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## The Inflation Debate: Navigating the currents ahead

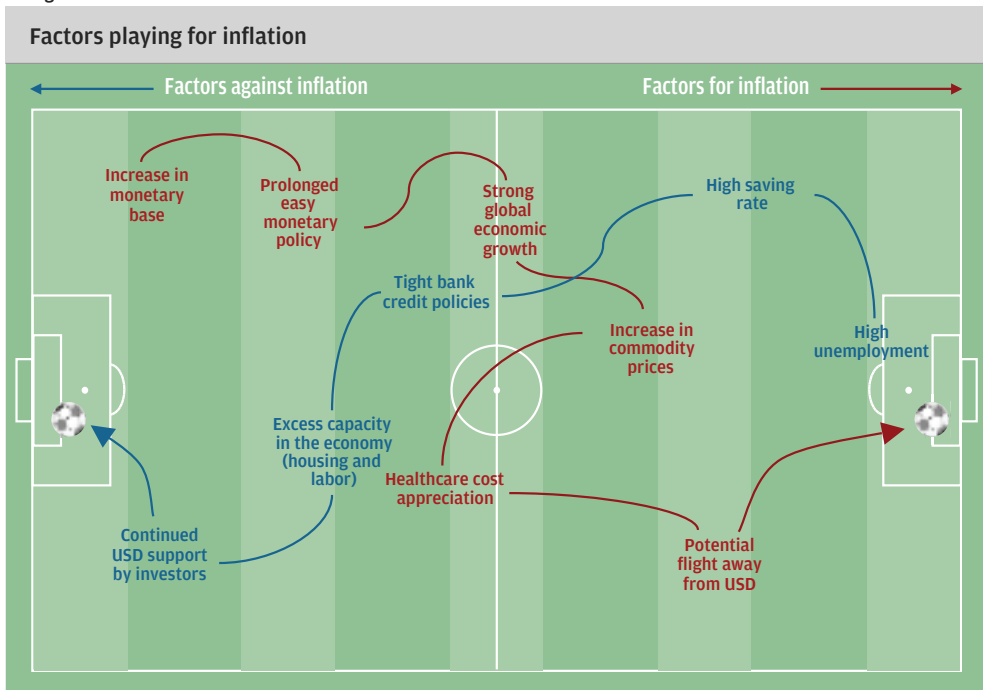
J.P.Morgan



## 1. Executive summary

Simply defined, inflation is the progressive increase in the price of goods and services in an economy over time. Its determinants are numerous, and the implications far-reaching. The tripling of the Federal Reserve's balance sheet since the beginning of the recession in December 2007, nominal interest rates that remain at historic lows, and recovering commodity prices have all fueled speculation about potential inflation. However, substantial slack in the economy, a persistently high unemployment rate and a tight credit environment all counter these factors, as depicted in Figure 1 below. In this report, we provide a brief summary of (1) why firms should care about inflation; (2) where inflation could go from here; and, most importantly; (3) how firms can best prepare themselves against inflation risk.

Figure 1



The current debate generally centers around scenarios of mild deflation versus high inflation over the near to medium term. There is also active debate on the likelihood of the high inflation scenario being accompanied by economic stagnation ("stagflation"). In this paper, we summarize the factors and explain the arguments for the different inflation scenarios, without making any of our own predictions (beyond discounting hyperinflation as a credible outcome). We also highlight the negative impact inflation surprises can have on firms and some potential solutions to mitigate this risk.

We hope that this report helps to clear up much of the confusion surrounding the topic of inflation and to highlight the reasons why this matter deserves the immediate focus of finance executives and board members across corporate America.

## 2. Why should firms care?

For firms in most sectors, inflation directly impacts revenues, operating costs, financing costs and the cost of providing employee benefits. Each of these variables can pressure profit margins, and hence firm valuations. Inflation also directly impacts the dollar exchange rate, which has important implications for most firms. Additionally, corporate policies set for a particular economic regime can become counterproductive in the event of inflation surprises. A relevant example is the cash reserves that firms have built up in anticipation of continued stress in the financial markets. If economic activity does pick up and there is an upward movement of inflation, that can quickly dilute the value of this asset.

Inflation directly impacts every firm's investing and financing activities. Because the vast majority of debt is issued in nominal, rather than in real terms, lower-than-expected inflation (or deflation) is most companies' worst nightmare. As an example, imagine a firm that issues a \$100mm bond paying a 5% nominal interest rate at a time when the market expects inflation of 2%. If the economy in fact experiences price deflation of 5%, the company's real financing cost has increased from an expected rate of 3% to an actual rate of 10%, negatively impacting the weighted average cost of capital.

