

**COMMONWEALTH OF KENTUCKY**  
**BEFORE THE PUBLIC SERVICE COMMISSION**

**In the Matter of:**

<b>APPLICATION OF KENTUCKY POWER</b>	)	
<b>COMPANY FOR: (1) A GENERAL</b>	)	
<b>ADJUSTMENT OF ITS RATES FOR</b>	)	
<b>ELECTRIC SERVICE; (2) AN ORDER</b>	)	
<b>APPROVING ITS 2014 ENVIRONMENTAL</b>	)	<b>CASE NO. 2014-00396</b>
<b>COMPLIANCE PLAN; (3) AN ORDER</b>	)	
<b>APPROVING ITS TARIFFS AND ALL OTHER</b>	)	
<b>REQUIRED APPROVALS AND RELIEF</b>	)	

**KENTUCKY INDUSTRIAL UTILITY CUSTOMERS, INC.'S**  
**RESPONSE TO KENTUCKY POWER COMPANY'S**  
**FIRST SET OF DATA REQUESTS**

1. Please provide all schedules, tables, and charts included in the testimony and exhibits to the testimony of Mr. Kollen in electronic format, with formulas intact and visible, and no pasted values.

RESPONSE:

Please see attached files.

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2. Please provide all workpapers, source documents, and electronic spreadsheets used in the development of the testimony of Mr. Kollen. The requested information, if so available, should be provided in an electronic format, with formulas intact and visible, and no pasted values.

**RESPONSE:**

Please refer to the response to Question 1.

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3. Please provide all schedules, tables, and charts included in the testimony and exhibits to the testimony of Mr. Baron in electronic format, with formulas intact and visible, and no pasted values.

RESPONSE:

See attached files.

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4. Please provide all workpapers, source documents, and electronic spreadsheets used in the development of the testimony of Mr. Baron. The requested information, if so available, should be provided in an electronic format, with formulas intact and visible, and no pasted values.

RESPONSE:

See response to Question 3.



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5. Please provide all schedules, tables, and charts included in the testimony and exhibits to the testimony of Mr. Baudino in electronic format, with formulas intact and visible, and no pasted values.

RESPONSE:

Please refer to the attached spreadsheet file entitled "Kentucky Power ROE Analysis.xlsx"

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6. Please provide all workpapers, source documents, and electronic spreadsheets used in the development of the testimony of Mr. Baudino. The requested information, if so available, should be provided in an electronic format, with formulas intact and visible, and no pasted values.

RESPONSE:

Please refer to the attached work papers and source documents.

Please note that Value Line reports were not included due to copyright restrictions.

Also, cited pages from *New Regulatory Finance* and *A Random Walk Down Wall Street* were not provided due to copyright restrictions.

The documents cited in footnotes 1 through 4 may be obtained from the web sites shown in the footnotes.

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7. Please provide all schedules, tables, and charts included in the testimony and exhibits to the testimony of Dr. Coomes in electronic format, with formulas intact and visible, and no pasted values.

**RESPONSE:**

Please see attached files.

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7. Please provide all schedules, tables, and charts included in the testimony and exhibits to the testimony of Dr. Coomes in electronic format, with formulas intact and visible, and no pasted values.

**RESPONSE:**

Please see attached files.

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8. Please provide all workpapers, source documents, and electronic spreadsheets used in the development of the testimony of Dr. Coomes. The requested information, if so available, should be provided in an electronic format, with formulas intact and visible, and no pasted values.

**RESPONSE:**

Please see attached files.

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9. Please reference Exhibit LK-9, page 3 of 3, of the testimony of Company Witness Kollen, specifically the numbers used for the Plant in Service total, which reference Schedule B-2.

- a. Confirm that the Plant in Service values used in Exhibit LK-9, page 3 of 3, which reference Schedule B-2, were not those provided by the Company in this proceeding.
- b. If you cannot confirm the statement in subpart a, please explain the basis for your inability to confirm.
- c. Please update Exhibit LK-9 and any other exhibits, schedules, calculations, statements, or other positions in which Mr. Kollen used or relied on calculations using values other than those provided by the Company. This includes updating all adjustments that used Mr. Kollen's gross up conversion factor as well as Mr. Kollen's overall recommendation.

RESPONSE:

- a. Confirmed.
- b. Refer to the response to part (a) of this question.
- c. Refer to the attached update of Exhibit LK-9. The adjustment to include the Section 199 Deduction in the Gross Revenue Conversion Factor should be \$1.147 million instead of \$2.116 million as shown in the Exhibit LK-9 as filed. This update changes Mr. Kollen's recommended reduction in the base revenue requirement to \$35.702 million rather than the \$36.670 million as filed and changes the overall increase in rates recommended by KIUC to \$26.781 million from the \$25.814 million as filed. The

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change does not affect adjustments to the other production related riders because those gross up conversion factors were calculated utilizing a 100% production allocation for the Section 199 deduction.

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10. Please reference page 9 of the testimony of Mr. Kollen.
- a. Please identify the units on the Y-axis of the chart shown on that page titled “Kentucky Power Co. Total Rates Charged to Kentucky Customers 2004-2013.”
  - b. Please provide all workpapers, source documents, and electronic spreadsheets used in the development of this chart. The requested information, if so available, should be provided in an electronic format, with formulas intact and visible, and no pasted values.

RESPONSE:

- a. Cents per kWh.
- b. Refer to the response to Question 1.



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11. Please reference page 42 of the testimony of Mr. Kollen. Please provide all workpapers, source documents, and electronic spreadsheets used in the calculation of Mr. Kollen's proposed \$0.832 million adjustment to the Company's proposed OSS base credit. The requested information, if so available, should be provided in an electronic format, with formulas intact and visible, and no pasted values.

**RESPONSE:**

Please see the attached zip file entitled Response\_to\_KPCO\_1-11 attachment a and b.zip, which contains the following files:

- Response\_to\_KPCO\_1-11 attachment a.xlsx
- Response\_to\_KPCO\_1-11 attachment b.xlsx

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12. Please reference pages 20-22 of the testimony of Mr. Baron.
- a. Please confirm that Mr. Barron is proposing that the Company pay customers interruptible credits under tariff CS IRP whether or not the interruptible capacity qualifies as a capacity resource in PJM?
  - b. If you cannot confirm the statement in subpart a, please explain the basis for your inability to confirm.

**RESPONSE:**

- a. Yes. However, Mr. Baron expects that the capacity will qualify as either a PJM capacity resource pursuant to PJM Demand Response rules, or as a PJM load reduction pursuant to PJM's January 2015 proposed modifications to its emergency demand response program. Please note that the FERC has rejected PJM's filing in an Order issued in Docket No. ER15-582 on March 31, 2015.
- b. Not Applicable.

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**KENTUCKY INDUSTRIAL UTILITY CUSTOMERS, INC.'S  
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13. Please reference pages 23 through 27 of the testimony of Mr. Baron.
- a. Please confirm that the majority of the Company's OATT PJM LSE expense is not within the Company's control and is instead governed by FERC approved tariffs and the revenue requirements of other transmission owners in the PJM RTO.
  - b. If you cannot confirm the statement in subpart a, please explain the basis for your inability to confirm.

RESPONSE:

- a. Yes. Mr. Baron agrees that pursuant to its participation in PJM, AEP East and KPCo must pay the PJM tariff rates. All of the charges that KPCo pays are based on the PJM tariff rates. The total amount that KPCo pays to PJM is a function of the PJM rates and the KPCo billing determinants applied to such rates, based on KPCo's obligations as an LSE.
- b. Not applicable.

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**KENTUCKY INDUSTRIAL UTILITY CUSTOMERS, INC.'S  
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14. Please identify all proceedings in Ohio, West Virginia, Virginia, Michigan and Indiana where Mr. Baron provided testimony in opposition to the inclusion of PJM charges and credits in riders.
- a. Please provide copies of all testimony offered by Mr. Baron in those proceedings.
  - b. Please provide copies of the State Commission Orders in those proceedings where the State Commissions agreed with the testimony of Mr. Baron opposing the inclusion of PJM charges and credits in riders.
  - c. Please confirm that the Company's affiliates in Ohio, West Virginia, Virginia, Michigan, and Indiana, all collect their PJM charges and credits through riders, or track the actual annual PJM charges above and below an amount in base rates.
  - d. If you cannot confirm the statement in subpart c, please explain the basis for your inability to confirm.

**RESPONSE:**

- a. See the attached testimony of Mr. Baron in a recent Appalachian Power Company rate case in West Virginia. To the best of his knowledge, Mr. Baron has not addressed this issue in Ohio and Virginia, nor has he presented testimony in Michigan or Indiana since AEP East joined PJM and thus has never addressed this issue in those two jurisdictions.
- b. The WV PSC has not yet issued an order in the case referred to in the response to part (a).
- c. Mr. Baron can confirm this statement with respect to Ohio, WV and VA. He has not participated in Michigan or Indiana AEP East Company proceedings since AEP East joined PJM.
- d. Not applicable.

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15. Reference Exhibit RAB-5 of the testimony of Mr. Baudino.
- a. Please provide a list of each firm relied on by Mr. Baudino to develop the median earnings and book value growth rates and the individual growth rate estimates for each firm.
  - b. Please provide a list of each firm relied on by Mr. Baudino to develop the median dividend yield of 0.76% and the individual dividend yield for each firm.
  - c. Please provide all workpapers and supporting documents for the Value Line median growth rates and dividend yields.
  - d. Please indicate how many of the firms included in arriving at the median earnings and book value growth rates pay common dividends.

**RESPONSE:**

- a. The Value Line summary statistics relied upon by Mr. Baudino does not list the names of the firms included in the summary.
- b. See response to part (a) of this question.
- c. Please refer to the spreadsheet entitled "Value Line Summary Statistics Feb 25 2015.xlsx" included in the response to Data Request No. 9.

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- d. The Value Line summary statistics relied upon by Mr. Baudino did not provide the requested information.

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## Daily Bond Yields and Key Indicators

Updated by 11 am ET with data from the previous business day.

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Data as of 30-SEP-14

### Moody's Daily Long-term Corporate Bond Yield Averages

	Utilities	Industrial	Corporate
<b>Aaa</b>	NA	4.05	4.05
<b>Aa</b>	4.13	4.16	4.15
<b>A</b>	4.20	4.34	4.27
<b>Baa</b>	4.78	4.84	4.81
<b>Avg</b>	4.37	4.35	4.36

### Moody's Daily Treasury Yield Averages

Short-Term (3-5 yrs)	1.48
Medium-Term (5-10 yrs)	2.09
Long-Term (10+ yrs)	2.96

### Moody's Daily Public Utility Common Stock Yield Averages

Price	353.00
Yield	4.01
New Dividend	14.16

### Moody's Commodity and Scrap Price Indexes

Spot Commodity Index	5604.79
Industrial Metals Index	1914.14

\* Moody's "Aaa" Utilities Index was suspended on 12/10/01. Since 2000, TVA was the only issuer left in the index as a decade of deregulation, debt growth, competition, and consolidation eliminated the rest of the Aaa universe.



# kwalton

 CreditTrends Bond Yields Feb 26 2015.pdf  
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## Daily Bond Yields and Key Indicators

Updated by 11 am ET with data from the previous business day.

[Contact Us](#)

Data as of 26-FEB-15

### Moody's Daily Long-term Corporate Bond Yield Averages

	Utilities	Industrial	Corporate
Aaa	NA	3.64	3.64
Aa	3.63	3.67	3.65
A	3.69	3.94	3.82
Baa	4.40	4.54	4.47
Avg	3.91	3.95	3.93

### Moody's Daily Treasury Yield Averages

Short-Term (3-5 yrs)	1.21
Medium-Term (5-10 yrs)	1.69
Long-Term (10+ yrs)	2.39

### Moody's Daily Public Utility Common Stock Yield Averages

Price	368.09
Yield	3.94
New Dividend	14.51

### Moody's Commodity and Scrap Price Indexes

Spot Commodity Index	5421.43
Industrial Metals Index	1714.02

\* Moody's "Aaa" Utilities Index was suspended on 12/10/01. Since 2000, TVA was the only issuer left in the index as a decade of deregulation, debt growth, competition, and consolidation eliminated the rest of the Aaa universe.

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## Daily Bond Yields and Key Indicators

Updated by 11 am ET with data from the previous business day.

[Contact Us](#)

Data as of 27-FEB-15

### Moody's Daily Long-term Corporate Bond Yield Averages

	Utilities	Industrial	Corporate
<b>Aaa</b>	NA	3.64	3.64
<b>Aa</b>	3.63	3.67	3.65
<b>A</b>	3.69	3.94	3.82
<b>Baa</b>	4.39	4.53	4.46
<b>Avg</b>	3.90	3.95	3.93

### Moody's Daily Treasury Yield Averages

Short-Term (3-5 yrs)	1.18
Medium-Term (5-10 yrs)	1.67
Long-Term (10+ yrs)	2.38

### Moody's Daily Public Utility Common Stock Yield Averages

Price	368.28
Yield	3.94
New Dividend	14.52

### Moody's Commodity and Scrap Price Indexes

Spot Commodity Index	5406.80
Industrial Metals Index	1697.18

\* Moody's "Aaa" Utilities Index was suspended on 12/10/01. Since 2000, TVA was the only issuer left in the index as a decade of deregulation, debt growth, competition, and consolidation eliminated the rest of the Aaa universe.

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 **CreditTrends Bond Yields March 16, 2015.pdf**  
 **04/22/15 12:46 AM**



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## Daily Bond Yields and Key Indicators

Updated by 11 am ET with data from the previous business day.

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Data as of 16-MAR-15

### Moody's Daily Long-term Corporate Bond Yield Averages

	Utilities	Industrial	Corporate
<b>Aaa</b>	NA	3.70	3.70
<b>Aa</b>	3.70	3.77	3.74
<b>A</b>	3.79	4.00	3.90
<b>Baa</b>	4.55	4.61	4.58
<b>Avg</b>	4.01	4.02	4.02

### Moody's Daily Treasury Yield Averages

Short-Term (3-5 yrs)	1.22
Medium-Term (5-10 yrs)	1.77
Long-Term (10+ yrs)	2.48

### Moody's Daily Public Utility Common Stock Yield Averages

Price	357.37
Yield	4.07
New Dividend	14.53

### Moody's Commodity and Scrap Price Indexes

Spot Commodity Index	5263.21
Industrial Metals Index	1671.73

\* Moody's "Aaa" Utilities Index was suspended on 12/10/01. Since 2000, TVA was the only issuer left in the index as a decade of deregulation, debt growth, competition, and consolidation eliminated the rest of the Aaa universe.

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 **FRB H.15 Release--Selected Interest Rates--Feb**  
 **04/22/15 01:19 AM**



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## Selected Interest Rates (Weekly) - H.15

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### Current Release (48 KB PDF)

Release Date: February 23, 2015

The weekly release is posted on Monday. Daily updates of the weekly release are posted Tuesday through Friday on this site. If Monday is a holiday, the weekly release will be posted on Tuesday after the holiday and the daily update will not be posted on that Tuesday.

### February 23, 2015 H.15 Selected Interest Rates *Yields in percent per annum*

Instruments	2015	2015	2015	2015	2015	Week Ending		2015
	Feb 16*	Feb 17	Feb 18	Feb 19	Feb 20	Feb 20	Feb 13	Jan
<b>Federal funds (effective)</b> <a href="#">1</a> <a href="#">2</a> <a href="#">3</a>	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.11
<b>Commercial Paper</b> <a href="#">3</a> <a href="#">4</a> <a href="#">5</a> <a href="#">6</a>								
<b>Nonfinancial</b>								
<b>1-month</b>		0.08	0.08	0.02	0.07	0.06	0.08	0.09
<b>2-month</b>		0.09	0.08	0.09	0.10	0.09	0.09	0.10
<b>3-month</b>		0.12	0.12	0.11	0.14	0.12	0.11	0.12
<b>Financial</b>								
<b>1-month</b>		0.11	0.09	n.a.	n.a.	0.10	0.10	0.12
<b>2-month</b>		0.15	0.11	0.11	0.11	0.12	0.12	0.14
<b>3-month</b>		0.19	0.14	0.15	0.14	0.16	0.15	0.16
<b>Eurodollar deposits (London)</b> <a href="#">3</a> <a href="#">7</a>								
<b>1-month</b>	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19
<b>3-month</b>	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
<b>6-month</b>	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37
<b>Bank prime loan</b> <a href="#">2</a> <a href="#">3</a> <a href="#">8</a>	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25
<b>Discount window primary credit</b> <a href="#">2</a> <a href="#">9</a>	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
<b>U.S. government securities</b>								
<b>Treasury bills (secondary market)</b> <a href="#">3</a> <a href="#">4</a>								
<b>4-week</b>		0.02	0.02	0.02	0.02	0.02	0.02	0.02
<b>3-month</b>		0.02	0.02	0.02	0.02	0.02	0.01	0.03
<b>6-month</b>		0.07	0.07	0.07	0.07	0.07	0.07	0.08
<b>1-year</b>		0.23	0.21	0.21	0.21	0.22	0.23	0.18
<b>Treasury constant maturities</b>								
<b>Nominal</b> <a href="#">10</a>								
<b>1-month</b>		0.02	0.02	0.02	0.02	0.02	0.02	0.02
<b>3-month</b>		0.02	0.02	0.02	0.02	0.02	0.01	0.03
<b>6-month</b>		0.07	0.07	0.07	0.07	0.07	0.07	0.08
<b>1-year</b>		0.25	0.23	0.23	0.23	0.24	0.24	0.20



<b>2-year</b>		0.70	0.62	0.67	0.67	0.67	0.65	0.55
<b>3-year</b>		1.10	1.00	1.05	1.07	1.06	1.04	0.90
<b>5-year</b>		1.62	1.52	1.58	1.61	1.58	1.51	1.37
<b>7-year</b>		1.95	1.86	1.92	1.94	1.92	1.82	1.67
<b>10-year</b>		2.14	2.07	2.11	2.13	2.11	2.00	1.88
<b>20-year</b>		2.49	2.46	2.50	2.50	2.49	2.33	2.20
<b>30-year</b>		2.73	2.70	2.73	2.73	2.72	2.58	2.46
<b>Inflation indexed <sup>11</sup></b>								
<b>5-year</b>		0.29	0.20	0.23	0.24	0.24	0.18	0.17
<b>7-year</b>		0.39	0.31	0.33	0.34	0.34	0.28	0.24
<b>10-year</b>		0.43	0.36	0.37	0.38	0.39	0.31	0.27
<b>20-year</b>		0.68	0.62	0.62	0.62	0.64	0.56	0.50
<b>30-year</b>		0.87	0.82	0.84	0.83	0.84	0.75	0.66
<b>Inflation-indexed long-term average <sup>12</sup></b>		0.73	0.68	0.68	0.68	0.69	0.61	0.54
<b>Interest rate swaps <sup>13</sup></b>								
<b>1-year</b>		0.50	0.51	0.48	0.49	0.49	0.49	0.41
<b>2-year</b>		0.93	0.94	0.88	0.90	0.91	0.90	0.77
<b>3-year</b>		1.28	1.30	1.23	1.25	1.26	1.24	1.10
<b>4-year</b>		1.54	1.56	1.50	1.51	1.53	1.49	1.34
<b>5-year</b>		1.73	1.76	1.69	1.70	1.72	1.66	1.52
<b>7-year</b>		1.98	2.02	1.96	1.97	1.98	1.90	1.77
<b>10-year</b>		2.21	2.24	2.20	2.20	2.21	2.11	2.00
<b>30-year</b>		2.58	2.60	2.59	2.59	2.59	2.47	2.39
<b>Corporate bonds</b>								
<b>Moody's seasoned</b>								
<b>Aaa <sup>14</sup></b>		3.78	3.73	3.77	3.78	3.77	3.62	3.46
<b>Baa</b>		4.67	4.60	4.64	4.63	4.64	4.53	4.45
<b>State &amp; local bonds <sup>15</sup></b>				3.62		3.62	3.60	3.40
<b>Conventional mortgages <sup>16</sup></b>				3.76		3.76	3.69	3.71

\* Markets closed.

n.a. Not available.

## Footnotes

- The daily effective federal funds rate is a weighted average of rates on brokered trades.
- Weekly figures are averages of 7 calendar days ending on Wednesday of the current week; monthly figures include each calendar day in the month.
- Annualized using a 360-day year or bank interest.
- On a discount basis.
- Interest rates interpolated from data on certain commercial paper trades settled by The Depository Trust Company. The trades represent sales of commercial paper by dealers or direct issuers to investors (that is, the offer side). The 1-, 2-, and 3-month rates are equivalent to the 30-, 60-, and 90-day dates reported on the Board's Commercial Paper Web page ([www.federalreserve.gov/releases/cp/](http://www.federalreserve.gov/releases/cp/)).
- Financial paper that is insured by the FDIC's Temporary Liquidity Guarantee Program is not excluded from relevant indexes, nor is any financial or nonfinancial commercial paper that may be directly or indirectly affected by one or more of the Federal Reserve's liquidity facilities. Thus the rates published after September 19, 2008, likely reflect the direct or indirect effects of the new temporary programs and, accordingly, likely are not comparable for some purposes to rates published prior to that period.
- Source: Bloomberg and CTRB ICAP Fixed Income & Money Market Products.
- Rate posted by a majority of top 25 (by assets in domestic offices) insured U.S.-chartered commercial banks. Prime is one of several base rates used by banks to price short-term business loans.
- The rate charged for discounts made and advances extended under the Federal Reserve's primary credit discount window program, which became effective January 9, 2003. This rate replaces that for adjustment credit, which was discontinued after January 8, 2003. For further information, see [www.federalreserve.gov/boarddocs/press/bcreg/2002/200210312/default.htm](http://www.federalreserve.gov/boarddocs/press/bcreg/2002/200210312/default.htm). The rate reported is that for the Federal Reserve Bank of New York. Historical series for the rate on adjustment credit as well as the rate on primary credit are available at [www.federalreserve.gov/releases/h15/data.htm](http://www.federalreserve.gov/releases/h15/data.htm).
- Yields on actively traded non-inflation-indexed issues adjusted to constant maturities. The 30-year Treasury constant maturity series was discontinued on February 18, 2002, and reintroduced on February 9, 2006. From February 18, 2002, to February 9, 2006,

the U.S. Treasury published a factor for adjusting the daily nominal 20-year constant maturity in order to estimate a 30-year nominal rate. The historical adjustment factor can be found at [www.treasury.gov/resource-center/data-chart-center/interest-rates/](http://www.treasury.gov/resource-center/data-chart-center/interest-rates/). Source: U.S. Treasury.

