

# The U.S. Housing Market Collapse and Adjustment of Household Balance Sheets—Medium-term Economic Forecast (2009–2018)

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*Amid the global economic turmoil triggered by the U.S. subprime mortgage crisis, we predict Japan's economy will average only 1.0% real growth annually over the next five years, well below its potential growth rate. In the U.S., balance sheet adjustment in the household sector will constrain consumption even after the financial crisis ends, slowing the growth of emerging economies. In the second five-year period, despite a global recovery, Japan's economy will temporarily stall due to consumption tax rate hikes, reducing the annual real growth rate to 1.5%, again below the potential growth rate.*

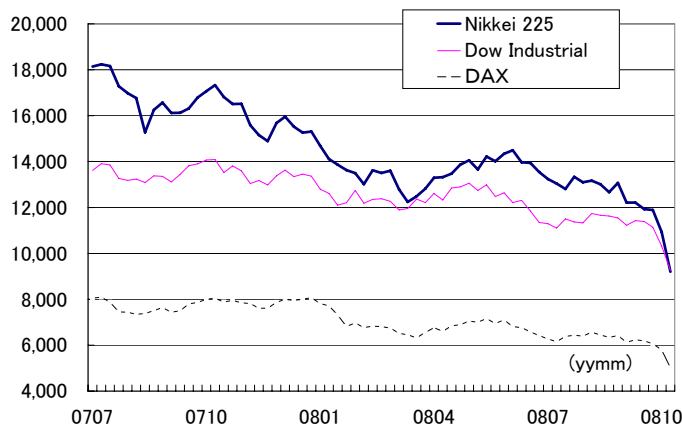
## 1. Growing Financial Market Crisis

### 1. Turbulence in Financial Markets

The U.S. subprime mortgage crisis, which spread to European financial markets in the summer of 2007, is still sending tremors across the global economy. Financial institutions have been crippled by losses, and some have been rescued by the government while others were allowed to fail. Short-term funding markets have nearly been paralyzed by the increased sensitivity to credit risk and lack of lenders. Although central banks such as the FRB and ECB have orchestrated massive injections of liquidity to address funding pressures, financial markets remain unsettled, with no end in sight.

Our 10-year outlook for the economy remains largely unchanged from the previous forecast released in October 2007. In Japan and other advanced economies, aging populations will reduce or even reverse labor force growth, bringing down the economy's potential growth rate. While emerging economies such as China and India will keep growing and altering the structure of the global economy, they too will eventually succumb to the effects of aging. China's labor force, for instance, is predicted to peak out around 2015 due to the longstanding one-child policy. One difference from last year's forecast is that the subprime crisis, which we predicted would dominate the first half of the forecast period, has worsened.

Exhibit 1 Major Stock Market Indices



Initially, the stock market downturn was led by financial stocks laden with subprime-related losses. However, when the turmoil in financial markets began to take a toll on the health of the real economy, the corporate earnings outlook soured, triggering a broad sell-off.

In the euro area, the present financial system crisis is the first since the euro's adoption. It will pose a critical test to the crisis management capabilities of the three-part framework consisting of a single monetary and exchange rate policy, decentralized financial supervision, and decentralized fiscal policy.

## 2. Housing Markets Tumble in the U.S. and Europe

The U.S. housing market boom began in the late 1990s, gaining momentum as monetary easing after the IT bubble's collapse sparked residential investment. As the market heated up, the home ownership ratio surged from a plateau of around 65% in the late 1990s to almost 70% in 2005. Residential investment also grew as a ratio of nominal GDP, peaking out in 2005 after the FRB initiated interest rate hikes in 2004.

U.S. home prices surged in early 2003, and then gradually decelerated as interest rate hikes curbed residential investment. Home prices finally began falling in early 2007.

Recently, U.S. home prices have declined faster than we predicted in our October 2007 forecast. The benchmark S&P/Case-Shiller 20-city composite index is already down 20% from the peak level.

The collapse of the U.S. housing market also sent tremors to Europe, where financial institutions held large positions in securitized subprime mortgage debt. To make matters worse, the crisis coincided with Europe's own housing bust.

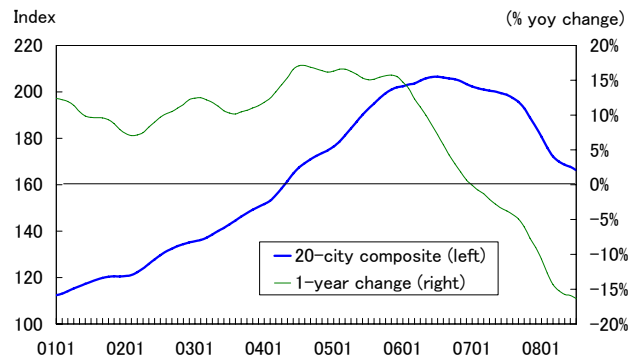
Earlier, Spain and Ireland's adoption of the euro in 1999 had added further momentum to their domestic housing booms, helping to extend their economic expansions. However, ECB monetary tightening from December 2005 reined in the economy and housing market in both countries. As for the U.K., arrival of the subprime crisis sent financial markets reeling, freezing credit for home loans. This exacerbated the housing market correction and sent house prices tumbling. Thus European financial markets are now reeling from losses related to both the U.S. housing slowdown and their own housing slowdown.

## 3. U.S. Household Finances Deteriorate

When Japan's bubble economy collapsed in the early 1990s, it was the corporate sector that was hardest hit. In contrast, the current housing market collapses in the U.S. and Europe have impacted their respective household sectors. Since 2000, household liabilities in the U.S. have surged relative to disposable income, indicating that household finances have worsened in recent years.

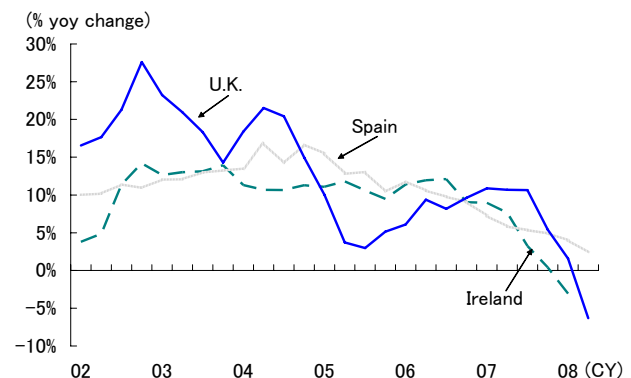
Not all of the borrowing was used for home purchases. As home prices rose, households were able to increase debt by refinancing existing mortgages with subprime mortgages, and some funds were diverted to consumption.