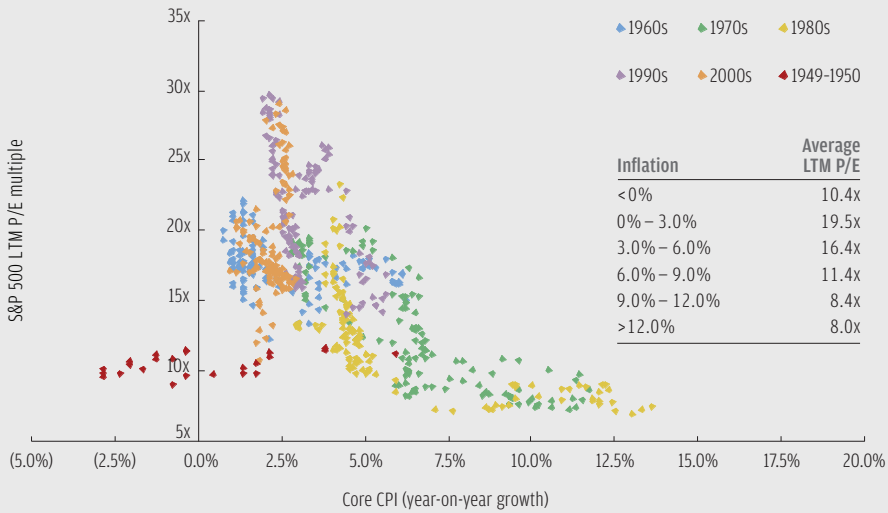
While lower-than-expected inflation carries steep costs, so does higher-than-expected inflation. This is largely a result of the uncertainty that periods of high inflation bring – if market participants cannot properly form expectations about future prices, it becomes very difficult to set the “right” nominal price for goods. This problem also impacts financial-sector “goods”, like Treasuries, commercial paper and commercial rent prices. Furthermore, if high inflation is accompanied by economic stagnation, a phenomenon known as stagflation, that could result in the most difficult scenario for firms to navigate.

Empirical evidence substantiates a robust relationship in the United States between firm valuations and inflation. In the top graph of Figure 2, we plot the S&P 500 price-to-earnings (P/E) multiple against core price inflation (excluding volatile food and energy items) for each month from 1960 through 2010. Additionally, we include a short period of time between 1949 and 1950, when the United States last experienced deflation. The figure indicates that years of mild inflation are typically coincident with periods of high firm valuations. For example, while average core inflation in the 1980s of about 6% was accompanied by P/E multiples in the range of 12x, the 1990s saw core inflation of just 3% and earnings multiples of more than 21x. The picture also seems to substantiate the belief that firm valuations are highest when inflation is low, but not too low. During 1949 and 1950, when the country briefly suffered from a deflationary environment, average valuations were well below those experienced during the periods of mild or even moderate inflation. The lower graph of Figure 2 further illustrates the damage that inflation surprises can have on the value of financial assets. What it shows is that the real return on stocks did not recover for over a decade after the high inflation shock of the early 1970s.

Figure 2

### Valuations typically higher during periods of muted inflation

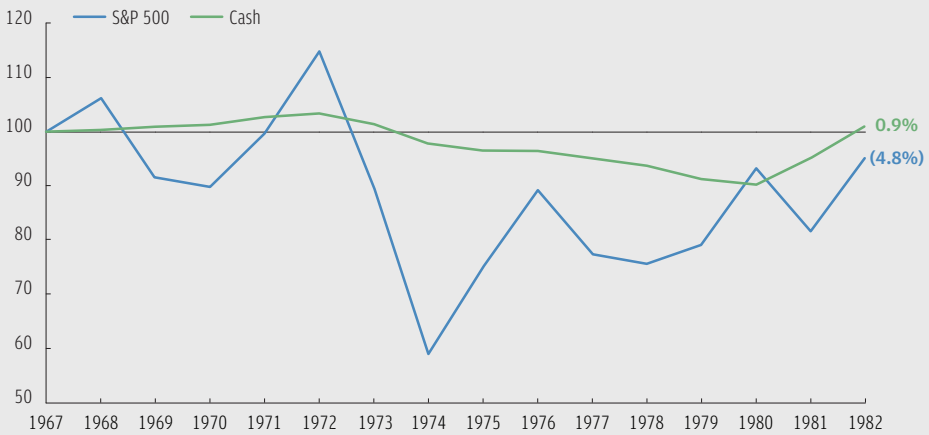
Core CPI growth versus S&P500 LTM P/E multiples, by decade



Source: J.P. Morgan, Bloomberg, Bureau of Labor Statistics

Note: Data for the 1949-1950 period are headline CPI inflation only  
Official core CPI data were published beginning in 1957