11. Yields on Treasury inflation protected securities (TIPS) adjusted to constant maturities. Source: U.S. Treasury. Additional information on both nominal and inflation-indexed yields may be found at [www.treasury.gov/resource-center/data-chart-center/interest-rates/](http://www.treasury.gov/resource-center/data-chart-center/interest-rates/).

12. Based on the unweighted average bid yields for all TIPS with remaining terms to maturity of more than 10 years.

13. International Swaps and Derivatives Association (ISDA®) mid-market par swap rates. Rates are for a Fixed Rate Payer in return for receiving three month LIBOR, and are based on rates collected at 11:00 a.m. Eastern time by Thomson Reuters and published on Thomson Reuters Page ISDAFIX®1. ISDAFIX is a registered service mark of ISDA®. Source: Thomson Reuters.

14. Moody's Aaa rates through December 6, 2001, are averages of Aaa utility and Aaa industrial bond rates. As of December 7, 2001, these rates are averages of Aaa industrial bonds only. Data obtained from Bloomberg Finance L.P.

15. Bond Buyer Index, general obligation, 20 years to maturity, mixed quality; Thursday quotations. Data obtained from Bloomberg Finance L.P.

16. Contract interest rates on commitments for 30-year fixed-rate first mortgages. Source: Primary Mortgage Market Survey® data provided by Freddie Mac.

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Note: Weekly and monthly figures on this release, as well as annual figures available on the Board's historical H.15 web site (see below), are averages of business days unless otherwise noted.

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Current and historical H.15 data are available on the Federal Reserve Board's web site ([www.federalreserve.gov/](http://www.federalreserve.gov/)). For information about individual copies or subscriptions, contact Publications Services at the Federal Reserve Board (phone 202-452-3244, fax 202-728-5886).

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### Description of the Treasury Nominal and Inflation-Indexed Constant Maturity Series

Yields on Treasury nominal securities at "constant maturity" are interpolated by the U.S. Treasury from the daily yield curve for non-inflation-indexed Treasury securities. This curve, which relates the yield on a security to its time to maturity, is based on the closing market bid yields on actively traded Treasury securities in the over-the-counter market. These market yields are calculated from composites of quotations obtained by the Federal Reserve Bank of New York. The constant maturity yield values are read from the yield curve at fixed maturities, currently 1, 3, and 6 months and 1, 2, 3, 5, 7, 10, 20, and 30 years. This method provides a yield for a 10-year maturity, for example, even if no outstanding security has exactly 10 years remaining to maturity. Similarly, yields on inflation-indexed securities at "constant maturity" are interpolated from the daily yield curve for Treasury inflation protected securities in the over-the-counter market. The inflation-indexed constant maturity yields are read from this yield curve at fixed maturities, currently 5, 7, 10, 20, and 30 years.

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Last update: February 23, 2015

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 **FRB H.15 Release--Selected Interest Rates--Mar**  
 **04/22/15 01:20 AM**



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## Selected Interest Rates (Weekly) - H.15



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### Current Release [\(48 KB PDF\)](#)

Release Date: March 2, 2015

The weekly release is posted on Monday. Daily updates of the weekly release are posted Tuesday through Friday on this site. If Monday is a holiday, the weekly release will be posted on Tuesday after the holiday and the daily update will not be posted on that Tuesday.

March 2, 2015

### H.15 Selected Interest Rates

*Yields in percent per annum*

Instruments	2015	2015	2015	2015	2015	Week Ending		2015
	Feb 23	Feb 24	Feb 25	Feb 26	Feb 27	Feb 27	Feb 20	
<b>Federal funds (effective) <a href="#">1</a> <a href="#">2</a> <a href="#">3</a></b>	0.11	0.11	0.11	0.11	0.06	0.12	0.12	0.11
<b>Commercial Paper <a href="#">3</a> <a href="#">4</a> <a href="#">5</a> <a href="#">6</a></b>								
<b>Nonfinancial</b>								
<b>1-month</b>	0.08	0.07	0.07	0.08	0.08	0.08	0.06	0.08
<b>2-month</b>	0.04	0.10	0.09	0.10	n.a.	0.08	0.09	0.09
<b>3-month</b>	0.14	0.12	0.12	0.12	n.a.	0.13	0.12	0.12
<b>Financial</b>								
<b>1-month</b>	0.09	0.10	n.a.	0.09	0.09	0.09	0.10	0.10
<b>2-month</b>	0.11	0.11	0.11	0.11	0.12	0.11	0.12	0.12
<b>3-month</b>	0.14	0.14	0.15	0.14	0.15	0.14	0.16	0.15
<b>Eurodollar deposits (London) <a href="#">3</a> <a href="#">7</a></b>								
<b>1-month</b>	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19
<b>3-month</b>	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
<b>6-month</b>	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37
<b>Bank prime loan <a href="#">2</a> <a href="#">3</a> <a href="#">8</a></b>	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25
<b>Discount window primary credit <a href="#">2</a> <a href="#">9</a></b>	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
<b>U.S. government securities</b>								
<b>Treasury bills (secondary market) <a href="#">3</a> <a href="#">4</a></b>								
<b>4-week</b>	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02
<b>3-month</b>	0.02	0.02	0.02	0.03	0.02	0.02	0.02	0.02
<b>6-month</b>	0.08	0.08	0.07	0.07	0.07	0.07	0.07	0.07
<b>1-year</b>	0.20	0.20	0.19	0.19	0.19	0.19	0.22	0.21
<b>Treasury constant maturities</b>								
<b>Nominal <a href="#">10</a></b>								
<b>1-month</b>	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02
<b>3-month</b>	0.02	0.02	0.02	0.03	0.02	0.02	0.02	0.02
<b>6-month</b>	0.08	0.08	0.07	0.07	0.07	0.07	0.07	0.07
<b>1-year</b>	0.22	0.22	0.21	0.22	0.22	0.22	0.24	0.22

<b>2-year</b>	0.64	0.60	0.61	0.66	0.63	0.63	0.67	0.62
<b>3-year</b>	1.03	0.97	0.98	1.04	1.01	1.01	1.06	0.99
<b>5-year</b>	1.56	1.47	1.47	1.54	1.50	1.51	1.58	1.47
<b>7-year</b>	1.88	1.79	1.78	1.86	1.82	1.83	1.92	1.79
<b>10-year</b>	2.06	1.99	1.96	2.03	2.00	2.01	2.11	1.98
<b>20-year</b>	2.44	2.38	2.35	2.39	2.38	2.39	2.49	2.34
<b>30-year</b>	2.66	2.60	2.56	2.63	2.60	2.61	2.72	2.57
<b>Inflation indexed <sup>11</sup></b>								
<b>5-year</b>	0.22	0.14	0.11	0.05	0.01	0.11	0.24	0.11
<b>7-year</b>	0.30	0.23	0.20	0.23	0.13	0.22	0.34	0.22
<b>10-year</b>	0.34	0.27	0.24	0.24	0.17	0.25	0.39	0.26
<b>20-year</b>	0.58	0.51	0.48	0.52	0.44	0.51	0.64	0.52
<b>30-year</b>	0.79	0.73	0.70	0.72	0.68	0.72	0.84	0.73
<b>Inflation-indexed long-term average <sup>12</sup></b>	0.64	0.58	0.54	0.55	0.51	0.56	0.69	0.58
<b>Interest rate swaps <sup>13</sup></b>								
<b>1-year</b>	0.48	0.47	0.47	0.48	0.48	0.48	0.49	0.47
<b>2-year</b>	0.90	0.89	0.86	0.89	0.88	0.88	0.91	0.87
<b>3-year</b>	1.26	1.24	1.19	1.23	1.23	1.23	1.26	1.20
<b>4-year</b>	1.52	1.50	1.44	1.48	1.48	1.48	1.53	1.45
<b>5-year</b>	1.71	1.68	1.62	1.66	1.66	1.67	1.72	1.63
<b>7-year</b>	1.98	1.95	1.87	1.90	1.91	1.92	1.98	1.87
<b>10-year</b>	2.21	2.18	2.10	2.12	2.14	2.15	2.21	2.10
<b>30-year</b>	2.59	2.56	2.48	2.48	2.51	2.52	2.59	2.47
<b>Corporate bonds</b>								
<b>Moody's seasoned</b>								
<b>Aaa <sup>14</sup></b>	3.70	3.65	3.61	3.64	3.64	3.65	3.77	3.61
<b>Baa</b>	4.54	4.48	4.45	4.47	4.46	4.48	4.64	4.51
<b>State &amp; local bonds <sup>15</sup></b>				3.62		3.62	3.62	3.58
<b>Conventional mortgages <sup>16</sup></b>				3.80		3.80	3.76	3.71

n.a. Not available.

## Footnotes

- The daily effective federal funds rate is a weighted average of rates on brokered trades.
- Weekly figures are averages of 7 calendar days ending on Wednesday of the current week; monthly figures include each calendar day in the month.
- Annualized using a 360-day year or bank interest.
- On a discount basis.
- Interest rates interpolated from data on certain commercial paper trades settled by The Depository Trust Company. The trades represent sales of commercial paper by dealers or direct issuers to investors (that is, the offer side). The 1-, 2-, and 3-month rates are equivalent to the 30-, 60-, and 90-day dates reported on the Board's Commercial Paper Web page ([www.federalreserve.gov/releases/cp/](http://www.federalreserve.gov/releases/cp/)).
- Financial paper that is insured by the FDIC's Temporary Liquidity Guarantee Program is not excluded from relevant indexes, nor is any financial or nonfinancial commercial paper that may be directly or indirectly affected by one or more of the Federal Reserve's liquidity facilities. Thus the rates published after September 19, 2008, likely reflect the direct or indirect effects of the new temporary programs and, accordingly, likely are not comparable for some purposes to rates published prior to that period.
- Source: Bloomberg and CTRB ICAP Fixed Income & Money Market Products.
- Rate posted by a majority of top 25 (by assets in domestic offices) insured U.S.-chartered commercial banks. Prime is one of several base rates used by banks to price short-term business loans.
- The rate charged for discounts made and advances extended under the Federal Reserve's primary credit discount window program, which became effective January 9, 2003. This rate replaces that for adjustment credit, which was discontinued after January 8, 2003. For further information, see [www.federalreserve.gov/boarddocs/press/bcreg/2002/200210312/default.htm](http://www.federalreserve.gov/boarddocs/press/bcreg/2002/200210312/default.htm). The rate reported is that for the Federal Reserve Bank of New York. Historical series for the rate on adjustment credit as well as the rate on primary credit are available at [www.federalreserve.gov/releases/h15/data.htm](http://www.federalreserve.gov/releases/h15/data.htm).
- Yields on actively traded non-inflation-indexed issues adjusted to constant maturities. The 30-year Treasury constant maturity series was discontinued on February 18, 2002, and reintroduced on February 9, 2006. From February 18, 2002, to February 9, 2006, the U.S. Treasury published a factor for adjusting the daily nominal 20-year constant maturity in order to estimate a 30-year nominal

rate. The historical adjustment factor can be found at [www.treasury.gov/resource-center/data-chart-center/interest-rates/](http://www.treasury.gov/resource-center/data-chart-center/interest-rates/). Source: U.S. Treasury.

11. Yields on Treasury inflation protected securities (TIPS) adjusted to constant maturities. Source: U.S. Treasury. Additional information on both nominal and inflation-indexed yields may be found at [www.treasury.gov/resource-center/data-chart-center/interest-rates/](http://www.treasury.gov/resource-center/data-chart-center/interest-rates/).

12. Based on the unweighted average bid yields for all TIPS with remaining terms to maturity of more than 10 years.

13. International Swaps and Derivatives Association (ISDA®) mid-market par swap rates. Rates are for a Fixed Rate Payer in return for receiving three month LIBOR, and are based on rates collected at 11:00 a.m. Eastern time by Thomson Reuters and published on Thomson Reuters Page ISDAFIX®1. ISDAFIX is a registered service mark of ISDA®. Source: Thomson Reuters.

14. Moody's Aaa rates through December 6, 2001, are averages of Aaa utility and Aaa industrial bond rates. As of December 7, 2001, these rates are averages of Aaa industrial bonds only. Data obtained from Bloomberg Finance L.P.

15. Bond Buyer Index, general obligation, 20 years to maturity, mixed quality; Thursday quotations. Data obtained from Bloomberg Finance L.P.

16. Contract interest rates on commitments for 30-year fixed-rate first mortgages. Source: Primary Mortgage Market Survey® data provided by Freddie Mac.

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Note: Weekly and monthly figures on this release, as well as annual figures available on the Board's historical H.15 web site (see below), are averages of business days unless otherwise noted.

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Current and historical H.15 data are available on the Federal Reserve Board's web site ([www.federalreserve.gov/](http://www.federalreserve.gov/)). For information about individual copies or subscriptions, contact Publications Services at the Federal Reserve Board (phone 202-452-3244, fax 202-728-5886).

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### Description of the Treasury Nominal and Inflation-Indexed Constant Maturity Series

Yields on Treasury nominal securities at "constant maturity" are interpolated by the U.S. Treasury from the daily yield curve for non-inflation-indexed Treasury securities. This curve, which relates the yield on a security to its time to maturity, is based on the closing market bid yields on actively traded Treasury securities in the over-the-counter market. These market yields are calculated from composites of quotations obtained by the Federal Reserve Bank of New York. The constant maturity yield values are read from the yield curve at fixed maturities, currently 1, 3, and 6 months and 1, 2, 3, 5, 7, 10, 20, and 30 years. This method provides a yield for a 10-year maturity, for example, even if no outstanding security has exactly 10 years remaining to maturity. Similarly, yields on inflation-indexed securities at "constant maturity" are interpolated from the daily yield curve for Treasury inflation protected securities in the over-the-counter market. The inflation-indexed constant maturity yields are read from this yield curve at fixed maturities, currently 5, 7, 10, 20, and 30 years.

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**Last update: March 2, 2015**

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# kwalton

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# Credit Ratings

Q3 2014  
FINANCIAL UPDATE

QUARTERLY REPORT  
OF THE U.S. SHAREHOLDER-OWNED  
ELECTRIC UTILITY INDUSTRY



#### About EEI

The Edison Electric Institute (EEI) is the association that represents all U.S. investor-owned electric companies. Our members provide electricity for 220 million Americans, operate in all 50 states and the District of Columbia, and directly employ more than 500,000 workers. With \$90 billion in annual capital expenditures, the electric power industry is responsible for millions of additional jobs. Reliable, affordable, and sustainable electricity powers the economy and enhances the lives of all Americans. EEI has 70 international electric companies as Affiliate Members, and 270 industry suppliers and related organizations as Associate Members. Organized in 1933, EEI provides public policy leadership, strategic business intelligence, and essential conferences and forums.

#### About EEI's Quarterly Financial Updates

EEI's quarterly financial updates present industry trend analyses and financial data covering 54 U.S. shareholder-owned electric utility companies. These 54 companies include 48 electric utility holding companies whose stocks are traded on major U.S. stock exchanges and six electric utilities who are subsidiaries of non-utility or foreign companies. Financial updates are published for the following topics:

Dividends	Rate Case Summary
Stock Performance	SEC Financial Statements (Holding Companies)
Credit Ratings	FERC Financial Statements (Regulated Utilities)
Construction	Fuel

EEI Finance Department material can be found online at:  
[www.eei.org/QFU](http://www.eei.org/QFU)

#### For EEI Member Companies

The EEI Finance and Accounting Division is developing current year and historical data sets that cover a wide range of industry financial and operating metrics. We look forward to serving as a resource for member companies who wish to produce customized industry financial data and trend analyses for use in:

- Investor relations studies and presentations
- Internal company presentations
- Performance benchmarking
- Peer group analyses
- Annual and quarterly reports to shareholders

#### We Welcome Your Feedback

EEI is interested in ensuring that our financial publications and industry data sets best address the needs of member companies and the financial community. We welcome your comments, suggestions and inquiries.

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#### Future EEI Finance Meetings

EEI Wall Street Briefing  
February 11, 2015  
University Club  
New York, New York

50th EEI Financial Conference  
November 8-11, 2015  
Westin Diplomat  
Hollywood, Florida

For more information about EEI Finance Meetings, please contact Debra Henry, (202) 508-5496, [DHenry@eei.org](mailto:DHenry@eei.org)

# The 54 U.S. Shareholder-Owned Electric Utilities

The companies listed below all serve a regulated distribution territory. Other utilities, such as transmission provider ITC Holdings, are not shown below because they do not serve a regulated distribution territory. However, their financial information is included in relevant EEI data sets, such as transmission-related construction spending.

ALLETE, Inc. (ALE)	<i>Energy Future Holdings Corp. (formerly TXU Corp.)</i>	PG&E Corporation (PCG)
Alliant Energy Corporation (LNT)	Entergy Corporation (ETR)	Pinnacle West Capital Corporation (PNW)
Ameren Corporation (AEE)	Exelon Corporation (EXC)	PNM Resources, Inc. (PNM)
American Electric Power Company, Inc. (AEP)	FirstEnergy Corp. (FE)	Portland General Electric Company (POR)
Avista Corporation (AVA)	Great Plains Energy Incorporated (GXP)	PPL Corporation (PPL)
<i>Berkshire Hathaway Energy</i>	Hawaiian Electric Industries, Inc. (HE)	Public Service Enterprise Group Inc. (PEG)
Black Hills Corporation (BKH)	<i>Iberdrola USA</i>	<i>Puget Energy, Inc.</i>
CenterPoint Energy, Inc. (CNP)	IDACORP, Inc. (IDA)	SCANA Corporation (SCG)
Cleco Corporation (CNL)	Integrus Energy Group, Inc. (TEG)	Sempra Energy (SRE)
CMS Energy Corporation (CMS)	<i>IPALCO Enterprises, Inc.</i>	Southern Company (SO)
Consolidated Edison, Inc. (ED)	MDU Resources Group, Inc. (MDU)	TECO Energy, Inc. (TE)
Dominion Resources, Inc. (D)	MGE Energy, Inc. (MGEE)	UIL Holdings Corporation (UIL)
<i>DPL, Inc.</i>	NextEra Energy, Inc. (NEE)	Unitil Corporation (UTL)
DTE Energy Company (DTE)	NiSource Inc. (NI)	Vectren Corporation (VVC)
Duke Energy Corporation (DUK)	Northeast Utilities (NU)	Westar Energy, Inc. (WR)
Edison International (EIX)	NorthWestern Corporation (NWE)	Wisconsin Energy Corporation (WEC)
El Paso Electric Company (EE)	OGE Energy Corp. (OGE)	Xcel Energy, Inc. (XEL)
Empire District Electric Company (EDE)	Otter Tail Corporation (OTTR)	
	Pepco Holdings, Inc. (POM)	

# Companies Listed by Category

## (as of 12/31/2013)

Please refer to the Quarterly Financial Updates webpage for previous years' lists.

Given the diversity of utility holding company corporate strategies, no single company categorization approach will be useful for all EEI members and utility industry analysts. Nevertheless, we believe the following classification provides an informative framework for tracking financial trends and the capital markets' response to business strategies as companies depart from the traditional regulated utility model.

Regulated	80%+ of total assets are regulated
Mostly Regulated	50% to 80% of total assets are regulated
Diversified	Less than 50% of total assets are regulated

Categorization of the 48 publicly traded utility holding companies is based on year-end business segmentation data presented in 10Ks, supplemented by discussions with company IR departments. Categorization of the six non-publicly traded companies (*shown in italics*) is based on estimates derived from FERC Form 1 data and information provided by parent company IR departments.

The EEI Finance and Accounting Division continues to evaluate our approach to company categorization and business segmentation. In addition, we can produce customized categorization and peer group analyses in response to member company requests. We welcome comments, suggestions and feedback from EEI member companies and the financial community.

### Regulated (38 of 54)

ALLETE, Inc.  
Alliant Energy Corporation  
Ameren Corporation  
American Electric Power Company, Inc.  
Avista Corporation  
Black Hills Corporation  
Cleco Corporation  
CMS Energy Corporation  
Consolidated Edison, Inc.  
*DPL, Inc.*  
DTE Energy Company  
Duke Energy Corporation  
Edison International  
El Paso Electric Company  
Empire District Electric Company  
Entergy Corporation  
Great Plains Energy Incorporated  
*Iberdrola USA*  
IDACORP, Inc.