**Exhibit 2 U.S. Home Price Index (S&P Case-Shiller)**



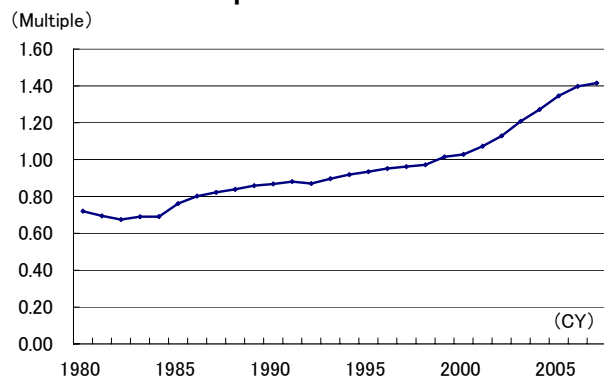
Source: Standard & Poors & Fiserv

**Exhibit 3 European House Price Indices**



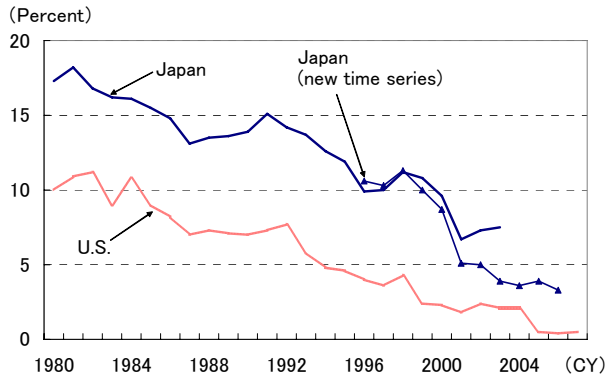
Sources: Halifax (U.K.); Ministry of Housing (Spain); Department of the Environment, Heritage and Local Government (Ireland).

**Exhibit 4 U.S. Household Debt as a Multiple of Disposable Income**



Source: FRB

### Exhibit 5 Household Saving Rate



Sources: Dept. of Commerce (U.S.); ESRI (Japan).

In addition, home equity loans were also easily available for funding additional consumption.

As a result of the borrowing binge, the household saving rate has plummeted well ahead of the baby boomer retirement wave, and at a faster pace than in Japan, where baby boomers began retiring last year. In recent years, the U.S. household saving rate has nearly reached zero. Previously, household finances were not a major concern despite the rising debt-to-income ratio because asset values had been rising. However, the recent decline of both home prices and stock prices now forces households to clean up their balance sheets.

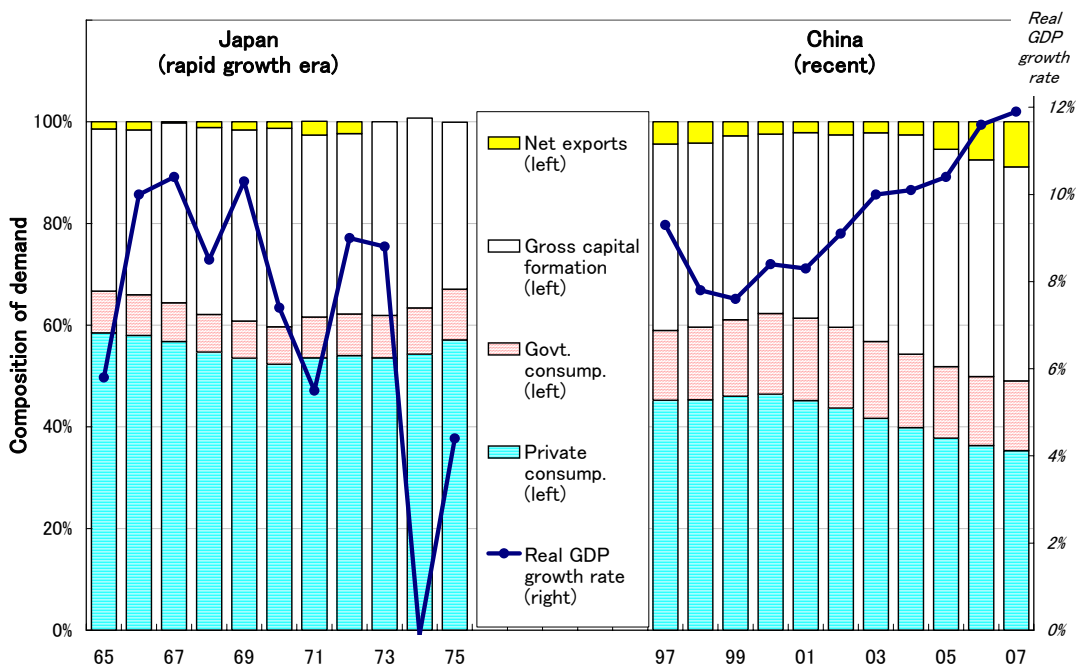
Clearly, the housing bust is likely to suppress not only residential investment but consumption because depressed home prices will no longer fuel debt-financed consumption. In addition, during the period until households regain financial health, they must save a larger portion of income and curb consumption.

### 4. Emerging Economies Lack Strength to Drive Global Economy

For a brief period, economists entertained the notion of “decoupling,” which held that in the event of slowdowns in the U.S. and Europe, emerging economies such as BRICs (Brazil, Russia, India and China) could continue to grow and drive the global economy.

However, a look at Japan’s rapid growth experience suggests this may not be the case. In Japan’s rapid growth experience from the late 1960s, domestic demand heated up and spurred import growth. This generated a current account deficit that drained foreign reserves, making the 360-yen fixed exchange rate unsustainable and requiring monetary tightening to cool down the economy. By comparison, in contemporary China, domestic consumption has dropped as a ratio to nominal GDP by approximately 10-percentage points from 1997 to 2007. As a result, domestic demand has failed to keep pace with the overall economy.