### Inflation-adjusted stock and cash return indices



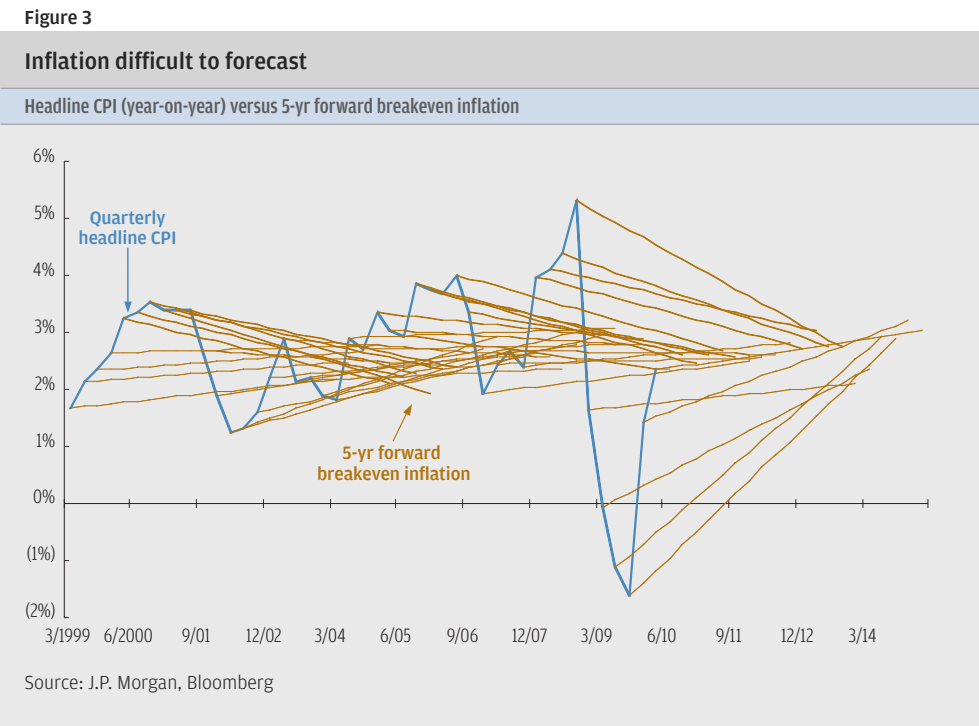
Source: Ibbotson Associates

### EXECUTIVE TAKEAWAY

Inflation can impact a company's profitability, cost of capital and firm valuation. Since firms in every sector are affected by inflation, it is critical for finance executives to consider how to best prepare for the potential adverse effects of inflation.

### 3. Inflation scenarios

Inflation is the result of numerous factors, and currently there are as many factors pointing toward high inflation as there are pointing toward low or no inflation in the coming years. While the capital markets appear to foresee tame or modest inflation over the short to medium term, the market has not historically been a great predictor of inflation. Figure 3 plots both actual inflation and the market’s expectations for inflation five years into the future, from the late 1990s to present.<sup>1</sup> Thus, the vertical distance between actual CPI growth (the blue line) and the market’s expectations from five years prior (the end of an orange line) is a measure of how “wrong” the market was at predicting inflation at any point in time. As the chart highlights, the market consistently predicts inflation in a narrow band between 1.5% and 3.5% through multiple cycles.



Because of these shortcomings, it is useful to examine other measures of inflation expectations. One such measure – analysts’ expectations for future inflation – is illustrated in Figure 4. This figure shows that the median analyst expectation, like the market, is for inflation to remain relatively modest (around 2%). But the median masks enormous variance in the range of estimates. Indeed, while some analysts expect inflation in December 2011 to be more than 6%, others expect the economy to experience modest deflation. Such variance underscores the uncertainty surrounding future inflation, and why it is critically important for firms to have a disciplined approach in dealing with this issue.

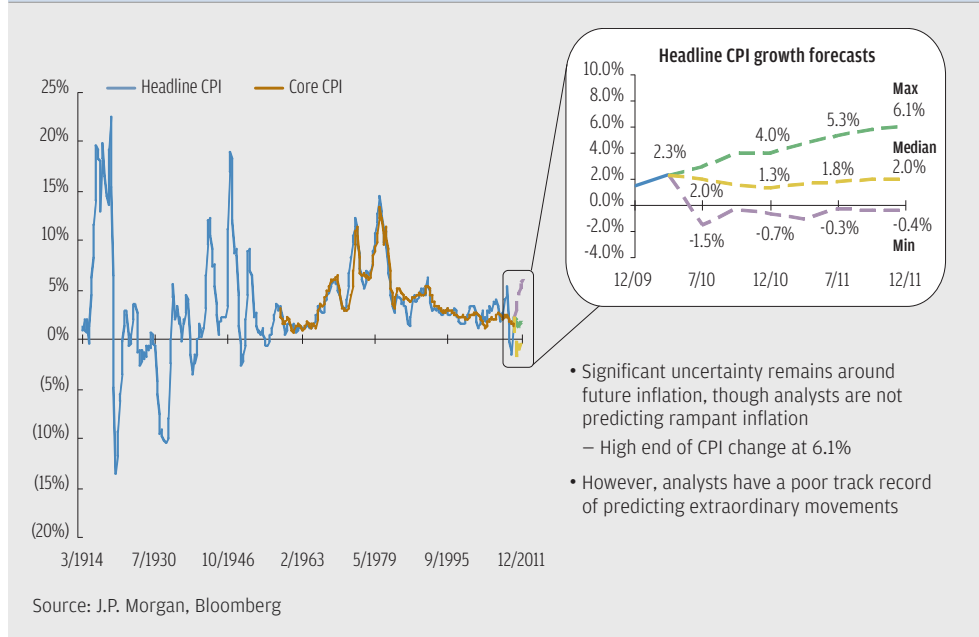
<sup>1</sup> Based on the Treasury Inflation-Protected Securities (TIPS) yield curve.

Finally, there has been tremendous divergence in price growth for the different goods and services underlying the consumer price index. For example, while housing prices – which makes up 40% of the CPI – fell for nearly a year, the prices of other goods and services, including those of health care and education, have increased. Such variation makes the headline index even more difficult for either the market or analysts to accurately forecast.