Integrus Energy Group  
*IPALCO Enterprises, Inc.*  
Northeast Utilities  
NorthWestern Energy  
OGE Energy Corp.  
Otter Tail Corporation  
Pepco Holdings, Inc.  
PG&E Corporation  
Pinnacle West Capital Corporation  
PNM Resources, Inc.  
Portland General Electric Company  
*Puget Energy, Inc.*  
Southern Company  
TECO Energy, Inc.  
UIL Holdings Corporation  
Unitil Corporation  
Westar Energy, Inc.  
Wisconsin Energy Corporation  
Xcel Energy, Inc.

### Mostly Regulated (13 of 54)

*Berkshire Hathaway Energy*  
CenterPoint Energy, Inc.  
Dominion Resources, Inc.  
Exelon Corporation  
FirstEnergy Corp.  
MGE Energy, Inc.  
NextEra Energy, Inc.  
NiSource Inc.  
PPL Corporation  
Public Service Enterprise Group, Inc.  
SCANA Corporation  
Semptra Energy  
Vectren Corporation

### Diversified (3 of 54)

*Energy Future Holdings*  
Hawaiian Electric Industries, Inc.  
MDU Resources Group, Inc.

Note: Based on assets at 12/31/2013

# Credit Ratings

## HIGHLIGHTS

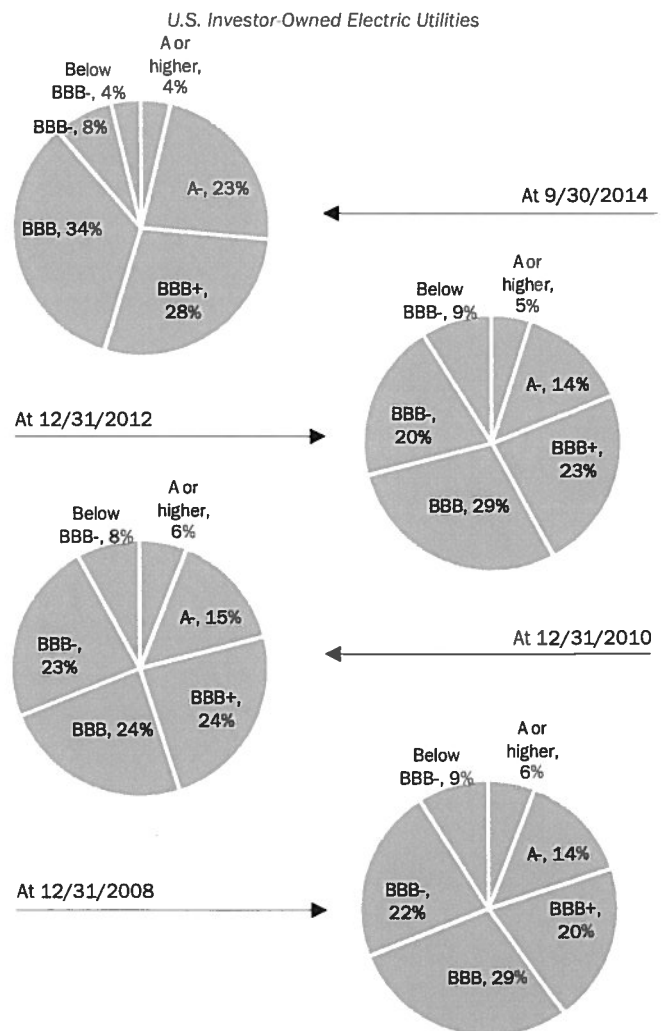
- There were no parent-level ratings actions in Q3. The industry's average credit rating remained BBB+.
- 2014's actions through Q3 were largely positive, with 98 upgrades outnumbering three downgrades.
- Credit outlooks remain stable to positive due to de-risking of business models through renewed focus on regulated activities and improved industry regulation.
- S&P and Moody's expect the eventual credit impact of EPA's proposed carbon regulations for existing plants (Clean Power Plan) to be significant, but it's too early to reach conclusions due to a multi-year implementation schedule and potential legal wrangling. S&P noted that four themes — regional differences, timing issues, costs and fuel mixes — will shape credit implications across industry subsectors and companies.

## COMMENTARY

There were no parent-level ratings actions in Q3 and the industry's average credit rating remained BBB+. During Q2, the average rating rose to BBB+ from BBB, the first change since the move to BBB from BBB- in 2004. Total ratings activity, at 101 changes through September 30, was significantly higher than in the comparable 2013 period, reflecting Moody's decision in late January to upgrade most regulated utilities by one notch. Accordingly, 2014's actions have been largely positive, with 98 upgrades outnumbering three downgrades.

EEI captures upgrades and downgrades at the subsidiary level; multiple actions within a single parent holding company are included in the upgrade/downgrade totals. The industry's average credit rating and outlook are based on the unweighted averages of all Standard & Poor's parent company ratings and outlooks.

## I. S&P Utility Credit Ratings Distribution

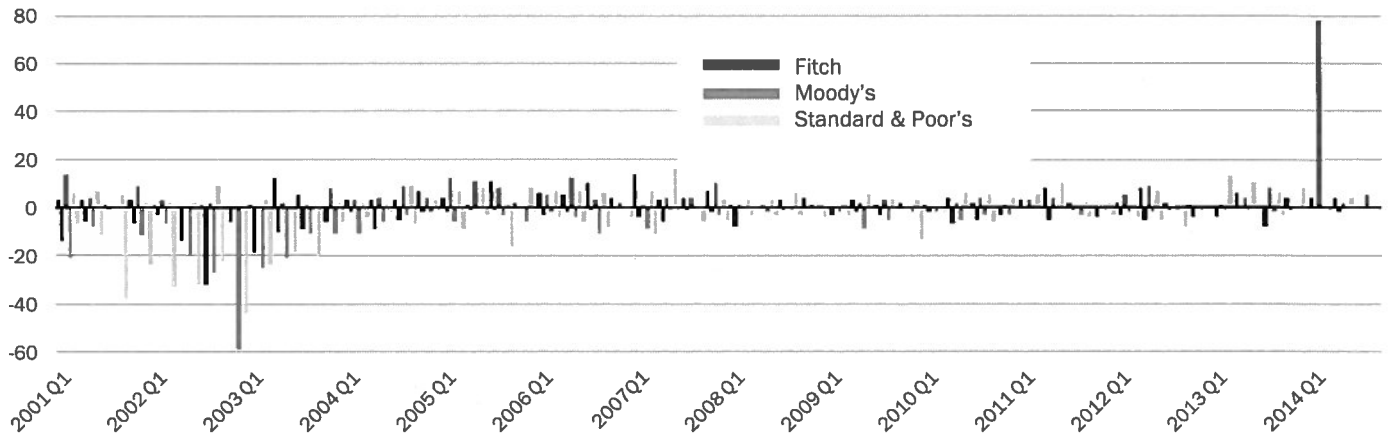


Note: Rating applies to utility holding company entity.  
Source: SNL Financial and EEI Finance Department

## II. Credit Rating Agency Upgrades and Downgrades

Positive = upgrades Negatives = downgrades

U.S. Investor-Owned Electric Utilities



	2008				2009				2010				2011				2012				2013				2014		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
Fitch (Up)	1	0	3	4	0	3	1	2	1	4	2	0	3	8	2	1	2	8	2	1	0	6	0	4	4	4	1
Fitch (Down)	-8	0	-1	0	-3	-2	-3	0	-2	-7	-5	-3	0	-6	-1	-4	-3	-5	-1	-4	-4	0	-8	-1	0	-2	0
Moody's (Up)	1	1	0	1	0	2	3	0	0	2	4	1	3	4	0	0	5	9	0	0	1	4	8	0	78	2	5
Moody's (Down)	0	-2	-1	0	-2	-9	-5	-2	-2	-5	-3	-3	0	0	-3	-1	-2	-2	-1	-1	-1	-1	-2	0	0	0	0
S&P (Up)	3	3	6	1	1	5	3	3	0	6	5	4	5	9	2	2	1	7	0	2	13	10	6	8	0	4	0
S&P (Down)	-5	-3	-3	-3	-4	-3	0	-1	-13	-2	0	-6	0	-2	0	-4	-3	-4	-5	-8	0	0	0	-3	0	-1	0

Note: Data presents the number of occurrences and includes each event, even if multiple actions occurred for a single company.  
Source: SNL Financial and EEI Finance Department

### III. Total Ratings Actions

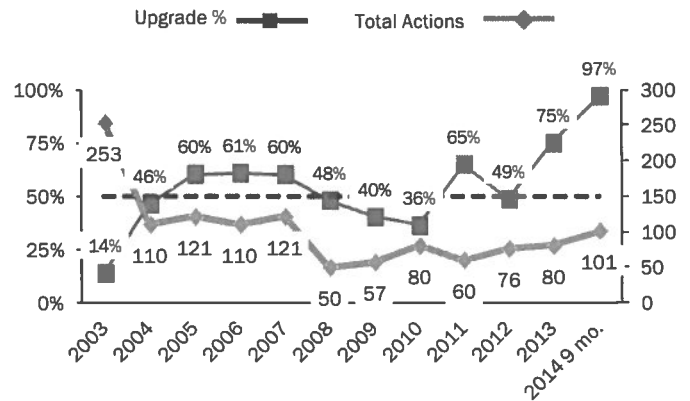
U.S. Investor-Owned Electric Utilities

	2008	2009	2010	2011	2011	2012	2013	2014*
Fitch	17	14	24	16	25	26	23	11
Moody's	6	23	20	7	11	20	17	85
Standard & Poor's	27	20	36	15	24	30	40	5
<b>Total</b>	<b>50</b>	<b>57</b>	<b>80</b>	<b>38</b>	<b>60</b>	<b>76</b>	<b>80</b>	<b>101</b>

Note: Full year, except where noted. / \* Through September 30  
Source: SNL Financial and EEI Finance Department

### IV. Direction of Ratings Actions

U.S. Investor-Owned Electric Utilities



Note: Full year, except where noted.  
Source: SNL Financial and EEI Finance Department

### V. S&P Utility Credit Rating Distribution by Company Category (at period end)

U.S. Investor-Owned Electric Utilities

	12/31/2007		12/31/2008		12/31/2009		12/31/2010		12/31/2011		12/31/2012		12/31/2013		9/30/2014	
<b>REGULATED</b>																
A or higher	5	13%	3	8%	3	7%	3	9%	3	8%	2	6%	1	3%	1	3%
A-	2	5%	4	10%	6	15%	5	14%	5	14%	6	17%	7	20%	8	21%
BBB+	10	26%	9	23%	9	22%	6	17%	7	19%	5	14%	6	17%	10	26%
BBB	8	21%	9	23%	11	27%	11	31%	13	35%	13	36%	17	49%	16	42%
BBB-	7	18%	9	23%	8	20%	6	17%	5	14%	6	17%	2	6%	1	3%
Below BBB-	6	16%	5	13%	4	10%	4	11%	4	11%	4	11%	2	6%	2	5%
Total	38	100%	39	100%	41	100%	35	100%	37	100%	36	100%	35	100%	38	100%
<b>MOSTLY REGULATED</b>																
A or higher	1	5%	1	5%	2	11%	1	5%	1	5%	1	6%	1	6%	1	8%
A-	3	16%	5	26%	2	11%	3	15%	3	16%	2	12%	5	29%	4	31%
BBB+	4	21%	2	11%	5	26%	6	30%	6	32%	7	41%	5	29%	4	31%
BBB	6	32%	8	42%	6	32%	4	20%	3	16%	3	18%	3	18%	2	15%
BBB-	4	21%	3	16%	4	21%	6	30%	6	32%	4	24%	3	18%	2	15%
Below BBB-	1	5%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Total	19	100%	19	100%	19	100%	20	100%	19	100%	17	100%	17	100%	13	100%
<b>DIVERSIFIED</b>																
A or higher	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
A-	2	22%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
BBB+	3	33%	2	29%	1	17%	2	40%	1	25%	1	33%	1	50%	1	50%
BBB	1	11%	2	29%	2	33%	0	0%	0	0%	0	0%	0	0%	0	0%
BBB-	2	22%	2	29%	2	33%	2	40%	2	50%	1	33%	0	0%	1	50%
Below BBB-	1	11%	1	14%	1	17%	1	20%	1	25%	1	33%	1	50%	0	0%
Total	9	100%	7	100%	6	100%	5	100%	4	100%	3	100%	2	100%	2	100%

Note: Category membership based on assets at January 1 of year shown.  
Percentages may not total 100% due to rounding.  
Source: SNL Financial and EEI Finance Department

During the first three quarters of 2014, parent-level ratings were affected by three upgrades and no downgrades. The upgrades centered on companies' continued focus on regulated operations and the effective management of regulatory risk, as well as company-specific factors.

As of October 1, 2014, approximately 72% of companies' ratings outlooks were Stable, 17% were Positive or Watch-Positive, 9% were Negative or Watch-Negative, and 2% were Developing.

The industry's revised rating of BBB+ reflects a rounding-up of EEI's calculated average (see the Excel "Backup Data" file accompanying this report on EEI's website).

#### Upgrades Reflect Continued Regulated Focus

Ratings changes through the third quarter included three parent company-level upgrades.

#### *Edison International*

On April 8, S&P raised its corporate credit rating for Edison International (EIX) by two notches, to BBB+ from BBB-, on the emergence from bankruptcy of the company's former unregulated subsidiary, Edison Mission Energy. At the same time, S&P affirmed its rating for EIX's primary subsidiary, regulated utility Southern California Edison (SCE), at BBB+.

S&P noted that SCE "represents virtually all" of EIX's

credit profile and has business fundamentals that, in the agency's view, are "slightly better" than most of its integrated electric utility peers. S&P said that SCE's service territory is "improving but still struggling," its financial health is protected by "strict and restrictive" oversight by the California Public Utilities Commission, the company's earned returns are "normally healthy" and that cash flow is supported by various rate mechanisms. S&P also commented that SCE's operating risk is worse than average, as highlighted by the problems it faced at the San Onofre nuclear plant.

Regarding EIX's financial metrics, S&P said it expects the utility's leverage to modestly increase with rising capital spending; it forecasts funds from operations (FFO) to debt at about 21% to 23% in the near term and debt to EBITDA of more than three times over the next several years. While S&P's upgrade of EIX was driven largely by the successful resolution of EME's bankruptcy, the agency also noted that management's "stated plans to focus mainly on regulated activities," as well as its commitment to maintaining a stable financial profile, were important considerations.

#### *Westar*

On April 29, S&P raised its corporate ratings for Westar Energy and utility subsidiary Kansas Gas & Electric to BBB+ from BBB. The upgrade reflected the company's improved business risk profile as a result of management's continuing focus on regulated operations, effective management of regulatory risk and "strengthening cost recovery through the regulatory process." S&P said that Westar's reduced business risk had led to stable profits and stronger financial metrics. The agency commented that the company's ongoing capital spending would require timely recovery through "various rate mechanisms including base rates and rate surcharges" that were likely to improve cash flow. Furthermore, S&P noted that Westar's investment in emissions control equipment at the La Cygne coal plant, which it jointly owns with Great Plains Energy's Kansas City Power & Light, does not benefit from rider recovery, meaning that Westar would need to seek base rate changes to recover its costs.

With regard to Westar's financial metrics, S&P forecast FFO to debt of 18% to 20% over the next three years and cash flow from operations (CFO) to debt of 17.5%. The agency noted that, as capital expenditures decline following the completion of the La Cygne air emissions equipment, it expects discretionary cash flow to be "much less negative," reducing the need for Westar to raise new debt and equity capital.

## VI. Credit Ratings Scales

### *U.S. Investor-Owned Electric Utilities*

Investment Grade	Moody's	S&P	Fitch
	Aaa	AAA	AAA
	Aa1	AA+	AA+
	Aa2	AA	AA
	Aa3	AA-	AA-
	A1	A+	A+
	A2	A	A
	A3	A-	A-
	Baa1	BBB+	BBB+
	Baa2	BBB	BBB
	Baa3	BBB-	BBB-
Speculative Grade	Moody's	S&P	Fitch
	Ba1	BB+	BB+
	Ba2	BB	BB
	Ba3	BB-	BB-
	B1	B+	B+
	B2	B	B
	B3	B-	B-
	Caa1	CCC+	CCC+
	Caa2	CCC	CCC
	Caa3	CCC-	CCC-
	Ca	CC	CC
	C	C	C
Default	Moody's	S&P	Fitch
	C	D	D

Source: Fitch Ratings, Moody's, Standard & Poor's

#### *Great Plains Energy*

On May 1, S&P raised its corporate ratings for Great Plains Energy (GPE) and subsidiary Kansas City Power & Light to BBB+ from BBB. The agency's rationale was largely the same as for Westar and Kansas Gas & Electric: management's continuing focus on regulated operations, the effective management of regulatory risk and improving cost recovery through the regulatory process. Each of these factors served to improve the companies' business risk profiles. As

with Westar, S&P stated that Great Plains Energy's capital spending program requires timely recovery through base rates and rate surcharges that should strengthen cash flow.

Regarding GPE's credit ratios, S&P forecast FFO to total debt of 18% over the next three years and CFO to debt of 16%. As capital spending tapers following the completion of the La Cygne emissions controls, S&P expects currently negative discretionary cash flow to improve.

#### **A More-Regulated Business & Constructive Regulation**

While 2013 marked the tenth consecutive year of a BBB rating for the industry (i.e., based on EEI's unweighted average of S&P ratings at the parent level), it was also characterized by the highest percentage of positive ratings changes (across all issuers and ratings agencies) in at least as many years. The first three quarters of 2014 extended this trend and moved the industry's average rating during the second quarter to BBB+. Early in 2014, both S&P and Moody's published industry-level outlooks describing why they expect U.S. regulated utilities to maintain stable credit profiles. While both agencies described positive factors that included the de-risking of utility business models through a renewed focus on regulated activities, Moody's emphasized that improving industry regulation was the "most important" driver of its outlook.

Moody's developed its view more fully in a report published February 3, 2014 ("U.S. Utility Sector Upgrades Driven by Stable and Transparent Regulatory Frameworks"). The report described the reasoning behind the November 2013 decision to place most regulated utilities on review for upgrade and the late January 2014 upgrade of most by one notch. Moody's described how state-level regulation had evolved over the past several years for the better, including implementation of a "suite of transparent and timely cost and investment recovery mechanisms." Moody's said the regulatory environment would likely remain "supportive and constructive" for at least three to five years.

In a report published February 19, 2014 ("Regulation Will Keep Cash Flow Stable as Major Tax Break Ends"), Moody's said the end of bonus depreciation in 2013 would cause financial metrics to decline but that improved regulatory frameworks —featuring cost-recovery mechanisms and annual base-rate increases — would play a significant offsetting role. Moody's offered several examples of positive rate case outcomes that are shaping its industry outlook, such as Puget Sound Energy's in Washington and Westar Energy's in Kansas (see Q2 2014 *Rate Case Summary*). Moody's also noted that improved regulation is helping utilities manage the effects of sluggish customer demand.

In a report published in January of this year, S&P said that factors behind the industry's credit stability included

continued improvement in economic conditions, sustained demand for a "very critical" commodity, the "generally supportive" posture of regulators toward cost recovery for capital expenditures, and continued demand by investors for utility equity and debt securities.

Throughout these reports, neither agency raised major concerns about risks to the stable progression of the industry's credit profile in the near to medium terms. S&P stated that "we see little alteration in the sector's business and financial risk profiles during periods of economic change" because of the essential nature of electricity, the regulated character of the business and the constructive regulatory environment. The agency also suggested that, if the economy grows faster than expected, there could be "some modest improvement" in the industry's credit worthiness. Moody's commented that "a more contentious regulatory environment" or a "widespread adoption" of more-aggressive financial strategies could lead to a negative outlook, while a "marked increase" in allowed ROEs or steps to scale back dividends and stock repurchases might lead to a positive outlook.

#### **Implications of the EPA's Clean Power Plan**

During Q2 and Q3, rating agencies analyzed the EPA's proposal for carbon limits on existing power plants, known as the Clean Power Plan (CPP). Released June 2, the plan is open to public comment through December 1; the EPA is expected to finalize the rule by June 2015. A key aspect of the rule is a requirement for states to develop individual implementation plans by June 2016 or partner with neighboring states and develop a multi-state plan by June 2017-18 (the deadlines are tentative and subject to revision).

S&P and Moody's both expect the eventual credit impact of the CPP to be significant but not uniform across the U.S. electricity sector. Furthermore, both expect the rules' effects to take shape over an extended period of time.

On June 3, Moody's described the EPA's draft rule as "credit-negative for coal-dependent utilities, power projects and merchant power generators because . . . the rule will likely result in reduced power volumes and higher costs for generation." However, Moody's expects that regulated utilities, including those with large coal fleets, will do better than unregulated power generators because regulated utilities generally have mechanisms in place to recover costs and investments associated with environmental mandates. Moody's also noted that it believes certain merchant generators, including Exelon and Calpine, will benefit from the CPP because their fleets emphasize nuclear or natural gas generation. Moody's said these companies face comparatively smaller capital investment needs and won't have to "materially change" their generation portfolios.



