return.

4. For the United States, see this study and this survey. See also studies for the euro area, Japan, and the United Kingdom.

5. In the transcript to the March 2009 meeting of the Federal Open Market Committee, Janet Yellen stated that "optimal policy simulations would take the fed funds rate to negative 6 percent."

The case of Japan at present is particularly instructive. The Bank of Japan launched a major QE program in 2013. However, it failed to achieve its goal of inflation at 2 percent within two years. Many observers point to Japan as evidence of the limits of QE. In fact, the opposite is true. Prior to 2013, core inflation in Japan languished around –0.5 to –1 percent for several years.[6] Since the start of the QE program, core inflation has jumped around 2 percentage points to just over 1 percent, about two-thirds of the way to its target. Given the weak global economy and the large consumption tax increase in 2014, the only plausible explanation for this remarkable rise in inflation is the QE program. The correct lesson is that QE worked rather well in Japan—only the dosage needs to be increased.[7]

SCOPE FOR QUANTITATIVE EASING

Table 9.1 shows that the scope for additional QE in the four major advanced economies is enormous. The first column is the recent level of central bank assets. For the United States, nearly all of these assets reflect QE purchases as short-term assets were sold off. (None of these central banks has yet begun to reduce QE assets.) For the euro area and the United Kingdom, about three-quarters of the assets reflect QE operations, including long-term loans to banks. For Japan, about three-fifths of the assets reflect QE purchases. The Bank of Japan has the largest balance sheet (as a share of its economy) among these central banks, but its holdings amount to less than one-quarter of Japanese securities.

As of now, the Bank of Japan is the only central bank to have purchased equities in its QE program, and only a small amount (about 2 percent of GDP) so far. The effects of QE via equities have not been studied, but research suggests that policy-driven purchases of equities should raise equity prices (Shleifer 1986 and Goodhart and Lu 2003). The equity market is an attractive market for QE purchases because it is large and liquid. Higher equity prices would encourage both consumption (through a wealth effect) and investment (through a reduction in the cost of capital). Equity purchases should be distributed across the entire market in a neutral fashion; the goal is not to pick winners and losers. Similar considerations should guide purchases of private bonds.

Table 9.1 Scope for additional QE purchases (percent of GDP)

Economy	Central bank assets	Domestic securities			
		Total	Government	Other bonds	Equity
Euro area	26	234	84	91	59
Japan	77	333	182	45	106
United Kingdom	23	314	97	124	96
United States	25	321	137	53	131

Note: Central bank assets data refer to 2015Q4 except for the United Kingdom, which is 2014Q4. Securities data refer to 2015Q3 for euro area, Japan, and the United States, and 2014Q4 for the United Kingdom. Government securities exclude bonds that are held within the government sector. Government securities include agency and agency mortgage-backed securities for the United States. Other bonds are based on nonfinancial and financial corporations, including publicly owned corporations. Equity includes only publicly traded shares at market prices.

Sources: Bank of Japan, European Central Bank, Federal Reserve Board, UK Office of National Statistics, IMF *World Economic Outlook* database, and author's calculations.

6. I use the Bank of Japan's preferred measure of consumer prices excluding energy and fresh food.
7. For a more detailed discussion, see my recent op-ed article in the *Nikkei Asian Review*.

In the United States, the Fed is limited to purchases of government and agency-backed bonds.[8] In the euro area, issues concerning the distribution of purchases across member countries and the prohibition of direct purchases from governments may place effective limits on the volume of securities that could be purchased. Even with these limiting factors in the euro area and the United States, there is plenty of scope for further purchases. The Bank of England and the Bank of Japan face few legal obstacles to expanding their QE holdings.

In all countries, central bank ownership of a large fraction of corporate bonds and equity might raise both economic and political concerns. In the euro area and the United States, many political leaders are vocally opposed to QE programs already. On the other hand, failing to make QE purchases to achieve central bank objectives also raises political concerns. In the end, central banks have no excuse not to use the tools they have been given to achieve the objectives they have been set. It is not the job of central bankers to second-guess or outmaneuver their political masters.

Moving to negative interest rates on central bank reserves may increase the scope for QE to lower long-term rates, as markets revise downward their expectations of future short-term rates. Some central banks have already reduced their deposit rates to as low as –0.75 percent. Evidence suggests that negative rates are not being passed through to retail bank deposits and loans, but they are having the intended effects on bond yields and exchange rates. As long as households, banks, and firms can hold paper currency at a 0 percent interest rate, it is not clear how much further central banks can usefully lower short-term interest rates, but some market participants expect further reductions in Europe and Japan.

CONCLUSION

The case for additional monetary stimulus is not strong for the United Kingdom and the United States, where unemployment rates have returned to their prerecession levels and inflation appears to be returning toward target. In these countries, central banks believe that the next move is likely to be a tightening.

There is less reason for optimism about achieving inflation goals in the euro area and Japan, particularly given the elevated rate of unemployment in the euro area. In these countries, central banks have signaled that policy is likely to remain loose for many months and even years. Further stimulus now would accelerate the return to full employment and 2 percent inflation, avoiding the risk of an undesired drift into deflation and bringing forward the day that monetary policy can return to normal.

8. With the approval of the secretary of the Treasury, the Fed could conduct a broad-based program of secured lending to private corporations, which would have many of the same effects as buying corporate bonds. The Fed's purchases of local government bonds are limited to those with maturities under six months.