**Figure 4**

### Analyst consensus estimates

Historical and projected headline CPI change (year-on-year)



### 3.1 Key factors fueling inflationary expectations

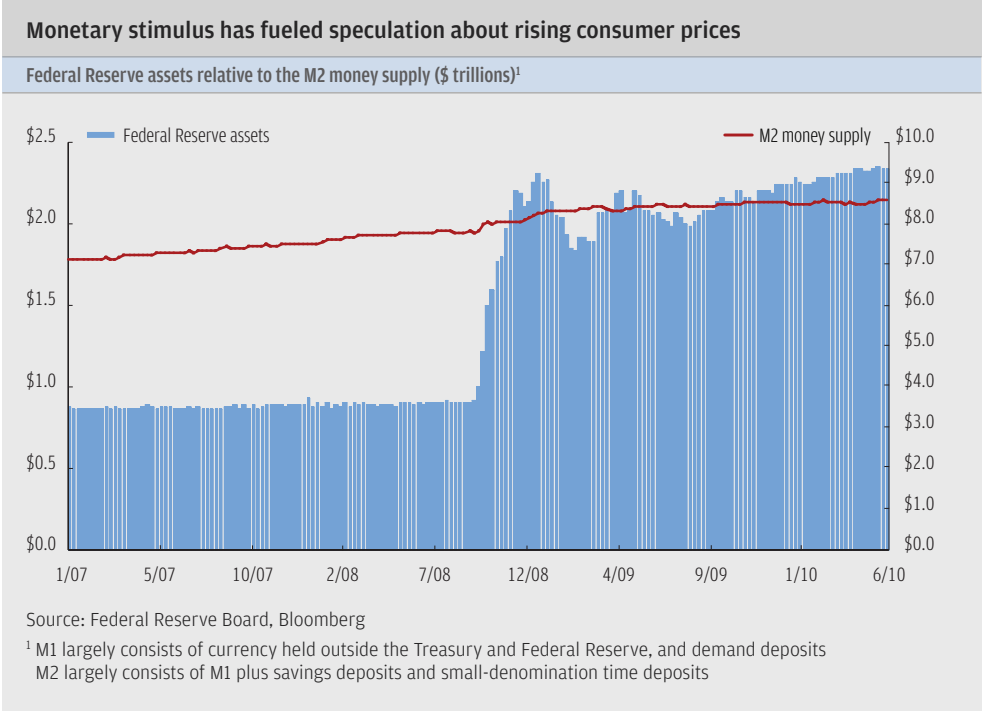
There are several key drivers of inflationary pressure over the short and medium run. These include both traditional and unconventional easy monetary policy set by the Federal Reserve, the projected trajectory of government debt, foreign purchases of dollar-denominated assets and increasing commodity prices. We discuss each of these issues in detail below:

*Traditional easy monetary policy* – Near-zero interest rates have been an important policy initiative in helping banks recover, since they are able to borrow at low rates from each other or the Federal Reserve, and then reinvest such funds at higher long-term rates. Once banks start lending more aggressively, this borrowed money will start flowing through the real economy. Because money is created by the process of lending, easy monetary policy could lead to inflation.

*The Federal Reserve and unconventional monetary policy* – One extraordinary policy measure that the central bank took during the recent crisis was to make large-scale purchases of certain assets, which ended up nearly tripling the size of its balance sheet. This supply of money in the marketplace could potentially create massive inflationary pressures. In an economy with 10% bank reserve requirements, a \$100 infusion by the central bank could

theoretically increase the total money in circulation by \$1,000. Therefore, one might expect the total amount of money circulating in the economy to soar, since the Federal Reserve expanded the money base by trillions of dollars. However, Figure 5 shows that the total money supply (as measured by M2) has remained relatively unchanged throughout the crisis, highlighting a tight credit policy by banks as they attempted to shore up their balance sheets during this time period.

Figure 5

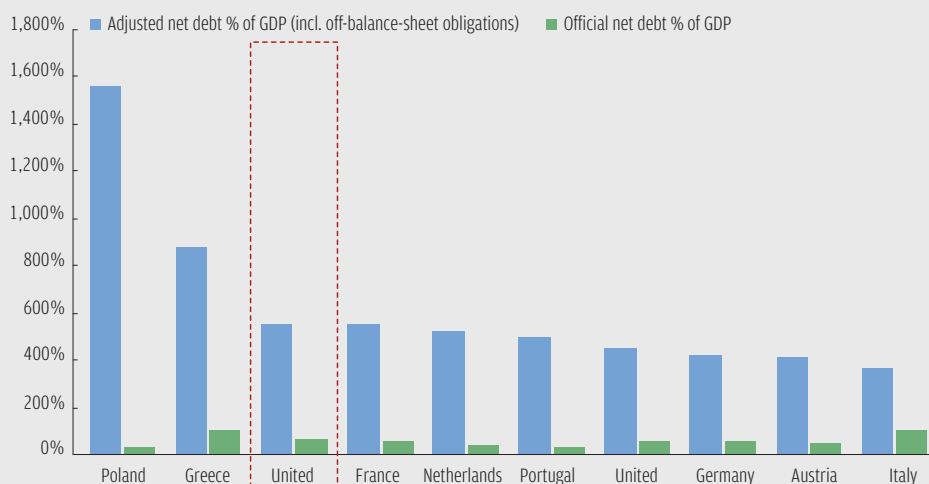


*Ballooning government debt* – Another cause for concern about inflationary pressures is the persistent increase in the gross federal debt-to-GDP ratio since 2001, and its jump from 69% in 2008 to 83% in 2009 due to the financial rescue measures and declining tax revenues. Even more troubling is the expectation that the ratio could reach 103% by 2015. Debt levels of over 100% of GDP are not unprecedented; gross debt rose to a peak of 122% of GDP in 1946 in the aftermath of World War II. However, the United States was a younger country then, embarking upon a rapid geopolitical and economic ascent. Indeed, from 1947 through 1988, the economy grew at an annual rate of about 3.7%. In contrast, from 1989 through the first quarter of 2010, the economy grew at a rate of only 2.6%. Notably, all of these debt estimates exclude off-balance-sheet obligations, such as Medicare or Social Security benefits. When incorporating the liabilities from these two programs, the 2010 debt-to-GDP ratio balloons nearly tenfold on a net present value basis.<sup>2</sup> As Figure 6 shows, this places total U.S. liabilities among the highest in the world, even after adjusting for GDP.