In a special report published September 2, S&P came to similar conclusions. The agency characterized the CPP as potentially “the most ambitious effort at mitigating the effects of climate change since the Clean Air Act of 1990;” however, it expects that “meaningful credit impacts” are unlikely to be imminent. S&P said the proposed rule will likely “undergo exhaustive reviews and spur much litigation before implementation” but that EPA will finalize it “more or less in its proposed form.”

S&P also described how four themes — regional differences, timing issues, costs and fuel mixes — will shape credit implications across industry subsectors and companies.

*Regional Differences* — The agency stated that the cost of reducing carbon emissions will be “much greater” in some states than in others. For example, while CPP reduction goals for Ohio and Kentucky are less aggressive than for other states, “their percentage reductions would be quite steep considering their limited generating flexibility, minimal remediation efforts to date, and constrained natural gas pipeline capacity.”

*Timing* — S&P emphasized the uncertainty associated with potential litigation of the EPA’s final rule and noted that states’ implementation plans are not due until mid-2016 at the earliest. Therefore any credit implications before 2016 would result from anticipatory actions that companies may choose to take.

*Costs* — S&P expressed the view that power prices are

likely to rise “in response to carbon-trading schemes” but that utilities might work to reduce generating costs through demand management programs.



*Fuel* — S&P stated that the CPP favors natural gas over coal. Therefore, the agency expects capacity factors to improve for natural gas and decline for coal, but noted that outcomes would vary regionally “based on gas and coal supply availability and the region’s current generating profile.”

While it’s too early to reach conclusions about the CPP’s impact on credit ratings, the industry faces the issue from a position of strength. As the rating agencies have noted in industry outlooks and recent rating changes, strong regulatory relationships and the continued shift toward regulated business models have reduced fundamental risks and resulted in both credit stability and improved financial metrics.

#### **Ratings by Company Category**

The table S&P Utility Credit Rating Distribution by Company Category presents the distribution of credit ratings over time for the investor-owned electric utilities organized into Regulated, Mostly Regulated and Diversified categories. Ratings are based on S&P long-term issuer ratings at the holding company level, with only one rating assigned per company. At September 30, 2014, the categories had the following average ratings: Regulated = BBB+, Mostly Regulated = BBB+, and Diversified = BBB.■

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For use at 10:00 a.m., EDT  
July 21, 2009

# Monetary Policy Report to the Congress

July 21, 2009



Board of Governors of the Federal Reserve System

# Monetary Policy Report to the Congress

Submitted pursuant to section 2B  
of the Federal Reserve Act

July 21, 2009



**Board of Governors of the Federal Reserve System**



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# Letter of Transmittal

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BOARD OF GOVERNORS OF THE  
FEDERAL RESERVE SYSTEM

Washington, D.C., July 21, 2009

THE PRESIDENT OF THE SENATE  
THE SPEAKER OF THE HOUSE OF REPRESENTATIVES

The Board of Governors is pleased to submit its *Monetary Policy Report to the Congress* pursuant to section 2B of the Federal Reserve Act.

Sincerely,

A handwritten signature in black ink, appearing to read "Ben Bernanke", is written over the word "Sincerely,".

Ben Bernanke, Chairman



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# Part 1

## Overview:

# Monetary Policy and the Economic Outlook

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Amid a severe global economic downturn, the U.S. economy contracted further and labor market conditions worsened over the first half of 2009. In the early part of the year, economic activity deteriorated sharply, and strains in financial markets and pressures on financial institutions generally intensified. More recently, however, the downturn in economic activity appears to be abating and financial conditions have eased somewhat, developments that partly reflect the broad range of policy actions that have been taken to address the crisis. Nonetheless, credit conditions for many households and businesses remain tight, and financial markets are still stressed. In the labor market, employment declines have remained sizable—although the pace of job loss has diminished somewhat from earlier in the year—and the unemployment rate has continued to climb. Meanwhile, consumer price inflation has remained subdued.

U.S. real gross domestic product (GDP) fell sharply again in the first quarter of 2009, but the contraction in overall output looks to have moderated somewhat of late. Consumer spending—which has been supported recently by the boost to disposable income from the tax cuts and increases in various benefit payments that were implemented as part of the 2009 fiscal stimulus package—appears to be holding reasonably steady so far this year. And consumer sentiment is up from the historical lows recorded around the turn of the year. In the housing market, a leveling out of home sales and construction activity in the first half of 2009 suggests that the demand for new houses may be stabilizing following three years of steep declines. Businesses, however, have continued to cut capital spending and liquidate inventories in response to soft demand and excessive stocks. Economic activity abroad plummeted in the first quarter and has continued to fall, albeit more slowly, in recent months. Slumping foreign demand led to a sharp drop in U.S. exports during the first half of the year. However, the ongoing contraction in U.S. domestic demand triggered an even sharper drop in imports.

The further contraction in domestic economic activity during the first half of 2009 was accompanied by a significant deterioration in labor market conditions.

Private-sector payroll employment fell at an average monthly rate of 670,000 jobs in the first four months of this year before declining by 312,000 jobs in May and 415,000 jobs in June. Meanwhile, the unemployment rate moved up steadily from 7¼ percent at the turn of the year to 9½ percent in June. With the sharp reductions in employment, the wage and salary incomes of households, adjusted for price changes, fell during this period.

Overall consumer price inflation, which slowed sharply late last year, remained subdued in the first half of this year as the margin of slack in labor and product markets widened considerably further and as prices of oil and other commodities retraced only a part of their earlier steep declines. All told, the 12-month change in the personal consumption expenditures (PCE) price index was close to zero in May, while the 12-month change in PCE prices excluding food and energy was 1¼ percent. Survey measures of longer-term inflation expectations have remained relatively stable this year and currently stand at about their average values in 2008.

During the first few months of 2009, pressures on financial firms, which had eased late last year, intensified again. Equity prices of banks and insurance companies fell amid reports of large losses in the fourth quarter of 2008, and market-based measures of the likelihood of default by those institutions rose. Broad equity price indexes also fell in the United States and abroad, and measures of volatility in such markets stayed at near-record levels. In addition, bank funding markets were strained, flows of credit to businesses and households were impaired, and many securitization markets remained shut.

The Federal Reserve and other government entities continued to respond forcefully to these adverse financial market developments. The Federal Reserve kept its target for the federal funds rate at a range between 0 and ¼ percent and purchased additional agency mortgage-backed securities (MBS) and agency debt. Throughout the first half of the year, the Federal Reserve also continued to provide funding to financial institutions and markets through a variety of credit and liquidity facilities. In February, the Treasury, the Feder-

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Note: A list of abbreviations is available at the end of this report.

al Reserve, the Federal Deposit Insurance Corporation, the Office of the Comptroller of the Currency, and the Office of Thrift Supervision announced the Financial Stability Plan. The plan included, among other elements, a Capital Assistance Program designed to assess the capital needs of banking institutions under a range of economic scenarios (through the Supervisory Capital Assessment Program (SCAP), or stress test) and, if necessary, to assist banking institutions in strengthening the amount and quality of their capital. In early March, the Federal Reserve and the Treasury launched the Term Asset-Backed Securities Loan Facility (TALF), an initiative designed to catalyze the securitization markets by providing financing to investors to support their purchases of certain AAA-rated asset-backed securities. At the March meeting of the Federal Open Market Committee (FOMC), the Committee decided to expand its purchases of agency MBS and agency debt and to begin buying longer-term Treasury securities to help improve conditions in private credit markets. In May, the Federal Reserve announced an expansion of eligible collateral under the TALF program. In the same month, the results of the SCAP were announced and were positively received in financial markets.

These policy actions, and ones previously taken, have helped stabilize a number of financial markets and, in some cases, have led to significant improvements. In recent months, strains in short-term funding markets have eased, with some credit spreads in those markets returning close to pre-crisis levels. The narrowing in spreads likely reflects, in part, a decrease in the probability that market participants assign to extremely adverse outcomes for the economy in light of the apparent moderation in the rate of economic contraction. Global equity prices have recouped some of their earlier declines, and measures of volatility in equity and other financial markets have retreated somewhat, though they remain at elevated levels. Issuance in some securitization markets that were essentially shut down earlier has begun to increase. Although yields on longer-term Treasury securities have risen, some of these increases are likely attributable to improvement in the economic outlook and a reversal in flight-to-quality flows. Mortgage rates have risen about in line with Treasury yields, but corporate bond yields have continued to decline. By early June, the 10 banking organizations required

by the SCAP to bolster their capital buffers had issued new common equity in amounts that either met or came close to meeting the SCAP requirements. Nonetheless, despite these notable improvements, strains remain in most financial markets, many financial institutions face the possibility of significant additional losses, and the flow of credit to some businesses and households remains constrained.

In conjunction with the June 2009 FOMC meeting, the members of the Board of Governors of the Federal Reserve System and presidents of the Federal Reserve Banks, all of whom participate in FOMC meetings, provided projections for economic growth, unemployment, and inflation; these projections are presented in Part 4 of this report. FOMC participants generally viewed the outlook for the economy as having improved modestly in recent months. Participants expected real GDP to bottom out in the second half of this year and then to move onto a path of gradual recovery, bolstered by an accommodative monetary policy, government efforts to stabilize financial markets, and fiscal stimulus. However, all participants expected that labor market conditions would continue to deteriorate during the remainder of this year and improve only slowly over the subsequent two years, with the unemployment rate still elevated at the end of 2011. FOMC participants expected total and core inflation to be lower in 2009 than during 2008 as a whole, in part because of the sizable amount of slack in resource utilization; inflation was forecast to remain subdued in 2010 and 2011.

Participants generally judged that the degree of uncertainty surrounding the medium-term outlook for both economic activity and inflation exceeded historical norms. Participants viewed the risks to their projections of economic growth over the medium run as either balanced or tilted to the downside, and most saw the risk to their projections of medium-run inflation as balanced. Participants also reported their assessments of the rates to which key macroeconomic variables would be expected to converge in the longer run under appropriate monetary policy and in the absence of further shocks to the economy. Most participants expected real GDP to grow in the longer run at an annual rate of about 2½ percent, the unemployment rate to be about 5 percent, and the rate of consumer price inflation to be about 2 percent.

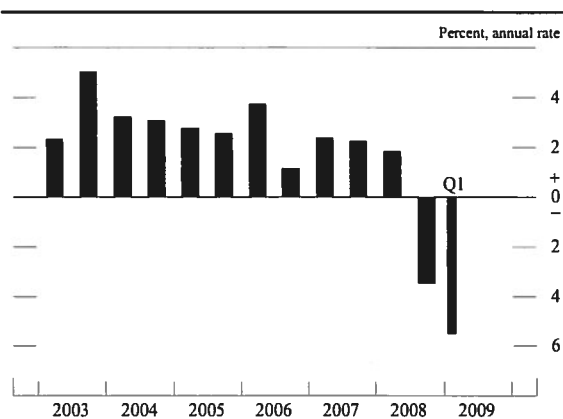
## Part 2

# Recent Financial and Economic Developments

Economic activity, which fell sharply in the fourth quarter of 2008, declined at nearly the same rate in the first quarter of 2009. (For the change in real gross domestic product (GDP) in recent years, see figure 1.) However, the pace of contraction appears to have moderated somewhat of late. To be sure, businesses have continued to cut back on investment spending, and firms have reacted to the abrupt rise in inventory-sales ratios around the turn of the year by cutting production and running down inventories at a more rapid pace, particularly in the motor vehicle sector. Nevertheless, consumer spending seems to have stabilized, on balance, in the first half of this year, and housing activity, while still quite depressed, has leveled off in recent months. And, while the recession abroad led to another sharp drop in export demand in the first quarter, the latest indicators suggest that the contraction in foreign activity has lessened, especially in emerging Asian economies. In the labor market, the pace of job loss has diminished in recent months from the rate earlier this year; nonetheless, employment declines have remained sizable, and the unemployment rate has risen sharply. Meanwhile, inflation remained subdued in the first half of this year (figure 2).

In early 2009, strains in some financial markets appeared to intensify from the levels seen in late 2008.

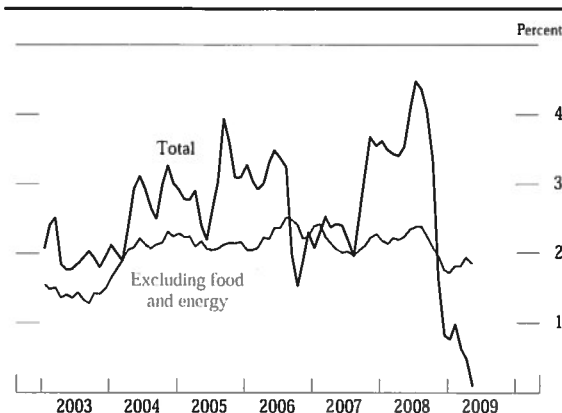
1. Change in real gross domestic product, 2003–09



NOTE: Here and in subsequent figures, except as noted, change for a given period is measured to its final quarter from the final quarter of the preceding period.

SOURCE: Department of Commerce, Bureau of Economic Analysis.

2. Change in the chain-type price index for personal consumption expenditures, 2003–09



NOTE: The data are monthly and extend through May 2009; changes are from one year earlier.

SOURCE: Department of Commerce, Bureau of Economic Analysis.

Market participants' concerns about major financial institutions increased, equity prices for such institutions fell, and their credit default swap (CDS) spreads widened substantially. These developments spilled over to broader markets, with equity prices falling and spreads of yields on corporate bonds over those on comparable-maturity Treasury securities moving to near-record highs. Deterioration in the functioning of many financial markets restricted the flow of credit to businesses and households.

In response to these financial market stresses, the Federal Reserve and other government entities implemented additional policy initiatives to support financial stability and promote economic recovery. Federal Reserve initiatives included expanding direct purchases of agency debt and agency mortgage-backed securities (MBS), beginning direct purchases of longer-term Treasury securities, and providing loans against consumer and other asset-backed securities (ABS).<sup>1</sup> Other government entities also undertook new measures to support the financial sector, including the provision of

1. For more information, see Board of Governors of the Federal Reserve System (2009), *Federal Reserve System Monthly Report on Credit and Liquidity Programs and the Balance Sheet* (Washington: Board of Governors, July), [www.federalreserve.gov/files/monthlyclsreport200907.pdf](http://www.federalreserve.gov/files/monthlyclsreport200907.pdf).

more capital to banking institutions under the Capital Purchase Program, or CPP, and the announcement of programs to help banks manage their legacy assets. In addition, the bank supervisory agencies undertook a special assessment of the capital strength of the largest U.S. banking organizations (the Supervisory Capital Assessment Program, or SCAP).

Partly as a result of these efforts, conditions in financial markets began to show signs of improvement starting in March, although they remained strained. During the subsequent few months, both equity prices of financial firms and broad equity price indexes rose, on balance, and corporate bond spreads narrowed. Firms responded by substituting longer-term financing through the corporate bond market for shorter-term funding from bank loans and commercial paper (CP). Supported by the Federal Reserve's Term Asset-Backed Securities Loan Facility (TALF), issuance of consumer ABS began to approach pre-crisis levels. Short-term interbank funding markets also showed substantial improvement, and banking institutions involved in the SCAP were able to issue significant amounts of public equity and nonguaranteed debt. However, outstanding bank loans to households and nonfinancial businesses continued to decline amid expectations that borrower credit quality would deteriorate further, risk spreads in many markets that were still quite elevated, and financial conditions that remained somewhat strained.

## DOMESTIC DEVELOPMENTS

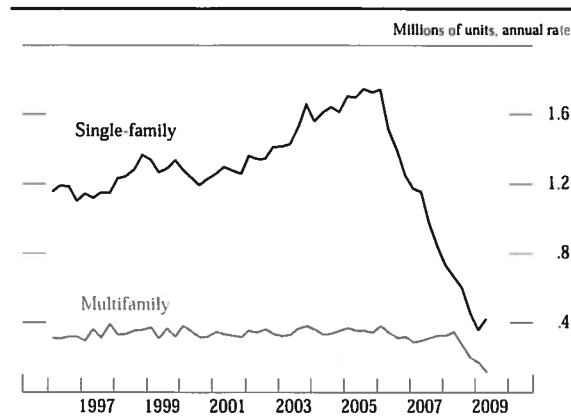
### The Household Sector

#### *Residential Investment and Housing Finance*

Although home prices have continued to fall, the steep declines in housing demand and construction that began in late 2005 appear to be abating. Sales of existing single-family homes have flattened out at a little more than 4 million units at an annual rate since late last year, and sales of new single-family homes have been little changed since January at a bit below 350,000 units. That said, the pace of sales for both new and existing homes is still very low by historical standards.

In the single-family housing sector, starts of new units appear to have firmed of late, though they remain at a depressed level (figure 3). With this restrained level of construction, months' supply of unsold new homes relative to sales has come down somewhat from its peak at the turn of the year, but it still remains quite high compared with earlier in the decade. Starts in the multifamily sector—which had held up well through the

### 3. Private housing starts, 1996–2009

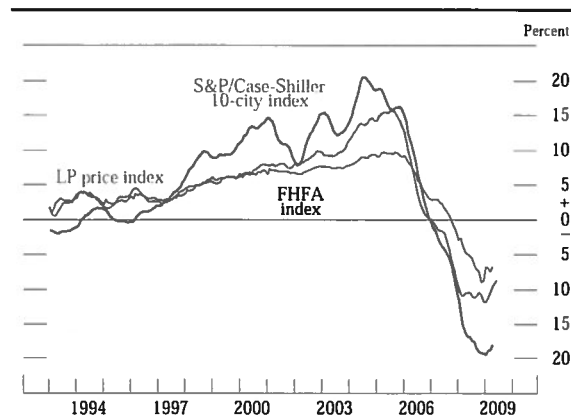


NOTE: The data are quarterly and extend through 2009:Q2.  
SOURCE: Department of Commerce, Bureau of the Census.

spring of 2008 even as single-family activity was plummeting—have deteriorated considerably over the past year. These declines have coincided with a substantial worsening of many of the economic and financial factors that influence construction in this sector, including reports of a pullback in the availability of credit for new projects and a sharp decline in the price of apartment buildings following a multiyear run-up.

House prices continued to fall in the first part of this year. The latest readings from national indexes show price declines for existing homes over the past

### 4. Change in prices of existing single-family houses, 1993–2009



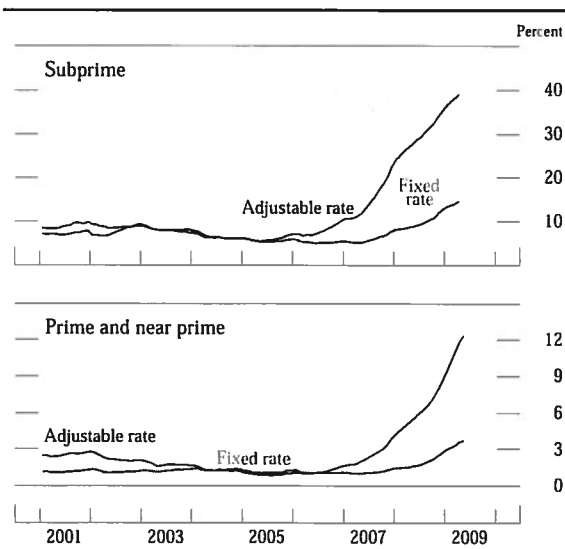
NOTE: The data are monthly and extend into 2009:Q2; changes are from one year earlier. The LP price index includes purchase transactions only. The FHFA index (formerly calculated by the Office of Federal Housing Enterprise Oversight) also includes purchase transactions only. The S&P/Case-Shiller index reflects all arm's-length sales transactions in the metropolitan areas of Boston, Chicago, Denver, Las Vegas, Los Angeles, Miami, New York, San Diego, San Francisco, and Washington, D.C.  
SOURCE: For LP, LoanPerformance, a division of First American CoreLogic; for FHFA, Federal Housing Finance Agency; for S&P/Case-Shiller, Standard & Poor's.

12 months in the range of 7 to 18 percent (figure 4). One such measure with wide geographic coverage, the LoanPerformance repeat-sales price index, fell more than 9 percent over the 12 months ending in May and is now 20 percent below the peak that it achieved in mid-2006. Price declines have been particularly marked in areas of the country that have experienced a large number of foreclosure-related sales, such as Nevada, Florida, California, and Arizona. Lower prices improve the affordability of homeownership for potential new buyers and, all else being equal, should eventually help bolster housing demand. However, expectations of further declines in house prices can make potential buyers reluctant to enter the market. Although consumer surveys continue to suggest that a sizable portion of households expect house prices to fall in the coming year, the share of such households appears to have subsided in recent months.

With house prices still falling, conditions in the labor market deteriorating, and household financial conditions remaining weak, delinquency rates continued to rise across all categories of mortgage loans. As of April 2009, nearly 40 percent of adjustable-rate subprime loans and 15 percent of fixed-rate subprime loans were seriously delinquent (figure 5).<sup>2</sup> In May 2009, delinquency rates for prime and near-prime loans reached

2. A mortgage is defined as seriously delinquent if the borrower is 90 days or more behind in payments or the property is in foreclosure.

##### 5. Mortgage delinquency rates, 2001–09



NOTE: The data are monthly and extend through April 2009 for subprime and May 2009 for prime and near prime. Delinquency rate is the percent of loans 90 days or more past due or in foreclosure.

SOURCE: For subprime, LoanPerformance, a division of First American CoreLogic; for prime and near prime, Lender Processing Services, Inc.