### Exhibit 6 GDP Growth Comparison —Japan (1965-1975) and China (1997-2007)



Sources: National Bureau of Statistics (China), Cabinet Office (Japan).

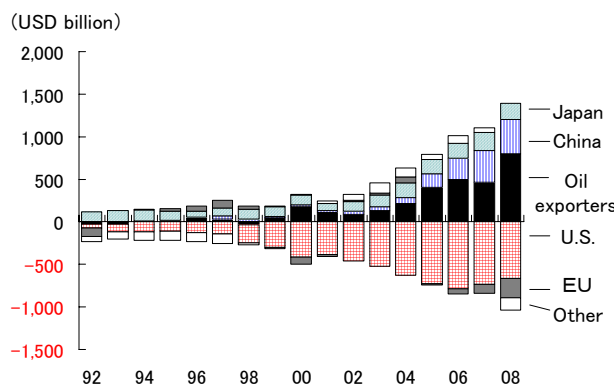
Although China's exports and imports have both grown, the expanding trade surplus suggests that economic growth is led by exports. Even business fixed investment, which has been a prominent component of domestic demand, is sustained by export growth. As such, it seems clear that in the event that export growth slows, domestic demand will not be able to sustain the economy's present growth rate.

## 2. Growing Balance of Payments Disequilibrium

### 1. Demand for U.S. Dollar Grows Despite Waning Confidence

Normally, when a country's economic fundamentals deteriorate due to a financial crisis or falling economic growth rate, its currency suffers a sell-off and depreciates in value. The U.S. has proved to be an exception to the rule. In recent years, its current account deficit has consistently comprised approximately 5% of nominal GDP. In fact, because of its large and sustained current deficits, the U.S. became a net debtor nation long ago. Nonetheless, until recently both the U.S. and global economy managed to expand amid a growing balance of payments disequilibrium in which America's large current deficit and expanding imports were offset by rising current surpluses of oil exporting countries and China.

**Exhibit 7 Global Current Account Balances**



Source: IMF

Considering how the subprime crisis has shaken the U.S. financial system and real economy, the dollar's value now faces even greater downside risk than before from deteriorating fundamentals. The recent spurt of federal funds rate cuts is another downside factor for the dollar. Nonetheless, the dollar's real effective exchange rate has actually risen from its bottom in March 2008 when the Bear Stearns crisis surfaced, and remains buoyant.

Despite the above concerns, the shortage dollar funds is now acute in global financial markets, where it still functions as the anchor currency for international settlements. In fact, the shortage exists not only in Europe, where financial institutions face severe losses amid a credit freeze, but

in Japan as well. The reason is that U.S. financial institutions can no longer provide dollar funding to international markets because they need it for themselves in order to survive the credit freeze.

As the intensifying and broadening of international financial market turmoil aggravates the dollar funding shortfall, countries have been forced to sell off their own currencies to provide dollar funding, sustaining the dollar's value. In an unusual move, central banks in other countries have established temporary reciprocal currency arrangements (swap lines) with the U.S. to provide funding for dollar liquidity operations.

Meanwhile, the yen's real effective exchange rate dropped due to the weak economy and ultra-low interest rates. Its recent appreciation is interpreted as a long overdue correction to Japan's post-bubble deflation and sustained inflation in the U.S.

### 2. Contradictions in the International Currency Regime

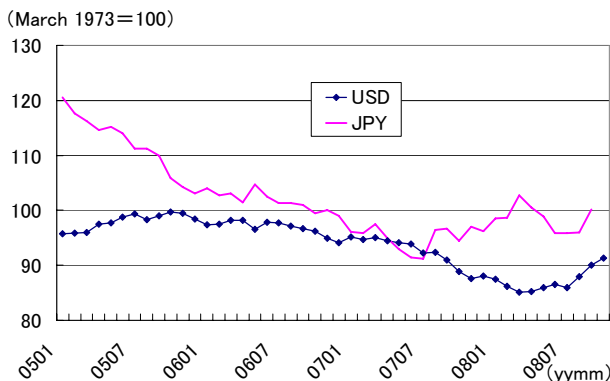
The dollar funding shortfall not only affects bilateral transactions involving the U.S., but even other international transactions with little apparent connection to the dollar. For example, transactions between Asian currencies such as the yen, Chinese renminbi, and Thai baht are seldom conducted directly between currency pairs, relying instead on the dollar as an intermediating currency.

Although the U.S. boasts the world's largest economy, the contradictions inherent in the

dollar-dependent international currency regime have long been known. First, the growth of international trade over they years has required a corresponding increase in official reserves held by countries, and these countries rely on the U.S. dollar as a key reserve asset. Meanwhile, the supply of dollars depends on the U.S. sustaining a large current account deficit year after year. This increases the U.S. external debt to alarming levels, which tends to undermine confidence in the dollar. Second, as the current financial crisis shows, the dollar anchor makes the global economy sensitive to U.S. monetary conditions—when money tightens in the U.S., the effect ripples across the global economy.

To address these contradictions, alternatives have been proposed over the years, including a return to the gold standard and establishment of a global currency. In 1969, the IMF created the special drawing right (SDR) as a new international reserve asset (besides gold and the dollar) to sustain the fixed exchange rate regime. The SDR has been credited with limited success in supplying international liquidity at times such as the Asian currency crisis of 1997. Nonetheless, the dollar remains the preeminent settlement currency because of key advantages such as widespread use in international financial markets and transactions, low transaction cost, and unparalleled convenience. Moreover, the U.S. has resisted reforms that might diminish the dollar’s role because such reforms would reduce the status of U.S. financial institutions and deprive the U.S. economy of benefits associated with being the provider of international liquidity.

**Exhibit 8 Real Effective Exchange Rate**



Sources: FRB, BOJ

### 3. Shaky Long-term Outlook for USD

Despite waning confidence in the dollar and in U.S. financial intermediaries, the global economy remains dependent on the dollar due to its integral role in international transactions. During our 10-year forecast period, we do not expect the dollar’s primacy to be seriously challenged, even in the worst case subprime crisis. Considering that countries other than the U.S. hold massive dollar reserves, no one wants to see the dollar tumble or lose anchor status. This embedded position in the global economic order makes the dollar’s primacy difficult to challenge.