<sup>2</sup> Note that this estimate refers to the net debt-to-GDP ratio (rather than gross debt), which excludes intra-governmental liabilities. This figure also incorporates state and local government debt, in addition to federal debt.



Figure 6

**Total obligations usually much larger than official debt figures suggest****Net debt % of GDP ratios**

Source: National Center for Policy Analysis, Organisation for Economic Co-operation and Development, Societe Generale

Note: OECD values for 2010 are forecasts

Fundamentally, there appear to be limited options for policymakers at this point to reduce the debt burden: cut government spending, increase taxes, nominally pay back debtholders by printing money or some combination thereof. Because of the political stalemate in Congress with no clear end in sight, it is difficult to imagine either of the first two options being successfully pursued. But the third option, while generally considered unprecedented in the United States, is an alternative policy choice that firms and investors must keep in mind. Since the United States issues debt in its own currency, inflation would be effective in eroding the real value of the country's outstanding debt balance, and the government has an incentive to do so. As an aside, one should note that there is precedent for public U.S. institutions to default on their obligations. From 1970 to 2009, 54 municipalities rated by Moody's defaulted on their bonds. When looking a bit further back, nine states defaulted in the early 1840s, of which two – Mississippi and Florida – completely repudiated their debts. Outside the United States, sovereign governments of developed economies have also defaulted on their debt liabilities.<sup>3</sup>

*Foreign purchases of U.S. debt* – In June 2009, foreigners held about \$8 trillion of U.S. long-term securities, representing about 18% of total long-term securities outstanding. This includes more than 50% of the \$4.6 trillion in long-term U.S. Treasuries. Ultimately, such significant foreign ownership of U.S. securities means that the strength of the dollar is sensitive to the perception of foreign entities, including central banks and sovereign wealth funds. If foreign institutions were to substantially reduce their holdings of U.S. securities,

<sup>3</sup> This list includes countries such as the United Kingdom, Japan, Spain, Austria, Denmark, Greece and the Netherlands.

it would place downward pressure on the value of the dollar. Consequently, the prices of imported basic, intermediate and final goods would likely increase, placing upward pressure on overall prices. Figure 7 shows that total foreign holdings of U.S. securities, including equity, have recently declined, largely driven by the crisis. This observation suggests that the dollar may depreciate, but it is important to note that the decline in total holdings at least partially reflects falling asset prices. Also significant is that even while total foreign holdings fell 7% between mid-2008 and mid-2009, the holdings of the two largest foreign owners – China and Japan – increased 21% and 2%, respectively.

Figure 7



*Commodity prices* – Commodity prices can be an implicit indicator of what the market expects of future inflation, since the intrinsic value of commodity prices is fixed. Unlike currency, commodities cannot simply be printed – only sporadic mining discoveries can increase their supply. With that in mind, the price of gold has sharply recovered since slightly dipping in early 2010, and has well surpassed its peak in late 2009, possibly indicating that the market expects gold to be a hedge against expected inflation. Likewise, crude prices have also recovered from their lows, although they remain depressed relative to their speculative prices in 2008. The presence of contango in the crude futures market, a situation in which near-term futures prices are lower than those further out, suggests that the market may be expecting an erosion of the U.S. dollar in the near and medium term. Potentially high commodity prices combined with a stagnating economy and high unemployment could result in stagflation, as last experienced in the United States in the early 1980s.

### 3.2 Key factors tempering inflationary expectations

Despite a multitude of factors that argue for higher inflation rates in the coming months and years, there are an equal number of factors that suggest inflation will continue to be muted or even negative over the near to medium term.

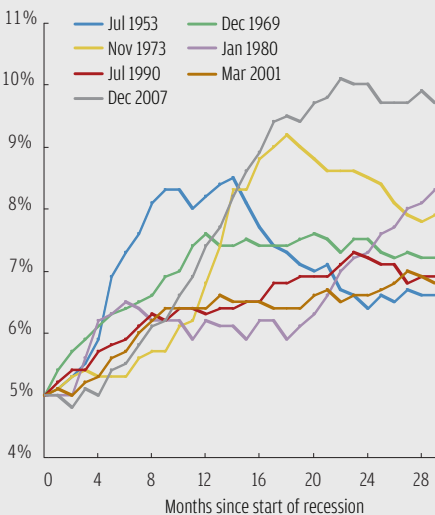
*Unemployment* – The first and most obvious factor is unemployment. Historically, there appears to be a robust inverse relationship between the inflation and unemployment rates. When unemployment is high, inflation is typically kept low due to lost bargaining power for increased wages and greater competition on price points for goods and services. Since unemployment reached 10.1% in October 2009, its highest level since the early 1980s, historical experience would suggest that inflation will be kept at bay until the slack in the labor force eases.