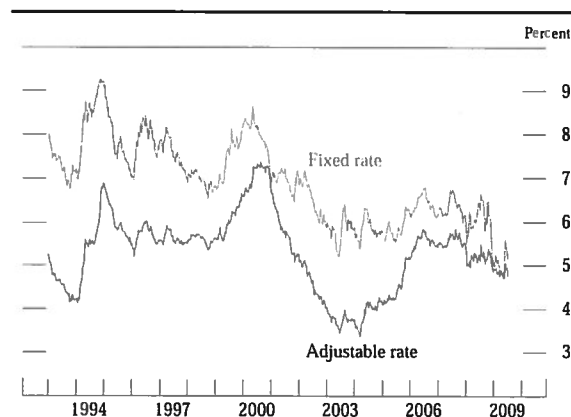
about 12 percent for adjustable-rate loans and 4 percent for fixed-rate loans, representing substantial increases over the past year to historic highs.

Foreclosures also jumped in 2009. Over the last three quarters of 2008, about 600,000 homes entered the foreclosure process each quarter. During the first quarter of 2009, about 750,000 homes entered the process. The increase may be related to the expiration of temporary foreclosure moratoriums that were put in place by some state and local governments, some private firms, and the government-sponsored enterprises (GSEs) late last year. The Treasury Department has recently established the Making Home Affordable program, which encompasses several efforts designed to lower foreclosure rates. The program includes a provision to allow borrowers to refinance easily into mortgages with lower payments and a provision to encourage mortgage lenders and servicers to modify delinquent mortgages.

Interest rates on 30-year fixed-rate conforming mortgages declined during early 2009; although those rates have risen more recently, about in line with increases in Treasury rates, mortgage rates remain at historically low levels (figure 6). Part of the decrease may have reflected expansion of the Federal Reserve's agency MBS purchase program. Early in the year, spreads of rates on conforming fixed-rate mortgages over long-term Treasury yields fell to their lowest levels in more than a year. Offer rates on nonconforming jumbo fixed-rate loans fell slightly but continued to be well above rates on conforming loans.<sup>3</sup> Although

3. Conforming mortgages are those eligible for purchase by Fannie Mae and Freddie Mac; they must be equivalent in risk to a prime mortgage with an 80 percent loan-to-value ratio, and they cannot exceed in size the conforming loan limit. The conforming loan limit

##### 6. Mortgage interest rates, 1993–2009



NOTE: The data, which are weekly and extend through July 15, 2009, are contract rates on 30-year mortgages.

SOURCE: Federal Home Loan Mortgage Corporation.

the declines in rates and spreads made borrowing relatively less expensive for those qualified for conforming mortgages, access to credit remained limited for many other borrowers. In the April 2009 Senior Loan Officer Opinion Survey on Bank Lending Practices, a majority of respondents indicated that they had tightened standards on residential mortgages over the preceding three months, an extension of the prevailing trend in earlier quarters, that about 40 percent of banks had reduced the size of existing home equity lines of credit, and that only a few of the banks reported having made subprime loans. The secondary market for conventional mortgage loans not guaranteed by Fannie Mae or Freddie Mac remained essentially shut.

Mortgage debt outstanding was about flat in the first quarter of 2009, with the effects of the weakness in the housing market and relatively restricted access to credit offsetting the influence of lower mortgage rates. The available indicators suggest that mortgage debt likely remained very soft in the second quarter. Refinancing activity was somewhat elevated early in the year, probably due to low mortgage interest rates and the waiver of many fees and easing of many underwriting terms by the GSEs. However, such activity moderated considerably when interest rates rose during the past few months.

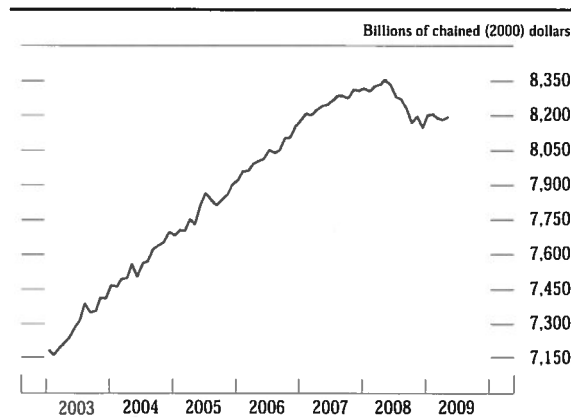
### Consumer Spending and Household Finance

Consumer spending appears to have leveled off so far this year after falling sharply in the second half of last year (figure 7). Continued widespread job losses and the drag from large declines in household wealth have weighed on consumption; however, spending lately has been supported by the boost to household incomes from the fiscal stimulus package enacted in February. Measures of consumer sentiment, while still at depressed levels, have nonetheless moved up from the historical lows recorded around the turn of the year.

Real personal consumption expenditures (PCE), although variable from month to month, have essentially moved sideways since late last year. Sales of new light motor vehicles continued to contract early this year but have stabilized in recent months—at an average annual rate of 9.7 million units over the four months ending in June. Outlays on other goods, which

for a first mortgage on a single-family home in the contiguous United States is currently equal to the greater of \$417,000 or 115 percent of the area's median house price; it cannot exceed \$625,500. Jumbo mortgages are those that exceed the maximum size of a conforming loan; they are typically extended to borrowers with relatively strong credit histories.

7. Real personal consumption expenditures, 2003–09

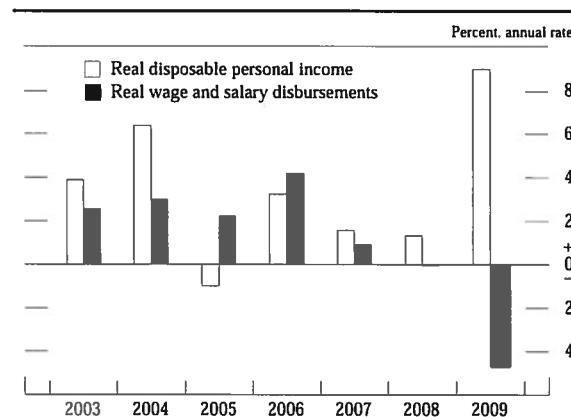


NOTE: The data are monthly and extend through May 2009.  
SOURCE: Department of Commerce, Bureau of Economic Analysis.

plunged in 2008, have remained at extremely low levels, while spending on services has only edged up so far this year.

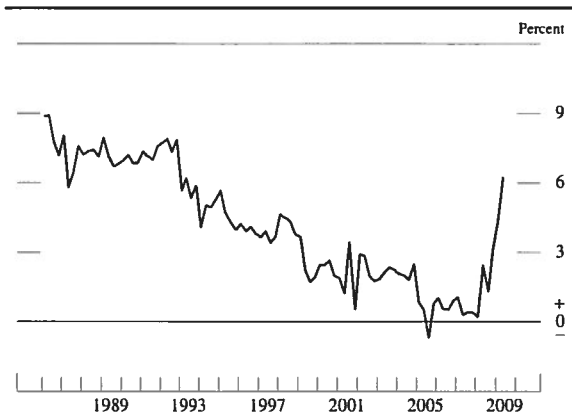
Real disposable personal income, or DPI—that is, after-tax income adjusted for inflation—has risen at an annual rate of about 9 percent so far this year, a substantial pickup from the increase of 1¼ percent posted in 2008 (figure 8). Gains in after-tax income have been bolstered by the tax cuts and increases in social benefit payments that were implemented as part of the 2009 fiscal stimulus package. In contrast, nominal labor income has been declining steeply. Although nominal hourly compensation has risen at a faster pace than overall prices, sizable reductions in employment and the work-week have cut deeply into total hours worked and hence

8. Change in real income and in real wage and salary disbursements, 2003–09



NOTE: Through 2008, change is from December to December; for 2009, change is from December to May.  
SOURCE: Department of Commerce, Bureau of Economic Analysis.

## 9. Personal saving rate, 1986–2009



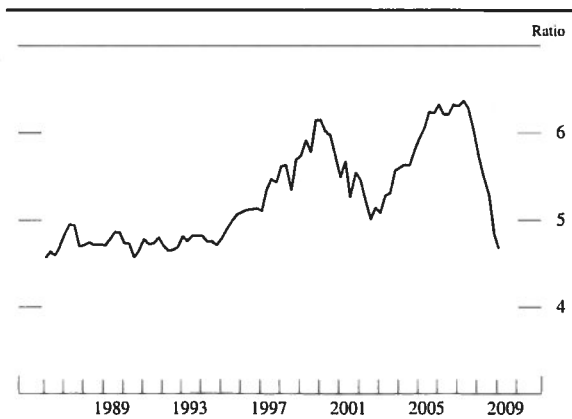
NOTE: The data are quarterly and extend through 2009:Q2; the reading for 2009:Q2 is the average for April and May.

SOURCE: Department of Commerce, Bureau of Economic Analysis.

overall labor compensation. With real after-tax income up appreciably in the first half of the year and consumer outlays leveling off, the personal saving rate jumped during the spring, reaching nearly 7 percent in May compared with the 1¾ percent average recorded during 2008 (figure 9).

Household net worth continued to fall in the first quarter of this year as a result of the ongoing declines in house prices and a further drop in equity prices (figure 10). However, equity prices have recorded substantial gains since March, helping to offset continued declines in the value of real estate wealth. The recent stimulus-induced jump in real disposable income and the improvement in equity wealth since this spring appar-

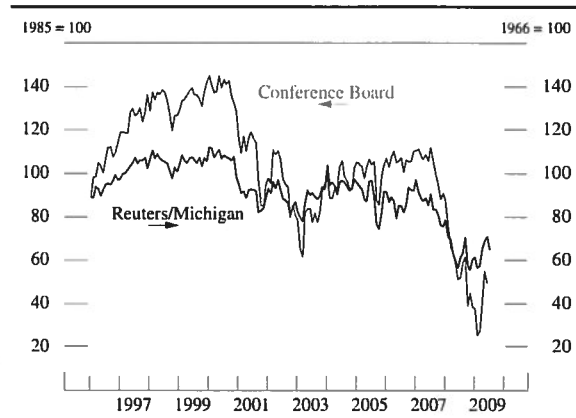
## 10. Wealth-to-income ratio, 1986–2009



NOTE: The data are quarterly and extend through 2009:Q1. The wealth-to-income ratio is the ratio of household net worth to disposable personal income.

SOURCE: For net worth, Federal Reserve Board, flow of funds data; for income, Department of Commerce, Bureau of Economic Analysis.

## 11. Consumer sentiment, 1996–2009



NOTE: The Conference Board data are monthly and extend through June 2009. The Reuters/University of Michigan data are monthly and extend through a preliminary estimate for July 2009.

SOURCE: The Conference Board and Reuters/University of Michigan Surveys of Consumers.

ently helped lift consumer sentiment somewhat from its earlier very low levels (figure 11).

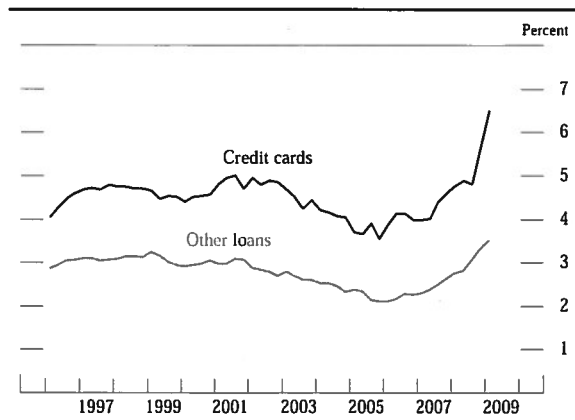
Nonmortgage consumer debt outstanding is estimated to have fallen at an annual rate of 2 percent in the first half of 2009, extending a decline that began in the final quarter of 2008. The decreases likely reflect both reduced demand for loans as a result of the restrained pace of consumer spending and a restricted supply of credit. The April 2009 Senior Loan Officer Opinion Survey showed a further tightening of standards and terms on consumer loans over the preceding three months, actions that included lowering credit limits on existing credit card accounts.

The tightening in standards and terms likely reflected, in part, concerns by financial institutions about consumer credit quality. Delinquency rates on most types of consumer lending—credit card loans, auto loans, and other nonrevolving loans—continued to rise during the first half of 2009. The increase in credit card loan delinquency rates at banks was particularly sharp, and at 6½ percent as of the end of the first quarter of 2009, such delinquencies exceeded the level reached during the 2001 recession (figure 12). Household bankruptcy rates continued the upward trend that has been evident since the bankruptcy law reform in 2005; the recent increases likely reflect the deterioration in household financial conditions.

Changes in interest rates on consumer loans were mixed over the first half of the year. Auto loan rates were about flat, credit card rates ticked upward, and rates on other consumer loans showed a slight decline. Spreads of these rates over those on comparable-maturity Treasury securities remained at elevated levels.



12. Delinquency rates on consumer loans at commercial banks, 1996–2009



NOTE: The data are quarterly and extend through 2009:Q1. Delinquency rate is the percent of loans 30 days or more past due.  
SOURCE: Federal Financial Institutions Examination Council, Consolidated Reports of Condition and Income (Call Report).

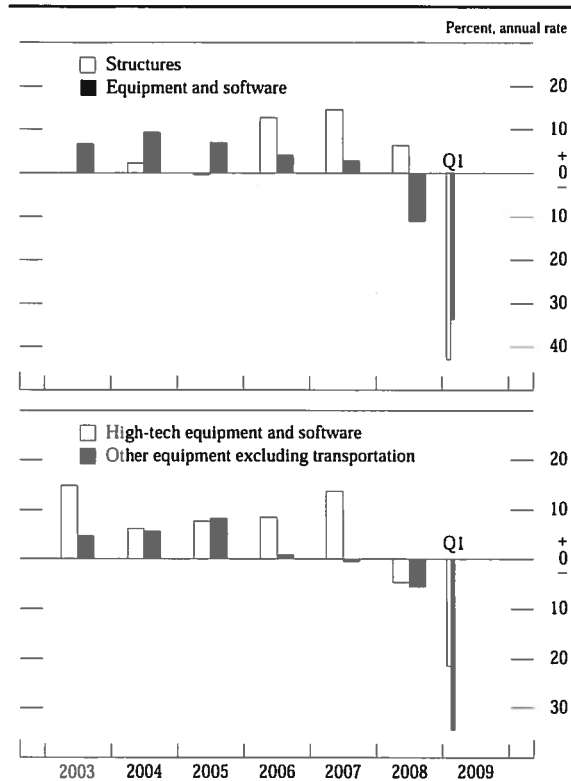
Before the onset of the financial crisis, the market for ABS provided significant support for consumer lending by effectively reducing the cost to lenders of providing such credit. The near-complete cessation of issuance in this market in the fourth quarter of 2008 thus likely contributed importantly to the curtailment of consumer credit. Issuance of credit card, auto, and student loan ABS began to pick up in March and approached pre-crisis levels in April and May. Spreads of yields on AAA-rated credit card and auto ABS over yields on swaps fell sharply in early 2009, although they remained at somewhat elevated levels. The increased issuance and falling spreads appeared to reflect importantly the TALF program, which had been announced in late 2008 and began operation in March 2009. Availability of loans to purchase automobiles, which had declined sharply at the end of 2008, rebounded in early 2009 as some auto finance companies accessed credit through the TALF and others received funding directly from the government.

## The Business Sector

### Fixed Investment

Businesses have continued to cut back capital spending, with declines broadly based across equipment, software, and structures. Real business fixed investment fell markedly in the final quarter of 2008 and the first quarter of this year (figure 13). The cutbacks in business investment were prompted by a deterioration late last year and early this year in the economic and financial conditions that influence capital expenditures: In

13. Change in real business fixed investment, 2003–09



NOTE: High-tech equipment consists of computers and peripheral equipment and communications equipment.  
SOURCE: Department of Commerce, Bureau of Economic Analysis.

particular, business output contracted steeply, corporate profits declined, and credit availability remained tight for many borrowers. More recently, it appears that the declines in capital spending may be abating, and financing conditions for businesses have improved somewhat.

Real business outlays for equipment and software dropped at an annual rate of 34 percent in the first quarter of 2009 after falling nearly as rapidly in the fourth quarter. In both quarters, business purchases of motor vehicles plunged at annual rates of roughly 80 percent, and real spending on high-tech capital—computers, software, and communications equipment—fell at an annual rate of more than 20 percent. Real investment in equipment other than high tech and transportation, which accounts for nearly one-half of outlays for equipment and software, dropped at an annual rate of about 35 percent in the first quarter after falling at a 20 percent rate in the previous quarter. The available indicators suggest that real spending on equipment and software fell further in the second quarter, though at a much less precipitous pace: Although shipments of non-defense capital goods other than transportation items

continued to fall in April and May, the rate of decline slowed from the first-quarter pace. In addition, business purchases of new trucks and cars appear to have stabilized in the second quarter (albeit at low levels), and recent surveys of business conditions have been generally less downbeat than earlier this year.

Real spending on nonresidential structures turned down late last year and fell sharply in the first quarter. Outlays for construction of commercial and office buildings declined appreciably late last year and have contracted further so far this year. Spending on drilling and mining structures, which had risen briskly for a number of years, has plunged this year in response to the substantial net decline in energy prices since last summer. In contrast, outlays on other energy-related projects—such as new power plants and the expansion and retooling of existing petroleum refineries—have been growing rapidly for some time now and continued to post robust gains through May. On balance, the recent data on construction expenditures suggest that declines in spending on nonresidential structures may have slowed in the second quarter. However, weak business output and profits, tight financing conditions, and rising vacancy rates likely will continue to weigh heavily on this sector.

### *Inventory Investment*

Businesses ran off inventories aggressively in the first quarter, as firms entered the year with extremely high inventory-sales ratios despite having drawn down stocks throughout 2008 (figure 14). Much of the first-quarter liquidation occurred in the motor vehicle sector, where production was cut sharply and remained low in the second quarter. As a result, days' supply of domestic

light vehicles dropped from its peak of about 100 days in February to less than 70 days at the end of June, closer to the automakers' preferred level.

Firms outside of the motor vehicle sector also have been making significant production adjustments to bring down inventories. Factory output (excluding motor vehicles and parts) plunged in the first quarter, and inventories of nonfarm goods other than motor vehicles were drawn down noticeably in real terms. According to the available data, this pattern of production declines and inventory liquidation appears to have continued in the second quarter as well. Although inventory-sales ratios remain elevated in many industries, some recent business surveys suggest that firms have become more comfortable in recent months with the current level of inventories.

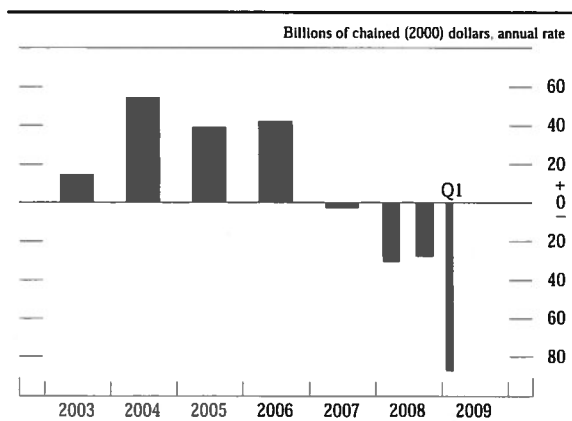
### *Corporate Profits and Business Finance*

Operating earnings per share for S&P 500 firms in the first quarter were about 35 percent below their year-earlier levels. Profitability of both financial and nonfinancial firms showed steep declines. Analysts' forecasts suggest that the pace of profit declines moderated only slightly in the second quarter, although downward revisions to forecasts for earnings over the next two years have slowed recently.

Business financial conditions in the first half of the year were characterized by lower demand for funds, even as financial conditions eased somewhat on balance. Borrowing by domestic nonfinancial businesses fell slightly in the first half of 2009 after having slowed markedly in the second half of 2008 (figure 15). The composition of borrowing shifted, with net issuance of corporate bonds surging, while both commercial and industrial (C&I) loans and CP outstanding fell. This reallocation of borrowing may have reflected a desire by businesses to strengthen their balance sheets by substituting longer-term sources of financing for shorter-term sources during a period when the cost of bond financing was generally falling. In particular, yields on both investment- and speculative-grade corporate bonds dropped sharply, and their spreads over yields on comparable-maturity Treasury securities narrowed appreciably, as investors' concerns about the economic outlook eased. Nonetheless, bond spreads remained somewhat elevated by historical standards.

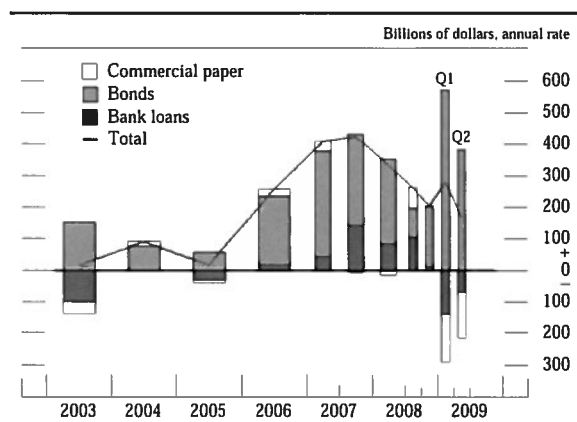
C&I and commercial real estate (CRE) lending by commercial banks were both quite weak in the first half of 2009, likely reflecting reduced demand for loans and a tighter lending stance on the part of banks. The results of the April 2009 Senior Loan Officer Opinion Survey

14. Change in real business inventories, 2003–09



SOURCE: Department of Commerce, Bureau of Economic Analysis.