Thus even if the current crisis deteriorates beyond expectations and the U.S. fails to stabilize financial markets on its own, Japan and other countries have little choice but to protect the dollar by providing funds indirectly through international organizations such as the IMF.

Yet as seen by the rise and fall of the British pound sterling, the dollar’s status is by no means guaranteed over the long term. The euro is a potential contender, but needs to gain more status as an international currency. However, as of early 2008, the euro area had grown to 15 member states with a population of 319.50 million, surpassing the U.S. population of 305.00 million.

Down the road, it is possible that China or India, whose populations are three to four times larger than either the U.S. or euro area, will someday outgrow the U.S., and that at some point the renminbi or rupee will gain enough clout to replace the dollar. Alternatively, the dollar’s anchor status could be challenged by the rise of a non-national currency such as the SDR.

## 3. Aging and Structural Changes in Japan’s Economy

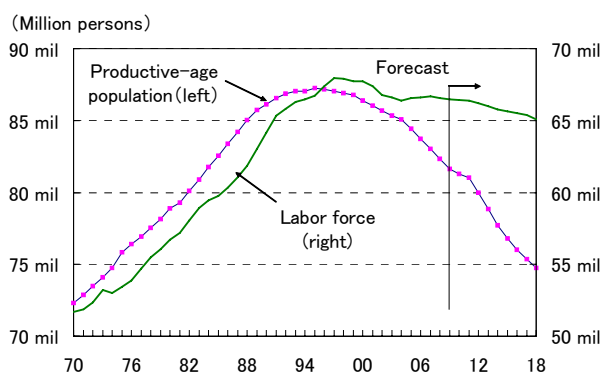
### 1. Aging Reduces the Potential Growth Rate

In 2007, Japan’s baby boomers started reaching age 60, the mandatory retirement age at many employers. Despite fears that mass retirement by baby boomers would cause a severe labor shortage,

problems have been averted thus far. One reason is that the Law Concerning Stabilization of Employment of Older Persons, which took effect in 2006, has the delayed withdrawal of persons aged 60 to 65 from the labor force.

Although the working-age population (age 15 to 64) started shrinking in 1995, the economy managed to avoid an immediate labor shortage due to the prolonged post-bubble recession. Labor demand temporarily declined again when the economy peaked in late 2007 and entered a recession. On the supply side, the Employees' Pension Plan is credited with boosting work motivation among older workers by stepping up the benefit age. As a result, labor shortages caused by aging have been postponed for the time being. However, we predict that by the time all baby boomers reach age 65 in 2012, their withdrawal from the labor market will be clearly felt. Even with rising labor force participation rates among women and older workers, the labor force is still predicted to decline from 67.94 million persons in 1997 to 65.09 million in 2018.

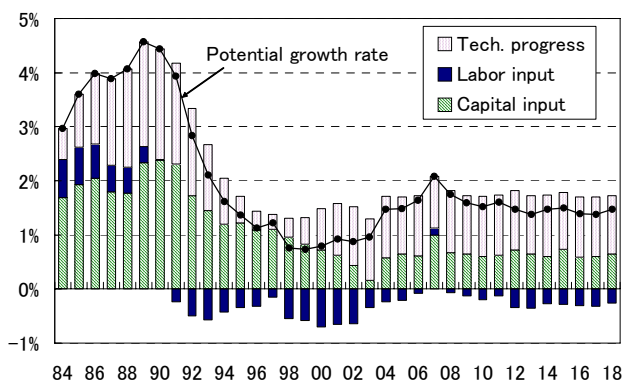
**Exhibit 9 Projected Decline of Working-age Population and Labor Force**



Notes: Shows median estimate for working-age population by the National Institute of Population and Social Security Research. Labor force forecast is by NLI Research Institute.  
Sources: Statistics Bureau, MIC, *Labour Force Survey*; IPSS, *Population Projections for Japan: 2006-2055 (December 2006)*.

Strong business investment growth has kept the economy's capital stock growing over the years. However, as the capital stock deepened, the proportion of replacement investment has risen relative to new investment. Moreover, Japan's high household saving rate, once the envy of advanced economies, dropped to as low as .2% in fiscal 2006. In the past, the high household saving rate generated domestic savings to fuel business investment. Since the current low saving rate makes less domestic funds available for business investment, we predict capital stock growth will slow down, reducing the economy's potential growth rate.

**Exhibit 10 Contribution to Potential Growth Rate**



Note: Estimates are based on actual values to fiscal 2007, and on forecast values from fiscal 2008 forward.  
Sources: Cabinet Office, *Annual Report on National Accounts*; and *Gross Capital Stock of Private Enterprises*; MIC, *Labour Force Survey*; other.

we predict capital stock growth will slow down, reducing the economy's potential growth rate.

In the 1980s, the potential growth rate surged to as high as 3% to 4%. Looking ahead, even assuming that aging of the population and slower capital stock growth do not reduce the rate of technological progress, the potential growth rate will still be limited by the labor force decline. Thus we predict the potential growth rate will decline from today's upper 1% range to approximately 1.5% by the latter half of the forecast period.

## 2. Balance of Payments and its Effect on Exchange Rates

According to UN population projections, in 2005 the population of advanced industrial countries spanning North America, Europe, Japan and Australia comprised approximately 1.2 billion. Simply by joining their ranks, China and India will be adding another 1.3 billion and 1.1 billion people respectively. This alone would triple the population of advanced economies, accelerating the growth of world food and energy consumption and driving up commodity prices.

Previously, we had predicted that Japan's trade deficit would emerge due to aging. When food and oil commodity prices recently surged, it appeared that the trade surplus might turn to deficit sooner

than predicted. Recently, however, due to the global economic slowdown, crude prices have abated and import prices have dropped, temporarily staving off the trade deficit.

We still predict that due to aging, Japan's trade balance in goods and services will turn to deficit in fiscal 2015, leaving only the income account to sustain the current account surplus. As the trade deficit subsequently expands, the current account surplus will shrivel to approximately 1% of nominal GDP in fiscal 2018, compared to 4.8% in fiscal 2007.