But how long will that take? Okun's Law, a rule-of-thumb that characterizes the relationship between unemployment and economic growth, suggests that a one percentage-point decline in the unemployment rate requires real GDP growth to be two percentage points above trend for four consecutive quarters. Even with expectations for moderate GDP growth in 2010 and 2011, this paints a rather bleak picture. With unemployment at 9.7% currently (as seen in Figure 8), it suggests that 4.5% real GDP growth will be required for a staggering 20 consecutive quarters to reach a "normal" level of unemployment of 5%.<sup>4</sup> To put that in perspective, annualized quarterly GDP growth has been 5% or higher in only 10 of the last 80 quarters.

Figure 8

#### Industrial overcapacity, depressed capex, and excess labor capital

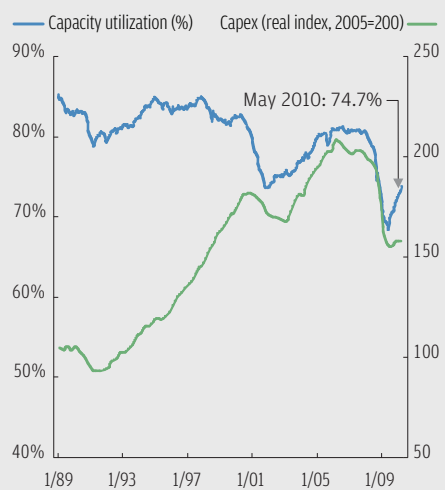
##### U.S. unemployment rates following selected recessions



Source: Bureau of Labor Statistics

Note: Unemployment rates have been normalized at the beginning of each recession to the Dec 2007 level (5.0%)

##### Capex and factory usage



Source: Federal Reserve Board, Bureau of Economic Analysis

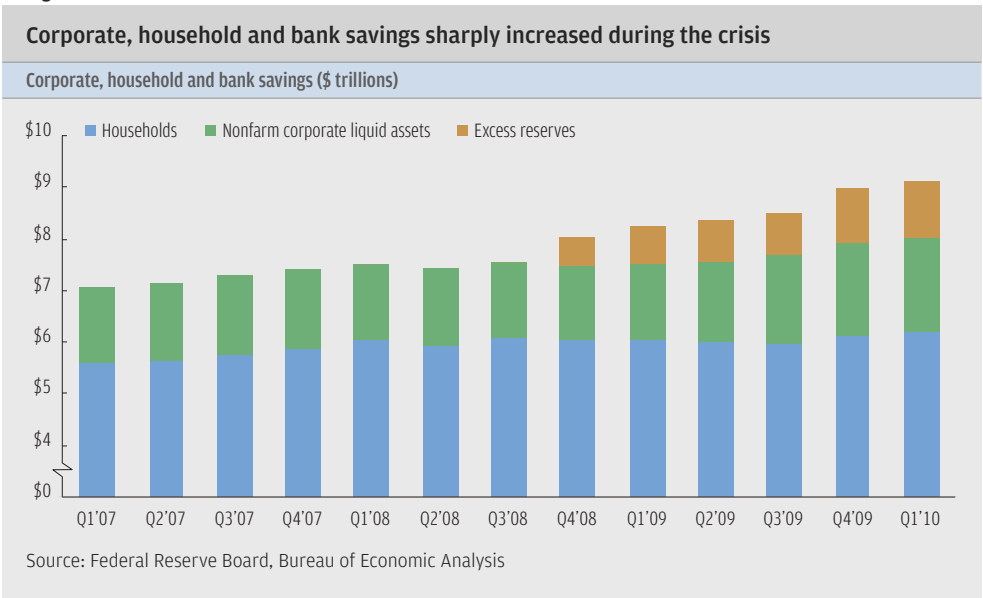
Note: Private fixed investment in equipment, software and structures was employed as a proxy for capex

<sup>4</sup> Assumes 2.5% annual trend growth.

*Capacity utilization* – In addition to excess capacity in the labor market, industrial capacity utilization continues to be a factor fighting against inflation as well. Capacity utilization measures the extent to which U.S. manufacturing firms utilize their productive capacity. When the demand for goods and services rises or falls, the capacity utilization rate typically follows suit. While we’ve seen a recent uptick in capacity utilization from the low of 68% recorded in June 2009, we remain well below the historical average over the past 40 years, at approximately 74% in May 2010. Since 1967, capacity utilization has been at or below 74% just 5% of the time. Additionally, the rate of capacity utilized has historically been slow to rebound, taking more than four years to rise from the post-9/11 low of 73.5% to the 40-year average of 81%. Given the recent slack in existing capacity, firms have responded by cutting capex, further depressing prices and suggesting tame inflation over the medium term.

*Corporate, personal and bank savings* – Corporate, personal and bank savings trends also indicate that a move towards an inflationary environment will take some time. On the corporate side, firms have built cash balances to historic highs by reducing capex, buybacks and dividends, and by raising capital. Additionally, while overall personal savings assets slightly decreased during the recent crisis as incomes fell and households were forced to draw down on accounts, the personal saving rate rose from just 0.8% in April 2008 to well over 6% in a little over a year. While this figure declined in 2010 with the economic recovery, it remains at an elevated level (4.0%) relative to recent history. The buildup of cash on the balance sheets of U.S. firms, coupled with lower overall consumer spending, implies a fall in demand that is likely to tame inflation.