15. Selected components of net financing for nonfinancial corporate businesses, 2003–09

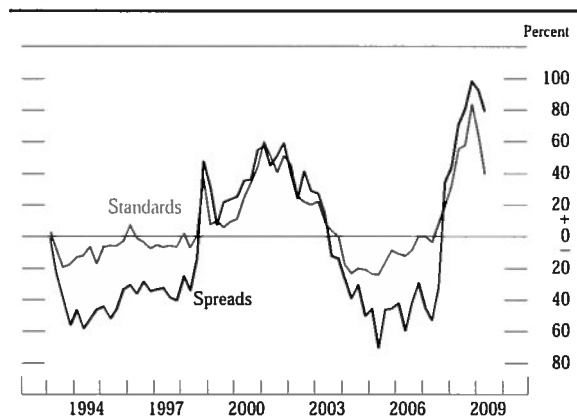


NOTE: The data for the components except bonds are seasonally adjusted. The data for 2009:Q2 are estimated.  
SOURCE: Federal Reserve Board, flow of funds data.

indicated that commercial banks had tightened terms and standards on C&I and CRE loans over the preceding three months (figure 16). The market for commercial mortgage-backed securities (CMBS)—an important source of funding before the crisis—remained shut.

Both seasoned and initial equity offerings by nonfinancial corporations were modest over the first half of 2009 (figure 17). Equity retirements are estimated to have slowed in early 2009 from their rapid pace during

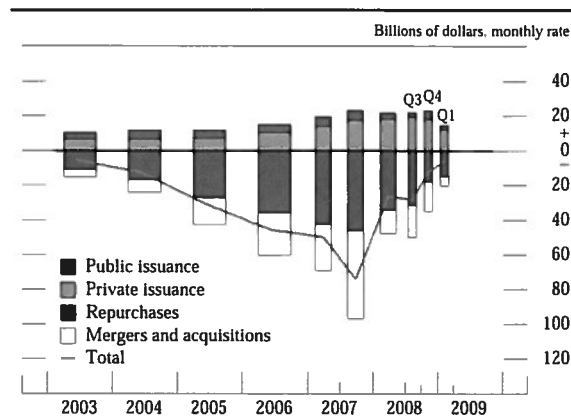
16. Net percentage of domestic banks tightening standards and increasing spreads on commercial and industrial loans to large and medium-sized borrowers, 1993–2009



NOTE: The data are drawn from a survey generally conducted four times per year; the last observation is from the April 2009 survey, which covers 2009:Q1. Net percentage is the percentage of banks reporting a tightening of standards or an increase in spreads less the percentage reporting an easing or a decrease. Spreads are measured as the loan rate less the bank's cost of funds. The definition of firm size suggested for, and generally used by, survey respondents is that large and medium-sized firms have annual sales of \$50 million or more.

SOURCE: Federal Reserve Board, Senior Loan Officer Opinion Survey on Bank Lending Practices.

17. Components of net equity issuance, 2003–09



NOTE: Net equity issuance is the difference between equity issued by domestic companies in public or private markets and equity retired through share repurchases, domestic cash-financed mergers, or foreign takeovers of U.S. firms. Equity issuance includes funds invested by private equity partnerships and stock option proceeds.

SOURCE: Thomson Financial, Investment Benchmark Report; Money Tree Report by PricewaterhouseCoopers, National Venture Capital Association, and Venture Economics.

the second half of 2008. As a result, net equity issuance in the first quarter declined by the smallest amount since 2002.

The credit quality of nonfinancial firms continued to deteriorate in the first half of 2009. The pace of rating downgrades on corporate bonds increased, and upgrades were relatively few. Delinquency rates on banks' C&I loans continued to increase in the first quarter, while those on CRE loans rose substantially (figure 18). Delinquency rates on construction and land development loans for one- to four-family residential properties increased to more than 20 percent. Banks that responded to the Senior Loan Officer Opinion Survey conducted in April 2009 expected delinquency and charge-off rates on such loans to increase over the rest of 2009, assuming that economic activity progressed in line with consensus forecasts.

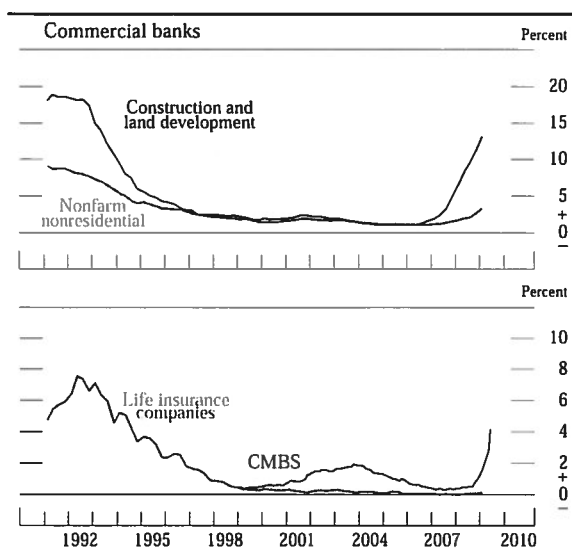
Financial firms issued bonds at a solid pace, including both debt issued under the Temporary Liquidity Guarantee Program of the Federal Deposit Insurance Corporation (FDIC) and debt issued without such guarantees. Equity issuance by such firms picked up substantially from a very low level following the completion of the SCAP reviews in May.

## The Government Sector

### Federal Government

The deficit in the federal unified budget has increased substantially during the current fiscal year. The budget

18. Delinquency rates on commercial real estate loans, 1991–2009



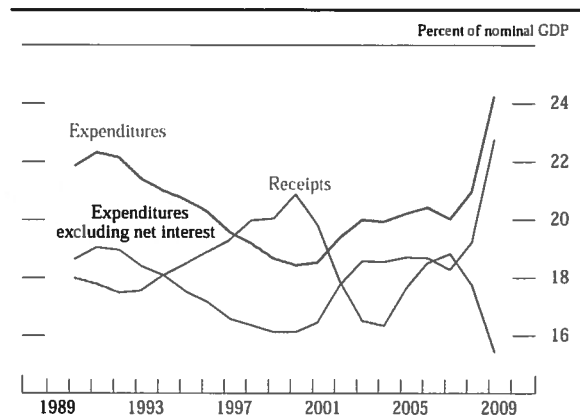
NOTE: The data for commercial banks and life insurance companies are quarterly and extend through 2009:Q1. The data for commercial mortgage-backed securities (CMBS) are monthly and extend through May 2009. The delinquency rates for commercial banks and CMBS are the percent of loans 30 days or more past due or not accruing interest. The delinquency rate for life insurance companies is the percent of loans 60 days or more past due or not accruing interest.

SOURCE: For commercial banks, Federal Financial Institutions Examination Council, Consolidated Reports of Condition and Income (Call Report); for life insurance companies, American Council of Life Insurers; for CMBS, Citigroup.

costs associated with the Troubled Asset Relief Program (TARP), the conservatorship of the mortgage-related GSEs, and the fiscal stimulus package enacted in February, along with the effects of the weak economy on outlays and revenues, have all contributed to the widening of the budget gap. Over the first nine months of fiscal year 2009—from October through June—the unified budget recorded a deficit of about \$1.1 trillion. The deficit is expected to widen further over the rest of the fiscal year because of the continued slow pace of economic activity, additional spending increases and tax cuts associated with the fiscal stimulus legislation, and further costs related to financial stabilization programs. The budget released by the Office of Management and Budget in May, which included the effects of the President's budget proposals, calculated that the deficit for fiscal 2009 would total more than \$1.8 trillion (13 percent of nominal GDP), significantly larger than the deficit in fiscal 2008 of \$459 billion (3¼ percent of nominal GDP).<sup>4</sup>

4. The President's budget includes a placeholder for additional funds for financial stabilization programs that have not been enacted but have an estimated budget cost of \$250 billion.

19. Federal receipts and expenditures, 1989–2009



NOTE: Through 2008, receipts and expenditures are on a unified-budget basis and are for fiscal years (October through September); gross domestic product (GDP) is for the four quarters ending in Q3. For 2009, receipts and expenditures are for the 12 months ending in June, and GDP is the average of 2008:Q4 and 2009:Q1.

SOURCE: Office of Management and Budget.

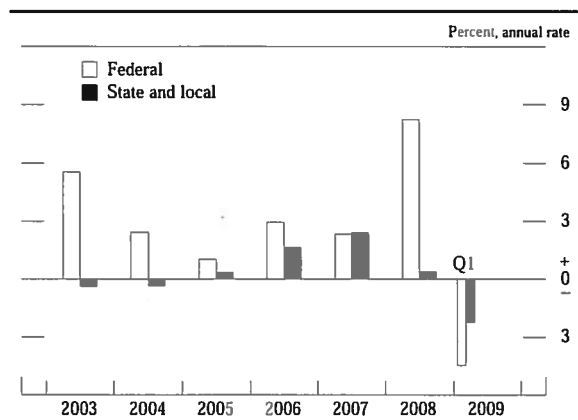
The decline in economic activity has cut deeply into tax receipts so far this fiscal year (figure 19). After falling about 2 percent in fiscal 2008, federal receipts dropped about 18 percent in the first nine months of fiscal 2009 compared with the same period in fiscal 2008. The decline in revenue has been particularly pronounced for corporate receipts, which have plunged as corporate profits have contracted and as firms have presumably adjusted payments to take advantage of the bonus depreciation provisions contained in the Economic Stimulus Act of 2008 and the American Recovery and Reinvestment Act of 2009. Individual income and payroll tax receipts have also declined noticeably, reflecting the weakness in nominal personal income and reduced capital gains realizations.<sup>5</sup>

Nominal federal outlays have risen markedly of late. After having increased about 9 percent in fiscal 2008, outlays in the first nine months of fiscal 2009 were almost 21 percent higher than during the same period in fiscal 2008. Spending was boosted, in part, by \$232 billion in outlays recorded for activities under the TARP and the conservatorship of the GSEs so far this fiscal year.<sup>6</sup> Spending for income support—particularly

5. While the 2009 stimulus plan has reduced individual taxes by around \$13 billion so far in fiscal 2009, the stimulus tax rebates in 2008 lowered individual taxes by about \$50 billion during the same period last year. Thus, the tax cuts associated with fiscal stimulus have not contributed to the year-over-year decline in individual tax receipts.

6. In the Monthly Treasury Statements and the Administration's budget, both equity purchases and debt-related transactions under the TARP are recorded on a net-present-value basis, taking into account market risk, and the Treasury's purchases of the GSE's MBS are

## 20. Change in real government expenditures on consumption and investment, 2003–09



SOURCE: Department of Commerce, Bureau of Economic Analysis.

for unemployment insurance benefits—has been pushed up by the deterioration in labor market conditions as well as by policy decisions to expand funding for a number of benefit programs. Meanwhile, federal spending on defense, Medicare, and Social Security also has recorded sizable increases. In contrast, net interest payments declined compared with the same year-earlier period, as the reduction in interest rates on Treasury debt more than offset the rise in Treasury debt.

As measured in the national income and product accounts (NIPA), real federal expenditures on consumption and gross investment—the part of federal spending that is a direct component of GDP—fell at an annual rate of 4½ percent in the first quarter following its steep rise of more than 8 percent in 2008 (figure 20). Real defense spending more than accounted for the first-quarter contraction, as nondefense outlays increased slightly. However, in the second quarter, defense spending appears to have rebounded, and it is likely to rise further in coming quarters given currently enacted appropriations.

### Federal Borrowing

Federal debt continued to increase in the first half of 2009, although at a slightly less rapid pace than had been posted in the second half of 2008. Despite the considerable issuance of Treasury securities in the first half of the year, demand at Treasury auctions generally kept pace, with bid-to-cover ratios within historical ranges. Foreign custody holdings of Treasury securities at the

recorded on a net-present-value basis. However, equity purchases from the GSEs in conservatorship are recorded on a cash-flow basis.

Federal Reserve Bank of New York grew steadily over the first half of the year. Fails-to-deliver of Treasury securities, which were elevated earlier in the year, generally decreased after the May 1 implementation of the Treasury Market Practices Group's recommendation of a mandatory charge for delivery failures.<sup>7</sup>

### State and Local Government

The fiscal positions of state and local governments have deteriorated significantly over the past year, and budget strains are particularly acute in some states, as revenues have come in weaker than policymakers expected. At the state level, revenues from income, business, and sales taxes have declined sharply.<sup>8</sup> Plans by states to address widening projected budget gaps have included cutting planned spending, drawing down rainy day funds, and raising taxes and fees. In coming quarters, the grants-in-aid included in the fiscal stimulus legislation will likely mitigate somewhat the pressures on state budgets, but many states are still expecting significant budget gaps for the upcoming fiscal year. At the local level, revenues have held up fairly well; receipts from property taxes have continued to rise moderately, reflecting the typically slow response of property taxes to changes in home values.<sup>9</sup> Nevertheless, the sharp fall in house prices over the past two years is likely to put downward pressure on local revenues before long. Moreover, many state and local governments have experienced significant capital losses in their employee pension funds in the past year, and they will need to set aside money in coming years to rebuild pension assets.

7. The fails charge is incurred when a party to a repurchase agreement or cash transaction fails to deliver the contracted Treasury security to the other party by the date agreed upon. The charge is a share of the value of the security, where the share is the greater of 3 percent (at an annual rate) minus the target federal funds rate (or the bottom of the range when the Federal Open Market Committee specifies a range) and zero. Previously, the practice was that a failed transaction was allowed to settle on a subsequent day at an unchanged invoice price; therefore, the cost of a fail was the lost interest on the funds owed in the transaction, which was minimal when short-term interest rates were very low. The new practice of a fails charge ensures that the total cost of a fail is at least 3 percent.

8. Sales taxes account for nearly one-half of the tax revenues collected by state governments.

9. The delay between changes in house prices and changes in property tax revenues likely occurs for three reasons. First, property taxes are based on assessed property values from the previous year. Second, in many jurisdictions, assessments are required to lag contemporaneous changes in market values (or they lag such changes for administrative reasons). Third, many localities are subject to state limits on the annual increases in total property tax payments and property value assessments. Thus, increases and decreases in market prices for houses tend not to be reflected in property tax bills for quite some time.

Outlays by state and local governments have been restrained by the pressures on their budgets. As measured in the NIPA, aggregate real expenditures on consumption and gross investment by state and local governments—the part of state and local spending that is a direct component of GDP—fell in both the fourth quarter of last year and the first quarter of this year, led by sharp declines in real construction spending. However, recent data on construction expenditures suggest that investment spending in the second quarter picked up, reversing a portion of the earlier declines. State and local employment has remained about flat over the past year, although some state and local governments are in the process of reducing outlays for compensation through wage freezes and mandatory furloughs that are not reflected in the employment figures.

### *State and Local Government Borrowing*

On net, bond issuance by state and local governments picked up in the second quarter of 2009 after having been tepid during the first quarter. Issuance of short-term debt remained modest, although about in line with typical seasonal patterns. Issuance of long-term debt, which is generally used to fund capital spending projects or to refund existing long-term debt, increased from the sluggish pace seen in the second half of 2008. The composition of new issues continued to be skewed toward higher-rated borrowers.

Interest rates on long-term municipal bonds declined in April as investors' concerns about the credit quality of municipal bonds appeared to ease somewhat with the passage of the fiscal stimulus plan, which included a substantial increase in the amount of federal grants to states and localities. That bill also aided the finances of state and local governments by establishing Build America Bonds, taxable state and local government bonds whose interest payments are subsidized by the Treasury at a 35 percent rate. Yields on municipal securities rose somewhat in May and June, concomitant with the rise in other long-term interest rates over that period; even so, the ratio of municipal bond yields to those on comparable-maturity Treasury securities dropped to its lowest level in almost a year.

In contrast to long-term municipal bond markets, conditions in short-term municipal bond markets continued to exhibit substantial strains. Market participants continued to report that the cost of liquidity support and credit enhancement for variable-rate demand obligations (VRDOs)—bonds that combine long maturities with floating short-term interest rates—remained

substantially higher than it had been a year earlier.<sup>10</sup> In addition, auctions of most remaining auction-rate securities failed. Some municipalities were able to issue new VRDOs, but many lower-rated issuers appeared to be either unwilling or unable to issue this type of debt at the prices that would be demanded of them. However, the seven-day Securities Industry and Financial Markets Association swap index, a measure of yields for high-grade VRDOs, declined to the lowest level on record, suggesting that the market was working well for higher-rated issuers.

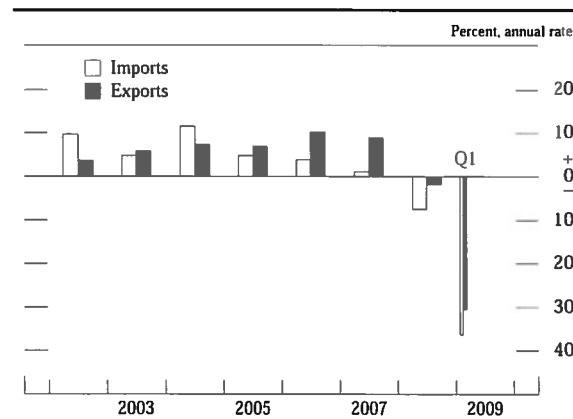
### **The External Sector**

The demand for U.S. exports dropped sharply in the first quarter. However, U.S. demand for imports fell even more precipitously, softening the decline in real GDP.

Real exports of goods and services declined at an annual rate of 31 percent in the first quarter, exceeding even the 24 percent rate of decline in the fourth quarter of 2008 (figure 21). Exports in almost all major categories contracted, with exports of machinery, industrial supplies, automotive products, and services recording large decreases. (Exports of aircraft were the exception, with increases following the end of strike-related

10. VRDOs are taxable or tax-exempt bonds that combine long maturities with floating short-term interest rates that are reset on a weekly, monthly, or other periodic basis. VRDOs also have a contractual liquidity backstop, typically provided by a commercial or investment bank, that ensures that bondholders are able to redeem their investment at par plus accrued interest even if the securities cannot be successfully remarketed to other investors.

21. Change in real imports and exports of goods and services, 2002–09



NOTE: Data for 2009:Q1 are expressed as percent change from 2008:Q4.  
SOURCE: Department of Commerce, Bureau of Economic Analysis.

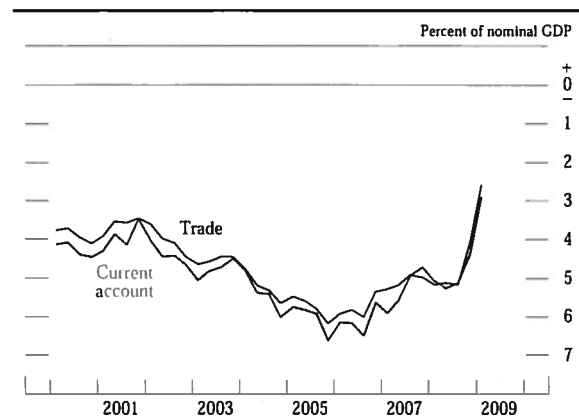
production disruptions in the fourth quarter.) All of our major trading partners reduced their demand for U.S. exports, with exports to Canada, Europe, and Mexico exhibiting especially significant declines. Data for April and May suggest that exports in the second quarter continued to fall, although more moderately, reflecting a slowing in the rate of contraction in foreign economic activity.

Real imports of goods and services fell at an annual rate of more than 36 percent in the first quarter. The drop in imports was widespread across U.S. trading partners, with large declines observed for imports from Canada, Europe, Japan, and Latin America. All major categories of imports fell, with imports of machinery, automotive products, and industrial supplies displaying particularly pronounced declines. The sharp fall in exports and imports of automotive products partly reflected cutbacks in North American production of motor vehicles, which relies heavily on flows of parts and finished vehicles among the United States, Canada, and Mexico.

In the first quarter of 2009, the U.S. current account deficit was \$406 billion at an annual rate, or a bit less than 3 percent of GDP, considerably narrower than the \$706 billion deficit recorded in 2008 (figure 22). The narrowing largely reflected the sharp reduction in the U.S. trade deficit, with the contraction in real imports described earlier being compounded by a steep fall in the value of nominal oil imports as oil prices declined.

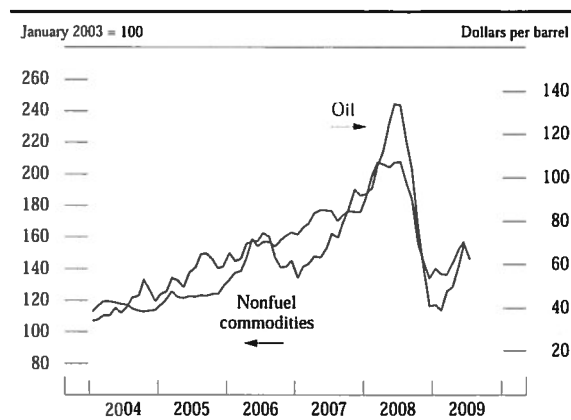
Import prices fell sharply in late 2008 and the first quarter of this year, but they have stabilized over the past few months. This pattern was influenced importantly by the swing in prices for oil and non-oil commodities, which turned back up in the second quarter. Prices for finished goods declined only slightly in the

22. U.S. trade and current account balances, 2000–09



NOTE: The data are quarterly and extend through 2009:Q1.  
SOURCE: Department of Commerce, Bureau of Economic Analysis.