Japan's large and sustained current surplus has been the primary factor sustaining the strong yen. Looking ahead, as the trade deficit grows and current account surplus shrinks, the yen will stop appreciating and eventually head downward. In the near term, the yen is at risk of appreciating against the dollar based on Japan's relatively favorable standing in the financial crisis. However, by the end of the forecast period, we predict the yen's real effective exchange rate will decline due to depreciation against currencies in China and other emerging economies

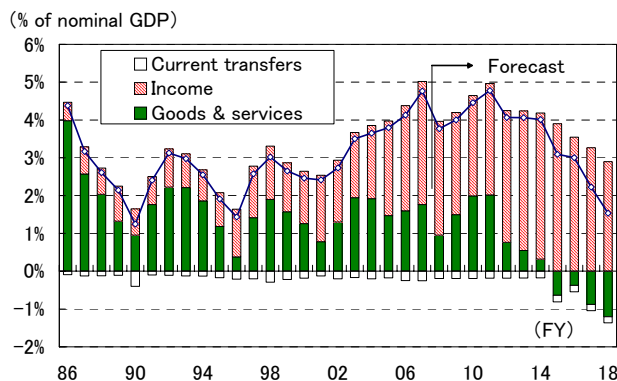
In the past, when a large gap had existed between the value of Japan's exports and imports, the government and corporate sectors tended to prefer a weak yen. This was because gains from trade from a strong yen were more than offset by the decline in export volume and profit margin, slowing down the economy. However, looking ahead, a weak yen is not necessarily in Japan's best interest. It could have a similar effect, for example, as the surge of crude prices in early 2008, which further sapped the ailing domestic demand by shifting more income to oil exporters.

### 3. Fiscal Balance and Government Debt

Previously, the government had announced the goal of achieving a primary surplus in the general account in the early 2010s through natural tax revenue growth and spending discipline. However, this goal now appears elusive under the current economic outlook. In 2009, the government's funding obligation for the national pension is slated to rise from one-third to one-half of benefits, requiring 2.5 trillion yen in additional funding. Looking ahead, as aging causes social security spending to outpace nominal economic growth, we predict fiscal spending will be difficult to contain despite ongoing efforts to downsize public works spending.

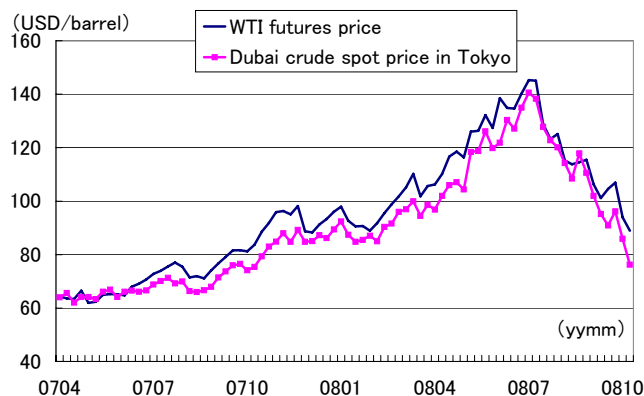
Under our assumption that the consumption tax rate will be raised to 10%, we predict the primary deficit will shrink to -0.4% of nominal GDP and thus almost disappear by 2018. However, as interest rates edge upward and increase the size of interest payments markedly, the ordinary fiscal deficit will grow in excess of 6% of nominal GDP. The value of

**Exhibit 12 Japan's Current Account Balance**



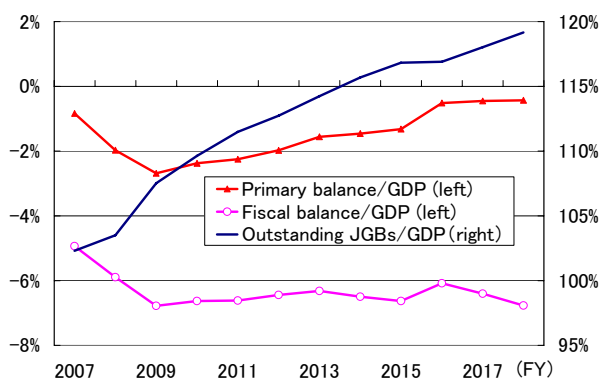
Sources: BOJ, *Balance of Payments*; Cabinet Office, *Annual Report on National Accounts*.

**Exhibit 11 Oil Prices**



Sources: NYMEX, Nikkei Shimbun.

**Exhibit 13 Forecast for General Account Budget**



outstanding JGBs will also edge upward as a ratio of nominal GDP. To avert a fiscal failure, outstanding JGBs must be reined in as a ratio of nominal GDP, and even reduced. Although this implies the need for a further consumption tax rate hike or other tax increase, the weak economy will prohibit such action during the forecast period.

Any additional consumption tax rate hike would seriously shock the economy. Based on our medium-term macroeconomic model, we estimate that a 1-percentage point consumption tax rate hike would decrease real GDP by 0.51% through the reduction of real household income among other things. In addition, a consumption tax rate hike tends to shift demand to the year preceding the tax rate hike, causing lumpy economic growth. To avoid such economic fluctuations, one proposed method is to implement tax rate hikes incrementally. However, one problem with this is that frequent tax rate changes would generate significant administrative costs for businesses in adjusting sales prices, and for the government in processing tax refunds under changing tax rates. The general consensus is thus not in favor of incremental tax rate hikes.

**Exhibit 14 Effect of a 1-Percentage Point Consumption Tax Rate Hike**

Real GDP	-0.51%
Private consumption	-0.40%
Residential investment	-0.67%
Business fixed investment	-1.71%
Nominal GDP	0.04%
CPI	0.71%

Note: Shows divergence rates under the standard scenario.

However, due to the global recession, economic conditions will not be conducive to a tax rate hike in the first half of the forecast period. In the second half, since the potential growth rate will fall to 1.5%, a tax rate hike of 2 to 3-percentage points in a single year could stagger the economy to near 0% growth. In addition, if the economy performs worse than predicted, a large consumption tax rate hike would prolong the economic malaise, during which time the government debt is likely to accumulate. Given these conditions, we suggest that even small tax rate hikes should be implemented whenever possible to minimize the fiscal deficit's growth.