Figure 9



Finally, excess reserves held by banks have ballooned to unprecedented levels. Thus, while fiscal stimulus and the explosion of the Federal Reserve’s asset base have fueled the expectation of rising consumer prices, the increase in the broader money supply has been almost negligible. This suggests that the improvement in bank liquidity has not been met by a greater extension of credit, but rather a greater discipline in lending practices, which has resulted in increased reserves. Additionally, as a result of the Economic Stabilization Act of 2008 – which allowed the Federal Reserve to pay interest on both required reserves *and*

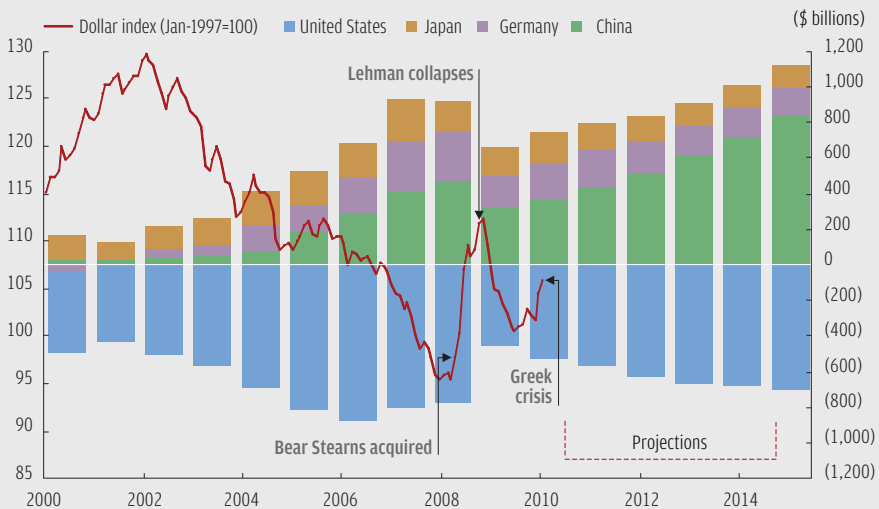
excess reserves – lending and its associated risks might continue to be viewed as a less attractive option to earning interest on reserves. This is demonstrated in Figure 9, which shows the increase in excess reserves shortly after the Lehman collapse. Excess reserves held with the central bank increased from \$2 billion in August 2008 to over \$700 billion just four months later.

*Dollar strength* – Since the late 1990s, the U.S. current account deficit has dramatically widened. When coupled with the costs of averting a depression over the past two years, these imbalances have been viewed by many as signaling the end of the dollar’s preeminence. In fact, the dollar has experienced a secular decline over the last decade. Even so, there is strong evidence that suggests that the dollar is still the currency of choice when a crisis hits the financial markets. As evidence, the dollar posted a strong rally during the peak of the banking crisis (see Figure 10), and again during the more recent events surrounding the sovereign debt crisis in some eurozone countries (primarily Greece).

Figure 10

### The dollar has been weakening since the early 2000s

Global imbalances, risk and dollar strength



Source: Federal Reserve Board, Federal Reserve Bank of St. Louis, International Monetary Fund

Note: An increase in the dollar index indicates appreciation; 2010 through 2015 current account values are IMF forecasts; 2009 current account value for China is IMF forecast

### EXECUTIVE TAKEAWAY

There are numerous factors fighting both for and against inflation over the medium term. While the path forward remains uncertain, we recommend that finance executives and boards of directors be mindful of how their firms could be impacted by all of the potential outcomes.

## 4. How can firms prepare themselves?

### 4.1 Corporate finance considerations in an uncertain environment

The high level of uncertainty surrounding the inflation question can make financial policy decisions for companies much more challenging. There are some strong arguments that suggest we may relapse into a deflationary environment for an extended period of time. On the other hand, equally strong arguments suggest that we are in for a period of very high inflation in the United States.

Firms in all sectors are exposed to inflation in one way or another. Common examples of explicit inflation risk include contractual agreements common in real estate, toll roads, or fixed-price contracts entered into by utilities. Additionally, inflation risk can also arise from cost-of-living adjustments (COLA) that are frequently found in salary or pension contracts.

There are several basic strategies that firms can employ in order to maximize real shareholder value and mitigate the financial impact of an extreme inflationary or deflationary environment. Firms may be able to combat an unexpected increase or decrease in prices by adjusting their capital budgets, optimizing net working capital, adjusting leverage and payout ratios, and altering their investment portfolios. Figure 11 lists the potential strategies that firms can employ to withstand unexpected inflation scenarios.

Figure 11

Corporate finance decisions		
Deflationary environment		Inflationary environment
<ul style="list-style-type: none"><li>• Lower valuation</li><li>• Real cost of debt is higher<ul style="list-style-type: none"><li>– Target a more conservative capital structure</li></ul></li><li>• Reduce duration of liability portfolio</li></ul>	Valuation/ Capital structure	<ul style="list-style-type: none"><li>• Lower valuation</li><li>• Extend duration of liability portfolio</li><li>• Swap floating rate debt to fixed rate</li><li>• Lock in rates today for future debt issuances</li></ul>
<ul style="list-style-type: none"><li>• Increase floating rate debt</li><li>• Focus on preservation of liquidity</li><li>• Invest cash in income-generating securities</li></ul>	Cash management/ liquidity	<ul style="list-style-type: none"><li>• Shorten duration of cash investment portfolio</li><li>• Invest cash in inflation-protected investments</li></ul>
<ul style="list-style-type: none"><li>• Allocate capital to investments with certain, near-term cash flow streams</li><li>• Return of capital is more critical than return on capital</li></ul>	Capital allocation	<ul style="list-style-type: none"><li>• Allocate capital to investments that benefit from high inflation</li><li>• Analyze impact of inflation on cost and revenue of potential projects and determine those with most attractive cash flow dynamics</li></ul>
<ul style="list-style-type: none"><li>• Investors may attribute premium to dividend-paying stocks</li><li>• Ensure strong capital structure and adequate liquidity before making distribution decisions</li></ul>	Distribution policy	<ul style="list-style-type: none"><li>• Increase dividends over time to ensure equity investors receive a constant real return</li></ul>