23. Prices of oil and nonfuel commodities, 2004–09



NOTE: The data are monthly. The oil price is the spot price of West Texas intermediate crude oil, and the last observation is the average for July 1–15, 2009. The price of nonfuel commodities is an index of 45 primary-commodity prices and extends through June 2009.

SOURCE: For oil, the Commodity Research Bureau; for nonfuel commodities, International Monetary Fund.

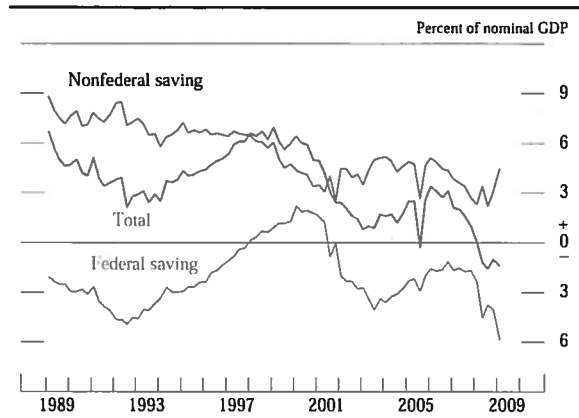
last quarter of 2008 and the first quarter of this year and have increased slightly in recent months.

The price of crude oil in world markets rose considerably over the first half of this year (figure 23). After plunging from a record high of more than \$145 per barrel in mid-July 2008 to a December average of about \$40, the spot price of West Texas intermediate (WTI) crude oil rebounded to about \$60 per barrel in mid-July of this year. The rebound in oil prices appears to reflect the view that the global demand for oil has begun to pick up once again. In addition, the ongoing effects of previous reductions in OPEC supply seem to be putting upward pressure on oil prices. The prices of longer-term futures contracts for crude oil have moved up to around \$85 per barrel, reflecting the view that the market will continue to tighten as global demand strengthens over the medium term.

## National Saving

Total net national saving—that is, the saving of households, businesses, and governments, excluding depreciation charges as measured in the NIPA—fell to a level of negative 1½ percent of nominal GDP in the first quarter of this year, its lowest reading in the post-World War II period (figure 24). After having reached 3½ percent of nominal GDP in early 2006, net national saving dropped over the subsequent three years as the federal budget deficit widened substantially and the fiscal positions of state and local governments deteriorated. In contrast, private saving has risen considerably, on balance, over this period, as a decline in business saving

24. Net saving, 1989–2009



NOTE: The data are quarterly and extend through 2009:Q1. Nonfederal saving is the sum of personal and net business saving and the net saving of state and local governments. GDP is gross domestic product.

SOURCE: Department of Commerce, Bureau of Economic Analysis.

has been more than offset by the recent jump in personal saving. National saving will likely remain very low this year in light of the weak economy and the probable further widening of the federal budget deficit. Nonetheless, if not boosted over the longer run, persistent low levels of national saving will likely be associated with both low rates of capital formation and heavy borrowing from abroad, which would limit the rise in the standard of living of U.S. residents over time and hamper the ability of the nation to meet the retirement needs of an aging population.

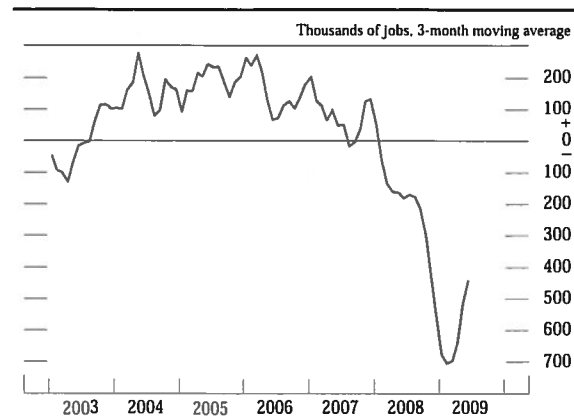
## The Labor Market

### *Employment and Unemployment*

The labor market deteriorated significantly further in the first half of this year as employment continued to fall and the unemployment rate rose sharply. The job losses so far this year have been widespread across industries and have brought the cumulative decline in private employment since December 2007 to more than 6½ million jobs. In recent months, however, the pace of job loss has moderated somewhat. Private nonfarm payroll employment fell by 670,000 jobs, on average, per month from January to April, but the declines slowed to 312,000 in May and 415,000 in June (figure 25). In contrast, the civilian unemployment rate has continued to move up rapidly so far this year, climbing 2¼ percentage points between December 2008 and June to 9½ percent (figure 26).

Virtually all major industries experienced considerable job losses in the first few months of the year. More

25. Net change in private payroll employment, 2003–09



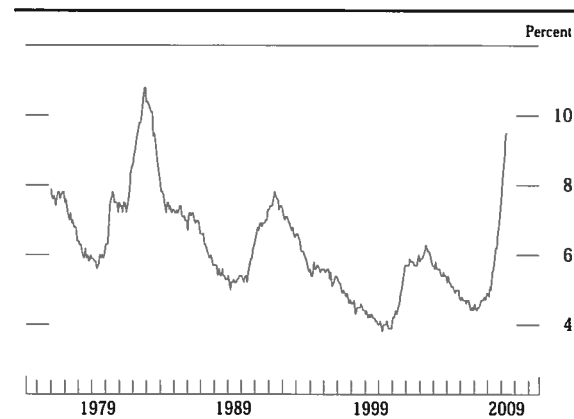
NOTE: The data are monthly and extend through June 2009.

SOURCE: Department of Labor, Bureau of Labor Statistics.

recently, employment declines in many industry groups have eased, and some industries have reported small gains. The May and June declines in construction jobs were the smallest since last fall, job declines in temporary help services slowed noticeably, and employment in nonbusiness services turned up in May and increased further in June. Meanwhile, in the manufacturing sector, employment declines have subsided a bit in recent months but still remain sizable; job losses in this sector have totaled 1.9 million since the start of the recession.

In addition to shedding jobs, firms have cut their labor input by shortening hours worked. Average weekly hours of production and nonsupervisory workers on private payrolls dropped sharply through June. In addition, the share of persons who reported that they were working part time for economic reasons—a group that

26. Civilian unemployment rate, 1976–2009



NOTE: The data are monthly and extend through June 2009.

SOURCE: Department of Labor, Bureau of Labor Statistics.



includes individuals whose hours have been cut by their employers as well as those who would like to move to full-time jobs but are unable to find them—is high.

Since the beginning of the recession in December 2007, the unemployment rate has risen more than 4½ percentage points. The rise in joblessness has been especially pronounced for those who lost their jobs permanently; these individuals tend to take longer to find new jobs than those on temporary layoffs or those who left their jobs voluntarily, and their difficulty in finding new jobs has been exacerbated by the ongoing weakness in hiring. Accordingly, the median duration of uncompleted spells of unemployment has increased from 8½ weeks in December 2007 to 18 weeks in June 2009, and the number of workers unemployed more than 15 weeks has moved up appreciably.

The labor force participation rate, which typically weakens during periods of rising unemployment, decreased gradually through March but has moved up somewhat, on balance, in recent months (figure 27). The emergency unemployment insurance programs that were introduced last July have likely contributed to the higher participation rate and unemployment rate by encouraging unemployed individuals to remain in the labor force to continue to look for work. In addition, anecdotes suggest that the impairment of household balance sheets during this recession may have led some workers to delay retirement and other workers to enter the labor force.

Other more recent indicators suggest that conditions in the labor market remain very weak. Initial claims for unemployment insurance, which rose dramatically earlier this year, have fallen noticeably from their peak but remain elevated, and the number of individuals receiving regular and emergency unemployment insurance

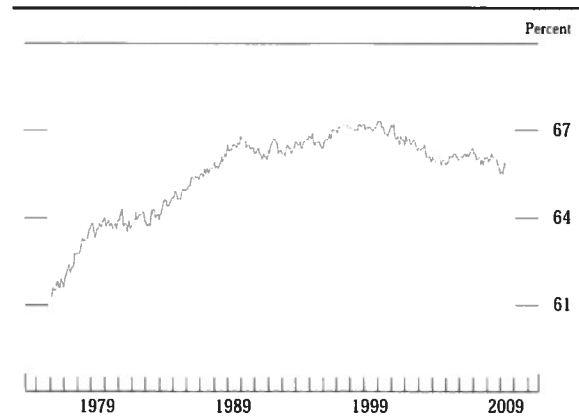
benefits climbed, reaching nearly 10 million at the end of June.

### *Productivity and Labor Compensation*

Labor productivity has continued to increase at a surprising rate during the most recent downturn, in part because firms have responded to the contraction in aggregate demand by aggressively reducing employment and shortening the workweeks of their employees. According to the latest available published data, output per hour in the nonfarm business sector increased at an annual rate of about 1½ percent in the first quarter after rising 2¼ percent during all of 2008 (figure 28). If these productivity estimates prove to be accurate, they would suggest that the fundamental factors that have supported a solid trend in underlying productivity in recent years—such as the rapid pace of technological change and ongoing efforts by firms to use information technology to improve the efficiency of their operations—remain in place.

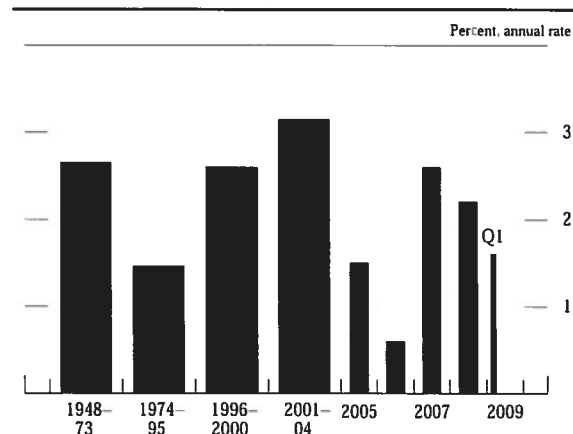
Alternative measures of nominal hourly compensation and wages suggest, on balance, that increases in labor costs have slowed this year in response to the sizable amount of slack in labor markets. The employment cost index (ECI) for private industry workers, which measures both wages and the cost to employers of providing benefits, has decelerated considerably over the past year (figure 29). This measure of compensation increased less than 2 percent in nominal terms between March 2008 and March 2009 after rising 3¼ percent in each of the preceding two years. Average hourly earn-

27. Labor force participation rate, 1976–2009



NOTE: The data are monthly and extend through June 2009.  
SOURCE: Department of Labor, Bureau of Labor Statistics.

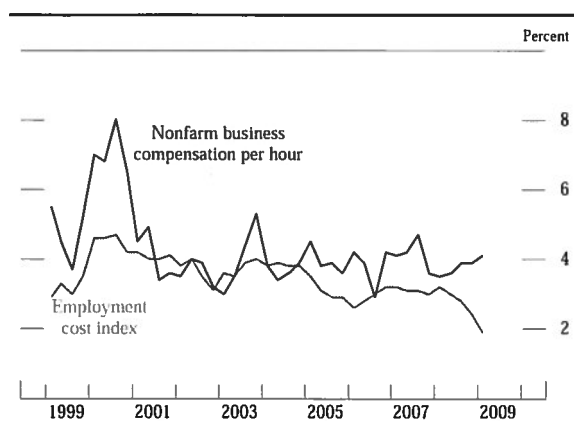
28. Change in output per hour, 1948–2009



NOTE: Nonfarm business sector. Change for each multiyear period is measured to the fourth quarter of the final year of the period from the fourth quarter of the year immediately preceding the period.

SOURCE: Department of Labor, Bureau of Labor Statistics.

## 29. Measures of change in hourly compensation, 1999–2009



NOTE: The data are quarterly and extend through 2009:Q1. For nonfarm business compensation, change is over four quarters; for the employment cost index (ECI), change is over the 12 months ending in the last month of each quarter. The nonfarm business sector excludes farms, government, nonprofit institutions, and households. The sector covered by the ECI used here is the nonfarm business sector plus nonprofit institutions. A new ECI series was introduced for data as of 2001, but the new series is continuous with the old.

SOURCE: Department of Labor, Bureau of Labor Statistics.

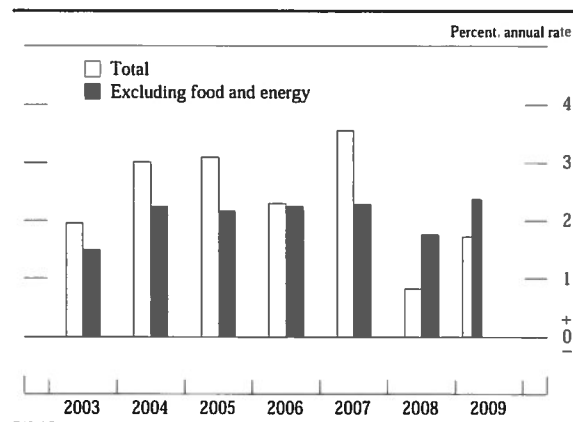
ings of production and nonsupervisory workers—a more timely, but narrower, measure of wage developments—have also decelerated significantly, especially in recent months. In contrast, compensation per hour (CPH) in the nonfarm business sector—an alternative measure of hourly compensation derived from the data in the NIPA—increased about 4 percent over the year ending in the first quarter of 2009, similar to the rate of increase seen during the past several years.

The much slower pace of overall consumer price inflation over the past year has supported real wage growth. Indeed, changes in both broad measures of hourly compensation—the ECI and CPH—have picked up in real terms over the past year, as has the inflation-adjusted increase in average hourly earnings. Nonetheless, as noted previously, with the sharp reduction in total hours worked, real wage and salary income of households has fallen over this period.

## Prices

Headline consumer prices, which fell sharply late last year with the marked deterioration in economic activity and drop-off in the prices of crude oil and other commodities, have risen at a moderate pace so far this year. While the margin of slack in product and labor markets has widened considerably further this year, putting downward pressure on inflation, many commodity prices have retraced part of their earlier declines. All

## 30. Change in the chain-type price index for personal consumption expenditures, 2003–09



NOTE: Through 2008, change is from December to December; for 2009, change is from December to May.

SOURCE: Department of Commerce, Bureau of Economic Analysis.

told, the chain-type price index for personal consumption expenditures increased at an annual rate of about 1¾ percent between December 2008 and May 2009, compared with its ¾ percent rise over the 12 months of 2008 (figure 30). The core PCE price index—which excludes the prices of energy items as well as those of food and beverages—also has increased at a moderate pace so far this year following especially low rates of increase late in 2008. Data for PCE prices in June are not yet available, but information from the consumer price index and other sources suggests that total PCE prices posted a relatively large increase that month as gasoline prices jumped; core consumer price increases were moderate.

Consumer energy prices flattened out, on balance, in the first five months of 2009 following their sharp drop late last year. However, crude oil prices have turned up again, with the spot price of WTI rising to around \$60 per barrel in mid-July from about \$40, on average, last December. The increase in crude costs has been putting upward pressure on the price of gasoline at the pump in recent months. In contrast, natural gas prices continued to plunge over the first half of this year in response to burgeoning supplies from new wells in Louisiana, North Dakota, Pennsylvania, and Texas that boosted inventories above historical midyear averages. Consumer prices for electricity have edged down so far this year—after rising briskly through the end of last year—as fossil fuel input costs have continued to decline.

Food prices decelerated considerably in the first part of this year in response to the dramatic downturn in spot prices of crops and livestock in the second half of last year. After climbing nearly 6½ percent in 2008, the

PCE price index for food and beverages decreased at an annual rate of 1 percent between December 2008 and May 2009.

Core PCE prices rose at an annual rate of 2½ percent over the first five months of the year, compared with 1¾ percent over all of 2008. The pickup in core inflation during the first part of this year reflected, in part, a jump in the prices of tobacco products associated with large increases in federal and state excise taxes this spring; excluding tobacco prices—for which the large increases likely were one-off adjustments—core inflation was unchanged at 1¾ percent over this period. Aside from tobacco, prices for other core goods snapped back early this year—following heavy discounting at the end of last year in reaction to weak demand and excess inventories—but have been little changed for the most part in recent months. In contrast, prices for a wide range of non-energy services have decelerated noticeably further this year.

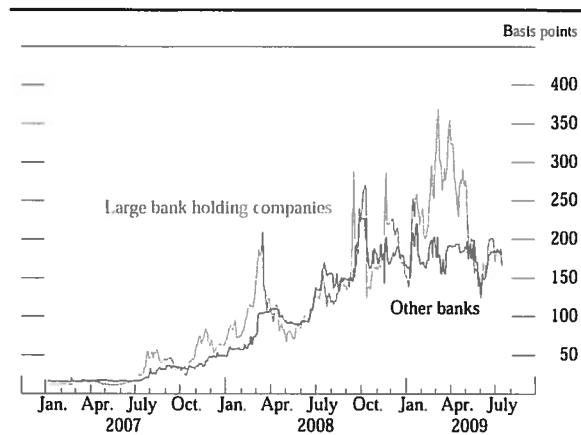
Survey-based measures of near-term inflation expectations declined late last year and early this year as actual headline inflation came down markedly, but, in recent months, some measures have moved back up close to their average levels of recent years. According to the Reuters/University of Michigan Surveys of Consumers, median expectations for year-ahead inflation stood at 3.0 percent in the preliminary estimate for July, up from about 2 percent around the turn of the year. Indicators of longer-term inflation expectations have been steadier over this period. These expectations in the Reuters/University of Michigan survey stood at 3.1 percent in the preliminary July release, about the measure's average value over all of 2008.

## FINANCIAL STABILITY DEVELOPMENTS

### Evolution of the Financial Turmoil, Policy Actions, and the Market Response

Stresses in financial markets intensified in the first few months of 2009 but have eased more recently. Credit default swap spreads for bank holding companies—which primarily reflect investors' assessments of the likelihood of those institutions defaulting on their debt obligations—rose sharply in early January on renewed concerns that some of those firms could face considerable capital shortfalls and liquidity difficulties (figure 31). Equity prices for banking and insurance companies fell in the first quarter of the year as a number of large financial institutions reported substantial losses for the fourth quarter of 2008 (figure 32).

31. Spreads on credit default swaps for selected U.S. banks, 2007–09

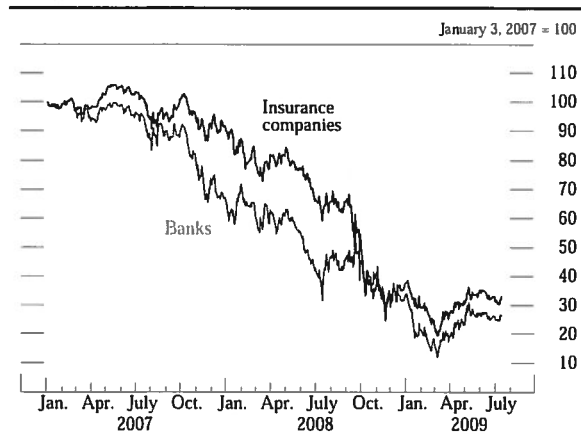


NOTE: The data are daily and extend through July 15, 2009. Median spreads for 6 bank holding companies and 12 other banks.  
SOURCE: Markit.

Strains in short-term funding markets persisted in January and February. A measure of stress in the interbank market, the spread of the London interbank offered rate (Libor) over the rate on comparable-maturity overnight index swaps (OIS), remained at elevated levels early in the year (figure 33). Required margins of collateral (also known as haircuts) and bid-asked spreads generally continued to be wide in the markets for repurchase agreements backed by many types of securities.

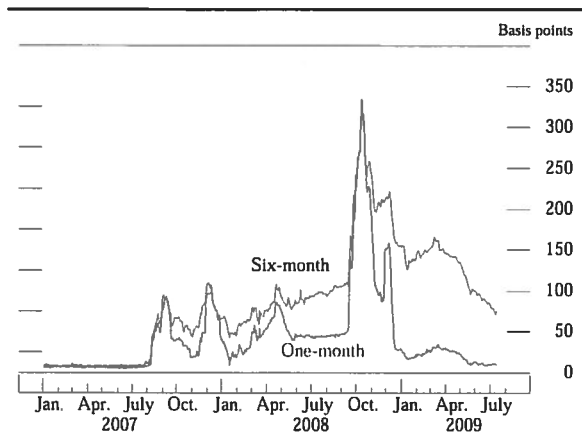
Other financial markets also continued to show signs of stress during the first two months of the year. In the leveraged loan market, bid prices remained

32. Equity price indexes for banks and insurance companies, 2007–09



NOTE: The data are daily and extend through July 15, 2009.  
SOURCE: Standard & Poor's.

33. Libor minus overnight index swap rate, 2007–09

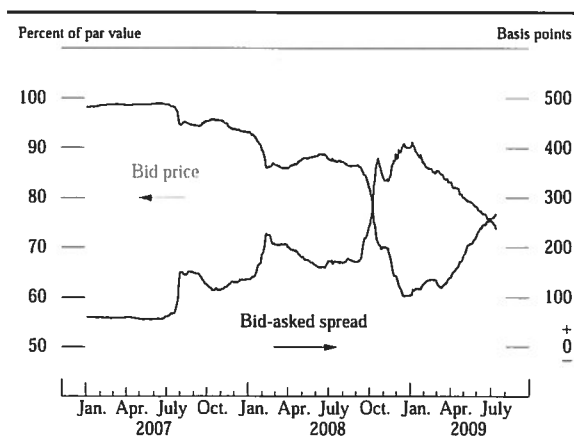


NOTE: The data are daily and extend through July 15, 2009. An overnight index swap (OIS) is an interest rate swap with the floating rate tied to an index of daily overnight rates, such as the effective federal funds rate. At maturity, two parties exchange, on the basis of the agreed notional amount, the difference between interest accrued at the fixed rate and interest accrued by averaging the floating, or index, rate. Libor is the London interbank offered rate.