## 4. Medium-term Economic Forecast

### 1. Assumptions of the Standard Scenario

We assume that in order to accommodate higher social security expenditures associated with aging, the current 5% consumption tax rate will need to be raised 2-percentage points in fiscal 2013 and 3-percentage points in fiscal 2016, such that it eventually reaches 10%. In our view, the timing for a tax rate hike decision requires the economy to be in stable condition. In fiscal 2008 and 2009, the economy is predicted to significantly underperform the potential growth rate. Factoring in the necessary lead time for political consensus to gel, we predict the decision can occur no earlier than fiscal 2013. Later, to fund rising social security expenditures due to aging, another consumption tax rate hike will be necessary. Thus we predict a 3-percentage point tax rate hike will occur in fiscal 2016, by when the economic shock from the first tax rate hike will have subsided. Our scenario assumes that no other major tax or social security contribution hikes will occur other than those already passed.

### 2. U.S. Households Must Adjust Balance Sheets

We predict U.S. home prices will fall another 10% from the present level by late 2009. The resulting adjustment of household balance sheets will keep consumer spending stagnant. The chill of residential investment, combined with stagnant consumption, will prompt businesses to postpone nonresidential investment. Thus in 2009, real GDP will contract -1.0%, marking the economy's worst performance since it contracted -1.9% in the 1982 recession 27 years ago.

Due to falling home prices, consumer spending will contract -1.2% in 2009, and subsequently grow at a restrained pace. The impact of the U.S. recession on the global economy will reduce growth of U.S. exports and imports. In particular, exports will remain sluggish as other economies slow down, likely causing the current account deficit to expand. In addition, the fiscal deficit will surge as tax revenues dwindle in the recession, and as funds are set aside for the U.S. financial system bailout. The slowing economy will cause inflation to temporarily subside, only to resume later as energy



prices recover in the medium term.

Meanwhile, aging will accelerate as baby boomers retire the 2010s, reducing growth of the working population (age 16 to 64), and lowering the potential growth rate.

Thus in the next decade, we predict the U.S. economy will grow at a low sustained pace, faltering in the first half amid the housing market downturn and restrained consumption, and having to confront the impact of aging and slower working-age population growth in the second half.

### **3. Europe's Financial System Instability to Persist**

Impaired by the spiraling U.S. financial crisis and recession, the euro area's financial system will remain in unstable condition. Credit contraction in the euro area, previously limited to the housing sectors in countries such as Spain and Ireland, is spreading across other sectors and regions due to the worsening of the financial crisis since September. Exporters such as Germany, who rely on export demand from emerging economies, will slow down from 2009 due to sluggish export growth.

In the past, the European Central Bank took a cautious stance toward inflation. However, we predict that due to the growing risk of recession posed by the financial crisis, policy management will remain focused on financial system stability from 2009 to 2010.

To survive the current crisis, the euro area must engage in restructuring of financial institutions and further harmonization of systems and policies. Success of these efforts should lead to productivity growth in the common currency area. In addition, if the eight Central Eastern European countries adopt the euro as planned in 2010, the euro area will increase in presence.

### **4. China's Double-Digit Growth to End**

We predict that as the external environment deteriorates, China's export-led economy will cool down in 2008 and fall short of double-digit growth for the first time in six years. The predicted U.S. recession in 2009, along with the RMB's recent appreciation against Asian currencies, will further cool down growth of exports and the economy.

In the first half of the 2010s, the "population bonus" from robust growth of the working-age population will help sustain economic growth at 8% to 9%. However, as a result of the longstanding one-child policy, the working-age population will start to shrink from around 2015, and aging will subsequently accelerate. This means that two key factors of the economy ever since the economic reform and open-door policy of 1978 will be waning—cheap and abundant labor, and high domestic saving rate.

### **5. Emerging Economies to Polarize**

The surge of energy and food prices since the summer of 2007 has tended to polarize the growth of emerging economies based on their resource abundance. On the one hand, resource-poor countries have suffered from import price inflation and a deteriorating balance of payments, necessitating monetary tightening to cool down their economies. By comparison, resource-rich countries have also been affected enough by inflation to require monetary tightening, but their balance of payments position has not deteriorated.

In 2009 and 2010, the slowdown among advanced economies will curb export growth of emerging economies. Moreover, further delays in achieving financial system stability in the U.S. and Europe could inhibit growth of net debtor countries. In the near term, investors will screen emerging economies more critically based on international competitiveness, responsiveness of policy, and economic fundamentals, further aggravating the polarization.

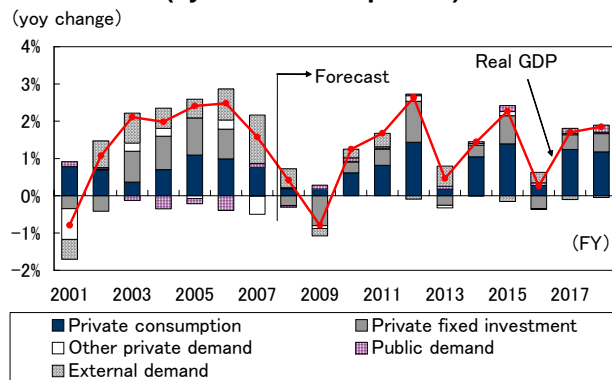
In the first half of the forecast period, China will lead the emerging economies in terms of growth and presence. However, as China's growth pace declines in the second half, India will catch up and develop a growing presence.

## 6. Forecast for Japan

Amid the unfolding subprime crisis and global recession, Japan's economic growth will be restrained in the first half of the forecast period. Real growth will average 1.0% per year from fiscal 2009 to fiscal 2013, well below the potential growth rate in the mid 1% range.

In the second half from fiscal 2014 to fiscal 2018, despite economic recovery abroad, Japan's economy will be weighed down by the effect of consumption tax rate hikes in each year of implementation, limiting real growth to 1.5% per year, slightly below the potential growth rate. Since oil prices have abated due to the global slowdown, CPI inflation will decline from the present level of 2%. In the medium term, as raw materials and food import price inflation continues, CPI inflation will average 1.5% per year, up from the -0.1% average of the past decade.