## 4.2 The inflation hedging market

Being unprepared for any extreme inflation outcome (on either the upside or downside) can have serious implications for firms. As discussed in the previous section, there are ways that firms can reduce the impact of inflation through more disciplined corporate finance decision-making. While firms during past periods of uncertainty had few direct tools at their disposal to hedge against inflation, this no longer remains true. The launch of the TIPS market in 1997 created the first tradable form of inflation-hedging securities in the United States. This has been followed more recently by the evolving inflation derivatives market. Primary inflation-hedging tools include inflation-linked debt issuances, inflation swaps or inflation options. As with any hedge strategy, corporate risk managers should fully understand the economics as well as the accounting implications before implementation.

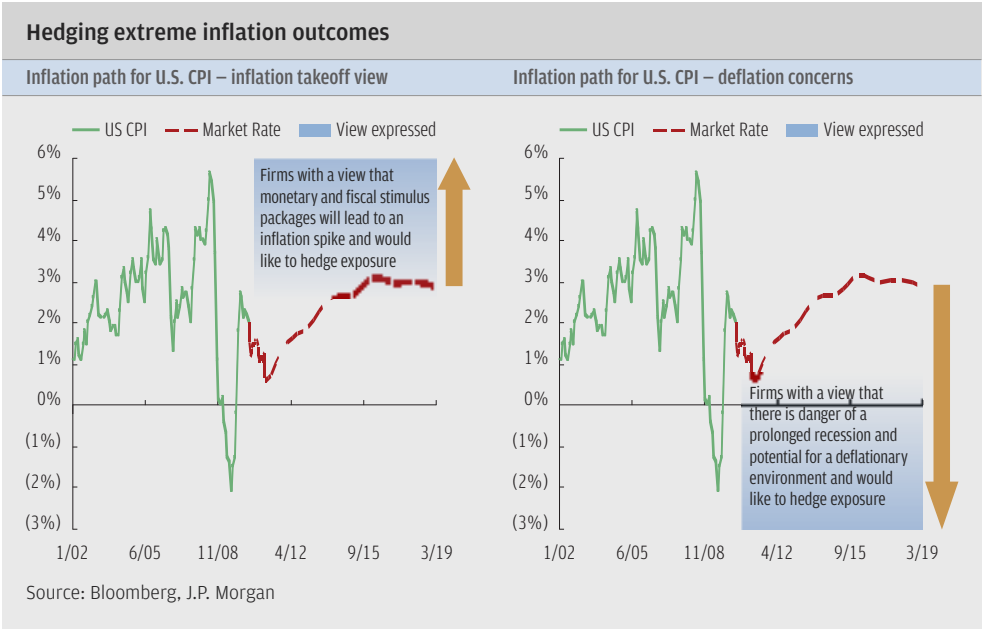
*Traditional inflation hedges* – Conventional wisdom would suggest that real estate and commodities, or commodity currencies, are an effective hedge against inflation. This is supported by the way these asset classes moved the last time the United States experienced a period of very high inflation in the 1970s. While these may continue to be good directional hedges, they are far from being perfect as the correlations can and have broken down at various points in time.

*Inflation-linked issuances* – This structure would be in line with the standard format of government issuance. It would involve paying a low real coupon on an inflating notional and then the inflated notional at redemption. This would provide attractive levels for funding, improved interest coverage metrics and a better hedge for a business with underlying inflation-linked revenues.

*Inflation-linked swaps* – Inflation-linked swaps are the building blocks of the inflation hedging market. In the basic structure, one side pays a fixed rate and the other side pays the annual change in inflation. As a typical example, a utility receiving a fixed price on a contract can enter into a hedge where it pays a fixed rate and receives the change in inflation, protecting the utility from a rise in inflation. Similarly, a pension fund manager can hedge an increase in expenses due to a cost-of-living adjustment using the same inflation-linked swap. Like most swaps, these structures can be modified to hedge a firm's risk in a more customized way.

*Inflation-linked options* – Given the wide disparity in inflation expectations, there is a lot of interest in the inflation option market. Particularly in the United States, the market is still evolving and hence liquidity remains fairly low. In the United Kingdom and the eurozone, the inflation markets are more sizeable, primarily driven by pension plans that hedge risk in inflation-indexed plans. Our expectation is that the uncertainty in future U.S. inflation rates will be a catalyst for the market to quickly catch up with the deeper U.K. and Eurozone markets, providing firms with a potentially new avenue to reduce their exposure to the ill effects of inflation surprises through buying or selling inflation-linked options.

Figure 12



EXECUTIVE TAKEAWAY

Since the objective of management is to maximize real shareholder value, finance executives and board members must consider what corporate finance options can best mitigate the adverse impacts of inflation surprises. These can be supplemented with capital markets tools that are increasingly sophisticated and liquid.



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