**Exhibit 15 Forecast for Real GDP Growth (by demand component)**



Source: ESRI, Annual Report on National Accounts.

## 7. Forecast for Financial Markets

Due to the ongoing global economic crisis, average interest rates will remain low globally in the first half of the forecast period.

We predict Japan's policy interest rate (unsecured overnight call rate) will be raised in fiscal 2011, while the long-term interest rate (10-year JGB) will increase at a moderate pace.

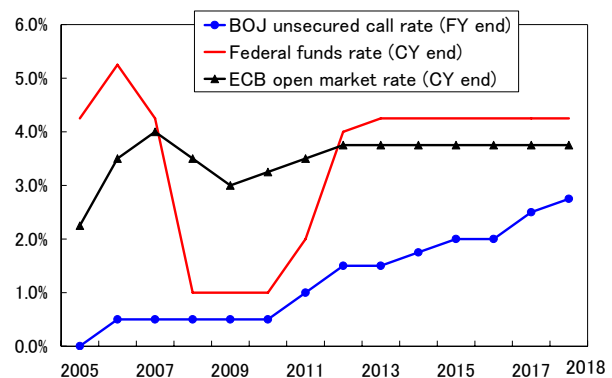
The U.S. federal funds rate will initially be held low due to the recession, but later will be raised sharply due to inflationary concerns stemming from the expanding twin deficits. The long-term interest rate will dip due to the recession, but subsequently rise as the fiscal deficit widens.

The ECB will cut its policy interest rate to 3% in 2009 to counter deflationary risk. However, this will have only a limited effect in easing the credit freeze unless confidence is restored at financial institutions.

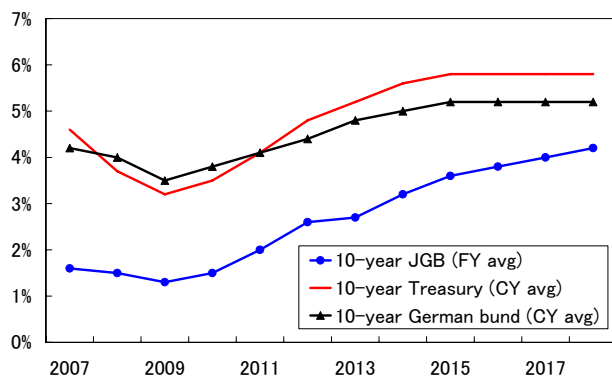
We predict that when the international liquidity shortage stemming from dollar credit contraction abates, the dollar's worsening fundamentals will cause it to depreciate against the yen. Later, as the U.S. economy recovers and the U.S. policy interest rate rises, the U.S.-Japan interest rate spread will widen, and the dollar will appreciate against the yen.

In the second half of the forecast period, the Bank of Japan will gradually raise the policy interest rate in step with the global recovery. However, interest rate hikes will be foregone in fiscal 2013 and 2016 to avoid overlapping with consumption tax rate hikes. As a result, we predict the policy rate spread between Japan and the U.S. and Europe will narrow, and that the yen will slowly appreciate against both the dollar and euro.

**Exhibit 16 Policy Interest Rate Forecast**



**Exhibit 17 Long-term Interest Rate Forecast**



### Exhibit 18 Forecast for China

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	10-year avg.		
	actual				forecast									99~08	09~18
Real GDP (% yoy change)	2.9	1.9	2.1	2.7	2.9	3.0	2.8	2.7	2.6	2.6	2.6	2.6	9.7	8.0	
CPI (% yoy change)	2.9	1.5	1.7	2.5	3.0	3.3	2.9	2.7	2.5	2.5	2.5	2.4	1.8	2.9	
RMB /USD	3.1	2.8	1.9	2.5	2.8	3.1	2.9	2.6	2.6	2.5	2.4	2.4	8.0	6.0	

### Exhibit 19 Forecast for Emerging Economies

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	10-year avg.		
	actual				forecast									99~08	09~18
Real GDP (% yoy change)	8.0	6.5	5.8	6.0	6.4	6.2	6.0	6.0	5.8	5.8	5.8	5.8	6.2	6.0	

### Exhibit 20 Forecast for U.S.

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	10-year avg.		
	actual				forecast									99~08	09~18
Real GDP (% yoy change)	2.0	1.6	-1.0	1.8	2.2	2.6	2.7	2.6	2.4	2.4	2.4	2.4	2.6	2.0	
Domestic demand (contrib)	1.4	0.5	-1.8	2.0	2.9	3.1	3.1	2.8	2.4	2.4	2.4	2.4	2.8	2.2	
Personal consumption (contrib)	2.8	1.0	-1.2	1.4	2.0	2.4	2.6	2.6	2.5	2.4	2.4	2.4	3.1	2.0	
Nonresid. investment (contrib)	-3.1	-4.8	-8.3	0.5	3.0	3.6	4.5	4.0	3.9	3.7	3.5	3.5	1.8	2.2	
Net exports (contrib)	0.6	1.1	0.8	-0.2	-0.7	-0.5	-0.4	-0.2	0.0	0.0	0.0	0.0	-0.2	-0.1	
CPI inflation (% yoy change)	2.9	4.5	1.2	1.2	2.0	2.2	2.3	2.3	2.2	2.2	2.2	2.2	2.9	2.0	
Current account bal. (% nom. GDP)	-5.3	-5.3	-4.2	-4.0	-4.2	-4.5	-4.6	-4.6	-4.4	-4.2	-4.1	-4.0	-4.8	-4.3	
Federal funds target rate (end)	4.25	1.00	1.00	1.00	2.00	4.00	4.25	4.25	4.25	4.25	4.25	4.25	3.30	3.35	
10-year Treasury yield (avg)	4.6	3.7	3.2	3.5	4.1	4.8	5.2	5.6	5.8	5.8	5.8	5.8	4.7	5.0	

### Exhibit 21 Forecast for Euro Area (15 member states)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	10-year avg.		
	actual				forecast									99~08	09~18
Real GDP (yoy change)	2.6	1.1	0.2	1.3	1.6	1.9	1.8	1.8	1.8	1.8	1.8	1.8	2.1	1.6	
Domestic demand (% contrib)	2.3	0.7	0.1	1.1	1.6	1.9	1.7	1.8	1.6	1.7	1.7	1.7	2.0	1.5	
Private consumption (% yoy chg)	1.6	0.2	0.2	1.2	1.6	1.8	1.7	1.7	1.7	1.7	1.7	1.7	1.8	1.5	
Fixed investment (% yoy chg)	4.2	1.6	-0.2	1.6	2.1	2.5	2.3	2.3	2.2	2.2	2.2	2.2	2.9	1.9	
Net exports (% contrib)	0.3	0.4	0.1	0.2	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.1	0.1	
HICP (% yoy chg)	2.1	3.5	1.9	1.7	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	2.2	1.8	
Current acct. bal. (% nom. GDP)	3.0	-1.0	-0.6	0.3	0.1	-0.2	0.2	-0.1	0.3	0.1	-0.1	-0.2	0.1	0.0	
EUR/USD	1.37	1.50	1.30	1.30	1.35	1.40	1.40	1.40	1.50	1.50	1.55	1.55	1.16	1.43	
EUR/JPY	156	152	117	117	135	154	154	147	158	150	147	140	128	142	
ECB policy rate (end)	4.00	3.50	3.00	3.25	3.50	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.14	3.60	
German 10-year bund yield (avg)	4.2	4.0	3.5	3.8	4.1	4.4	4.8	5.0	5.2	5.2	5.2	5.2	4.3	4.6	

## Exhibit 22 Forecast for Japan

(% yoy change, unless otherwise noted)

Fiscal year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	10-year avg.	
	actual	forecast											99~08	09~18
Nominal GDP (expenditures) (¥ trillion)	0.6 (515.1)	-0.0 (515.0)	0.1 (515.6)	1.6 (524.0)	1.9 (533.8)	2.3 (545.9)	1.8 (556.0)	2.0 (567.2)	2.4 (580.6)	2.8 (596.8)	2.1 (609.3)	2.4 (623.8)	0.2	1.9
Real GDP (expenditures)	1.6	0.4	-0.8	1.2	1.7	2.6	0.5	1.4	2.3	0.3	1.7	1.9	1.5	1.3
Domestic demand	0.3	-0.1	-0.6	1.1	1.4	2.9	-0.1	1.5	2.6	-0.0	1.9	2.0	1.0	1.3
Private demand	0.4	-0.1	-0.9	1.3	1.7	3.6	-0.2	1.9	3.0	-0.1	2.2	2.3	1.3	1.5
Consumption	1.4	0.3	0.3	1.1	1.5	2.6	0.3	1.9	2.5	0.5	2.2	2.1	1.2	1.5
Residential investment	-13.3	0.9	-1.2	1.9	1.9	5.2	-2.5	1.6	4.0	-0.8	1.3	1.2	-1.9	1.2
Nonresidential investment	-0.1	-1.7	-5.2	2.0	2.9	7.3	-1.6	2.0	4.9	-2.2	2.6	3.1	2.4	1.5
Public demand	0.2	-0.2	0.5	0.5	0.2	0.2	0.4	0.2	0.8	0.4	0.7	1.0	-0.0	0.5
Government consumption	0.7	0.6	1.0	1.1	0.8	0.8	1.1	0.8	1.4	1.1	1.2	1.6	2.0	1.1
Public investment	-1.8	-3.9	-2.0	-2.5	-2.7	-3.1	-3.6	-3.3	-2.7	-3.9	-2.7	-2.9	-6.2	-2.9
Net exports <contrib. to growth>	<1.3>	<0.5>	<-0.2>	<0.2>	<0.4>	<-0.1>	<0.5>	<-0.0>	<-0.2>	<0.3>	<-0.1>	<-0.0>	<0.5>	<0.1>
Exports of goods & services	9.5	2.6	-2.0	3.3	4.0	4.2	3.9	2.9	2.4	2.3	2.1	2.1	6.8	2.5
Imports of goods & services	2.0	-0.8	-1.2	2.8	2.7	7.2	1.0	4.5	4.8	1.0	4.0	3.4	3.9	3.0
Industrial production	2.6	-1.8	-3.4	1.9	2.2	4.2	-1.0	2.0	3.4	-0.7	2.5	1.7	1.4	1.3
Domes. corporate goods price index	2.3	6.4	-1.0	-1.2	0.0	1.6	3.4	0.4	1.1	4.0	0.3	0.7	0.8	0.9
CPI	0.4	1.6	0.8	0.6	1.0	1.2	2.8	1.2	1.4	3.5	1.2	1.4	-0.1	1.5
CPI (nonperishables)	0.3	1.7	0.8	0.6	1.0	1.2	2.7	1.2	1.2	3.4	1.2	1.3	-0.1	1.5
Unemployment rate (%)	3.8	4.2	4.3	4.1	4.0	3.8	3.9	3.9	3.8	3.9	3.8	3.7	4.6	3.9
Current account bal (trillion JPY)	24.5	19.4	20.6	23.4	25.5	22.2	22.6	22.7	17.9	17.9	13.6	9.6	17.1	19.6
(% of nominal GDP)	(4.8)	(3.8)	(4.0)	(4.5)	(4.8)	(4.1)	(4.1)	(4.0)	(3.1)	(3.0)	(2.2)	(1.5)	(3.4)	(3.5)
USD/JPY (avg, yen)	114	101	90	90	100	110	110	105	105	100	95	90	114	100
BOJ overnight call rate (avg, %)	0.50	0.50	0.50	0.50	1.00	1.50	1.50	1.75	2.00	2.00	2.25	2.75	—	—
10-year JGB yield (avg, %)	1.6	1.5	1.3	1.5	2.0	2.6	2.7	3.2	3.6	3.8	4.0	4.2	1.5	2.9
WTI oil price (avg, USD/barrel)	78	99	69	70	80	90	100	100	120	120	130	130	46	101

Sources: ESRI, Cabinet Office, *Annual Report on National Accounts*; MIC Statistics Bureau, *Consumer Price Index*, and *Labour Force Survey*; BOJ, *Financial Statistics Monthly*, other.