SOURCE: For Libor, British Bankers' Association; for the OIS rate, Prebon.

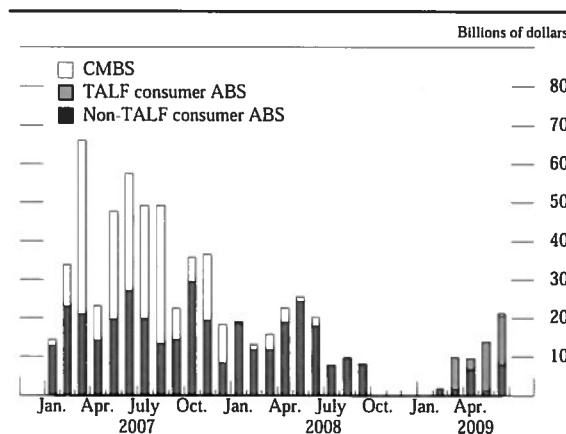
close to historical lows, and issuance—particularly of loans intended for nonbank lenders—dropped to very low levels (figure 34). Issuance of securities backed by credit card loans, nonrevolving consumer loans, and auto loans continued to be minimal in the first few months of the year, and there was no issuance of CMBS in the first half of 2009 (figure 35). An index based on CDS spreads on AAA-rated CMBS widened and neared the peak levels seen in November. Broad equity price indexes continued to fall, and measures of equity price volatility remained very high (figures 36 and 37).

34. Secondary-market pricing for syndicated loans, 2007–09



NOTE: The data are daily and extend through July 15, 2009.  
SOURCE: LSTA/Thomson Reuters Mark-to-Market Pricing.

35. Gross issuance of selected commercial mortgage- and asset-backed securities, 2007–09

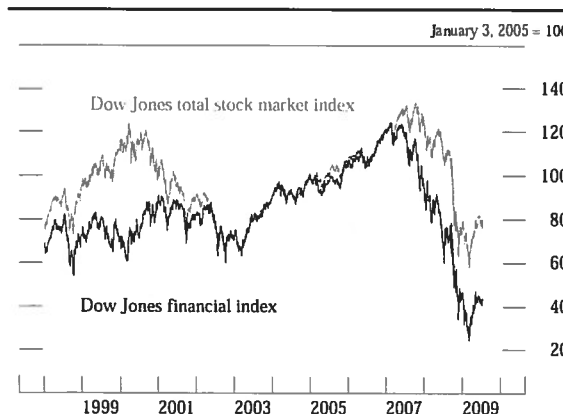


NOTE: CMBS are securities backed by commercial mortgages; consumer ABS (asset-backed securities) are securities backed by credit card loans, nonrevolving consumer loans, and auto loans. Data for consumer ABS show gross issuance facilitated by the Term Asset-Backed Securities Loan Facility (TALF) and such issuance outside the TALF.

SOURCE: For ABS, Bloomberg and the Federal Reserve Bank of New York; for CMBS, Commercial Mortgage Alert.

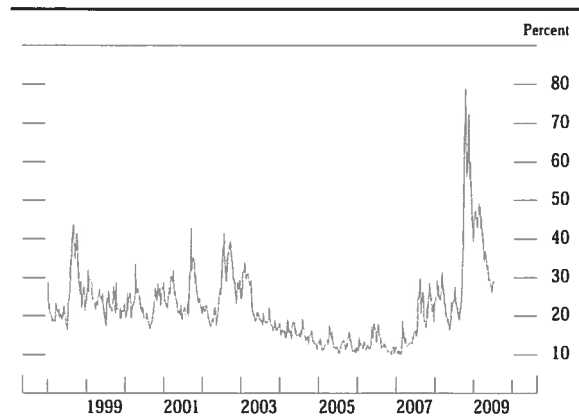
Nonetheless, a few financial markets showed signs of improvement early in the year. In the CP market, spreads on shorter-maturity A1/P1 nonfinancial and financial CP as well as on asset-backed commercial paper (ABCP) over AA nonfinancial CP declined modestly (figure 38). Although part of the improvement likely reflected greater demand from institutional investors as short-term Treasury yields declined to near zero on occasion, CP markets continued to be supported by the Federal Reserve's Commercial Paper Funding Facility (CPFF). More notably, spreads on shorter-maturity A2/P2 CP, which is not eligible for purchase under the

36. Stock price indexes, 1998–2009



NOTE: The data are daily and extend through July 15, 2009.  
SOURCE: Dow Jones Indexes.

37. Implied S&P 500 volatility, 1998–2009

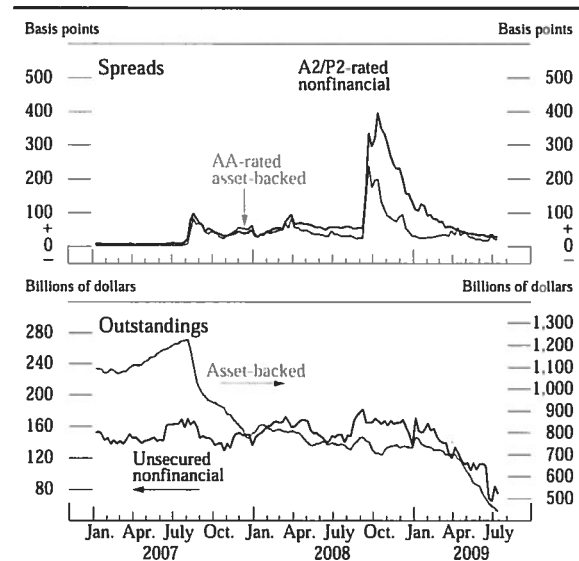


NOTE: The data are weekly and extend through the week ending July 17, 2009. The final observation is an estimate based on data through July 15, 2009. The series shown—the VIX—is the implied 30-day volatility of the S&P 500 stock price index as calculated from a weighted average of options prices.

SOURCE: Chicago Board Options Exchange.

CPFF, also fell. In the corporate bond market, spreads of yields on BBB-rated and speculative-grade bonds relative to yields on comparable-maturity Treasury securities narrowed in January and February, although they remained at historically high levels (figure 39). Spreads on 10-year Fannie Mae debt and option-adjusted spreads on Fannie Mae mortgage-backed securities over comparable-maturity Treasury securi-

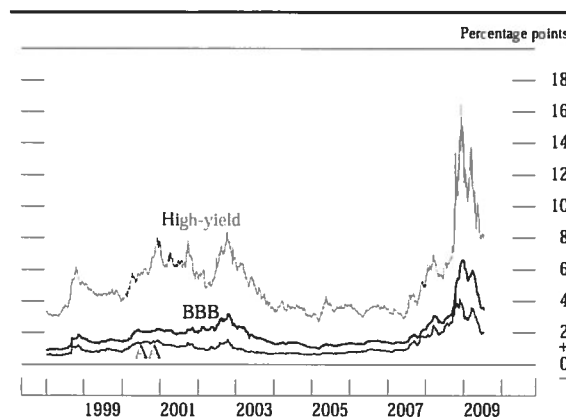
38. Commercial paper, 2007–09



NOTE: The data are weekly and extend through July 15, 2009. Commercial paper yield spreads are for an overnight maturity and are expressed relative to the AA nonfinancial rate. Outstandings are seasonally adjusted.

SOURCE: Depository Trust and Clearing Corporation.

39. Spreads of corporate bond yields over comparable off-the-run Treasury yields, by securities rating, 1998–2009



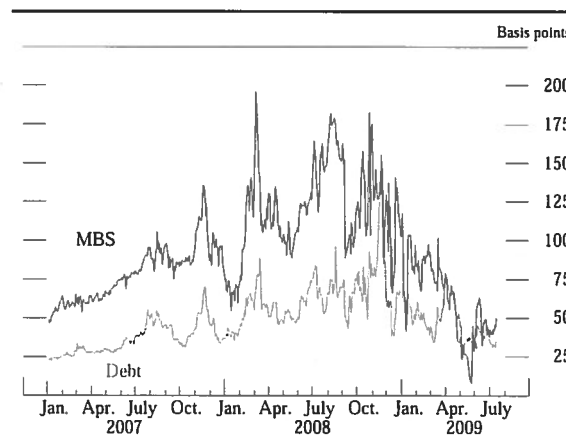
NOTE: The data are daily and extend through July 15, 2009. The spreads shown are the yields on 10-year bonds less the 10-year Treasury yield.

SOURCE: Derived from smoothed corporate yield curves using Merrill Lynch bond data.

ties dropped early in the year, reflecting, in part, the effects of Federal Reserve purchases of agency debt and agency MBS (figure 40). Interest rates on 30-year fixed rate conforming mortgages also fell.

In an effort to help restore confidence in the strength of U.S. financial institutions and restart the flow of lending to businesses and households, on February 10, the Treasury, the Federal Reserve, the FDIC, the Office of the Comptroller of the Currency, and the Office of Thrift Supervision announced the Financial Stability

40. Spreads on 10-year Fannie Mae debt and option-adjusted spreads on Fannie Mae mortgage-backed securities, 2007–09



NOTE: The data are daily and extend through July 15, 2009. The spreads are over Treasury securities of comparable maturities. MBS are mortgage-backed securities.

SOURCE: For MBS, Bloomberg; for debt, Merrill Lynch and the Federal Reserve Bank of New York.

Plan. The plan included the Capital Assistance Program (CAP), designed to assess the capital needs of depository institutions under a range of economic scenarios and to help increase the amount and strengthen the quality of their capital if necessary; a new Public-Private Investment Program, or PPIP, which would combine public and private capital with government financing to help banks dispose of legacy assets and strengthen their balance sheets, thereby supporting new lending; an expansion of the Federal Reserve's TALF program; and an extension of the senior debt portion of the FDIC's Temporary Liquidity Guarantee Program to October 31, 2009.

The announcement of the plan did not lead to an immediate improvement in financial market conditions. Bank and insurance company equity prices continued to decline, and CDS spreads of such institutions widened to levels above those observed the previous fall. Market participants were reportedly unclear about the methodology that would underlie the assessment of bank capital needs. The timing of the announcement of the results and the likely policy responses from this part of the CAP—formally named the SCAP, but popularly known as the stress test—were also sources of uncertainty. (CAP and SCAP are described in greater detail in the box titled “Capital Assistance Program and Supervisory Capital Assessment Program.”) On March 2, American International Group, Inc. (AIG), reported losses of more than \$60 billion for the fourth quarter of 2008, and the Treasury and the Federal Reserve announced a restructuring of the government assistance to AIG to enhance the company's capital and liquidity in order to facilitate the orderly completion of its global divestiture program.

On March 3, the Treasury and the Federal Reserve announced the launch of the TALF. In the initial phase of the program, the Federal Reserve offered to provide up to \$200 billion of three-year loans on a nonrecourse basis secured by AAA-rated ABS backed by newly and recently originated auto loans, credit card loans, student loans, and loans guaranteed by the Small Business Administration. The Treasury's TARP would purchase \$20 billion of subordinated debt in a special purpose vehicle (SPV) created by the Federal Reserve Bank of New York. The SPV would purchase and manage any assets received by the New York Fed in connection with any TALF loans. The demand for TALF funding was initially modest, reportedly on concerns that future changes in government policies could adversely affect TALF borrowers.

Financial markets began to show signs of improvement in early March when a few large banks indicated that they had been profitable in January and February. Sentiment continued to improve after the

March 17–18 meeting of the Federal Open Market Committee (FOMC), at which, against a backdrop of weakening economic activity and significant financial market strains, the Committee announced that it would expand its purchases of agency MBS by \$750 billion, and of agency debt by \$100 billion; in addition, it would also purchase up to \$300 billion of longer-term Treasury securities over the next six months. Yields on a wide range of longer-term debt securities dropped substantially within a day of the release of the Committee's statement. First-quarter earnings results pre-announced by some large financial institutions were substantially better than expected, although some of the surprise was attributable to greater-than-anticipated effects of revisions in accounting rules.<sup>11</sup> Equity prices of banks and insurance companies rose, and CDS spreads for such institutions narrowed, although to still-elevated levels. Broad stock price indexes also climbed and measures of equity price volatility declined. Libor-OIS spreads began to edge down. Spreads on lower-rated investment-grade and speculative-grade corporate bonds over comparable-maturity Treasury securities also fell, though again to levels that remained high by historical standards. Bid-asked spreads on speculative-grade bonds declined. Similarly, bid-asked spreads narrowed in the leveraged loan market.

Conditions in financial markets continued to improve in the second quarter, aided in part by the emergence of more detail on the SCAP program and the release of its results on May 7. Market participants reportedly viewed the amount of additional capital that banks were required to raise in conjunction with the SCAP as relatively modest. With uncertainty about the SCAP results resolved, and amid the ongoing improvements in financial markets, market participants appeared to mark down the probability of extremely adverse financial market outcomes. Equity prices for many large banks and insurance companies rose even as substantial equity issuance by banks covered by the SCAP program added to supply. The secondary market for leveraged loans also showed improvement, with the average bid price

11. In early April, the Financial Accounting Standards Board issued new guidance related to fair value measurements and other-than-temporary impairments (OTTIs). The new fair value guidance reduces the emphasis to be placed on the “last transaction price” in valuing assets when markets are not active and transactions are likely to be forced or distressed. The new OTTI guidance will require impairment write-downs through earnings only for the credit-related portion of a debt security's fair value impairment when two criteria are met: (1) The institution does not have the intent to sell the debt security, and (2) it is unlikely that the institution will be required to sell the debt security before a forecasted recovery of its cost basis. The two changes have resulted in higher fair value estimates and reductions in impairments, improving institutions' reported first-quarter earnings.

## Capital Assistance Program and Supervisory Capital Assessment Program

On February 10, 2009, the Treasury, Federal Reserve, Federal Deposit Insurance Corporation (FDIC), Office of the Comptroller of the Currency, and Office of Thrift Supervision announced a Capital Assistance Program (CAP) to ensure that the largest banking institutions would be appropriately capitalized with high-quality capital. As part of this program, the federal banking supervisors undertook a Supervisory Capital Assessment Program (SCAP) to evaluate the capital needs of the largest U.S. bank holding companies (BHCs) under a more challenging economic environment than generally anticipated. The Treasury and federal banking agencies believe it important for the largest BHCs to have a capital buffer sufficient to withstand losses and allow them to meet the credit needs of their customers if the economy were to weaken more than expected in order to help facilitate a broad and sustainable economic recovery.

The SCAP was initiated on February 25, 2009, and results were released publicly on May 7, 2009. U.S. BHCs with risk-weighted assets of more than \$100 billion at the end of 2008 were required to participate. The objective of the exercise was to conduct a comprehensive and consistent assessment simultaneously on the largest BHCs using a common set of alternative macroeconomic scenarios and a common forward-looking conceptual framework. Extensive information was collected on the characteristics of the major loan, securities, and trading portfolios, revenues, and modeling methods of the institutions. With this information, supervisors were able to apply a consistent and systematic approach across firms to estimate losses, revenues, and reserves for 2009 and 2010, and to determine whether firms would need to raise capital to build a buffer to withstand larger-than-expected losses. The SCAP buffer for each BHC was sized to achieve a Tier 1 risk-based ratio of 6 percent and a Tier 1 Common risk-based ratio of 4 percent at the end of 2010 under a more severe macroeconomic scenario than expected.

Supervisors took the unusual step of publicly reporting the findings of the SCAP. The decision to depart from the standard practice of maintaining confidentiality of examination information stemmed from the belief that greater clarity around the SCAP process and findings would make the exercise more effective at reducing

uncertainty and restoring confidence in financial institutions.<sup>1</sup>

Results of the SCAP indicated that 10 firms would need to augment their capital or improve the quality of the capital from 2008:Q4 levels; the combined amount totaled \$185 billion, nearly all of which is required to meet the target Tier 1 Common risk-based ratio. Between the end of 2008 and the release of the results in May, many firms had already completed or contracted for asset sales or restructured existing capital instruments. After adjusting for these transactions and revenues that exceeded what had been assumed in the SCAP, the combined amount of additional capital needed to establish the buffer was \$75 billion. The 10 firms are required to raise the additional capital by November 9, 2009.

Since the release of the results, almost all of the 10 firms that were asked to raise capital buffers issued new common equity in the public markets and raised about \$40 billion; they also raised a substantial additional amount of capital by exchanging preferred shares to common shares and selling assets. Firms that do not meet their buffer requirement can issue mandatory convertible shares to the Treasury in an amount up to 2 percent of the institution's risk-weighted assets (or higher on request), as a bridge to private capital. In addition, firms can apply to the Treasury to exchange their existing Capital Purchase Program preferred stock to help meet their buffer requirement. To protect taxpayers, firms will be expected to have issued private capital before or simultaneously with the exchange.

The firms not asked to augment their capital also raised about \$20 billion in common equity in May and early June. Most of these firms and others applied for and received approval from their supervisors to repay their outstanding Capital Purchase Program preferred stock. In early June, 10 large BHCs repaid about \$68 billion to the Treasury. A number of banks have also been able to issue debt not guaranteed by the FDIC's Temporary Liquidity Guarantee Program.

1. A description of the methodology and a summary of results, including loss rates on major loan categories for each firm, is available at [www.federalreserve.gov/bankinforeg/scap.htm](http://www.federalreserve.gov/bankinforeg/scap.htm).

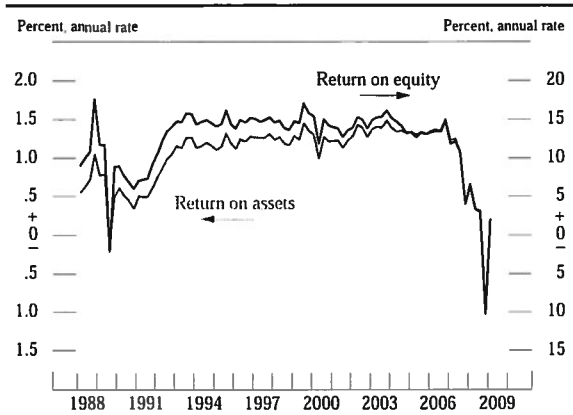
rising considerably; issuance, however, particularly of institutional loans, remained very weak. Short-term interbank funding markets continued to improve, with Libor-OIS spreads at one-month tenors declining to near pre-crisis levels; spreads at longer tenors also fell but remained very high. Demand for TALF funds increased in May and June, particularly for securities backed by credit card and auto loans. Supported by the TALF, issuance of consumer ABS picked up further in May, and it began to approach pre-crisis levels. Also in May, the Federal Reserve announced that, starting in June, CMBS and securities backed by insurance premium finance loans would be eligible collateral under the TALF. Financial markets abroad also improved during the second quarter, reflecting improved global economic prospects and positive news from the banking sector (see “International Developments” for additional detail).

In early June, the Federal Reserve outlined the criteria it would use to evaluate applications to redeem Treasury capital from participants in the SCAP. On June 17, 10 banking institutions redeemed about \$68 billion in Treasury capital. At about the same time, the 10 banking organizations that had been required under the SCAP to bolster their capital buffers all submitted plans that would provide sufficient capital to meet the required buffer under the assessment’s more adverse scenario. On June 25, the Federal Reserve announced that while it would extend a number of its liquidity facilities through early 2010, in light of the improvement in financial conditions and reduced usage of some of its facilities, it would trim their size and adjust some of their terms.

## Banking Institutions

Profitability of the commercial banking sector, as measured by return on assets and return on equity, recovered somewhat in the first quarter after having posted near-record lows in the fourth quarter of 2008 (figure 41). Profits were concentrated at the largest banks and were driven by a rebound in trading revenue as well as reduced noninterest expense related to smaller write-downs of intangible assets. Smaller banks, in contrast, continued to lose money amid mounting credit losses. Indeed, at the industry level, loan quality deteriorated substantially from the already poor levels recorded late last year, with delinquency rates on credit card loans reaching their highest level on record (back to 1991). Delinquency rates on residential mortgages held by banks soared to 8 percent. Regulatory capital ratios improved in the fourth quarter of

41. Commercial bank profitability, 1988–2009

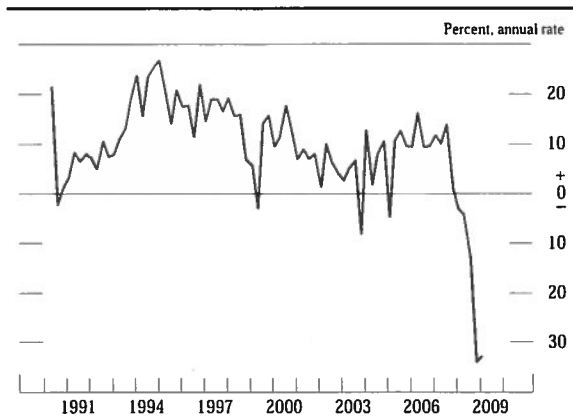


NOTE: The data are quarterly and extend through 2009:Q1.  
SOURCE: Federal Financial Institutions Examination Council, Consolidated Reports of Condition and Income (Call Report).

2008 and the first quarter of 2009 as commercial banks received substantial capital infusions—likely related to funds received by their parent bank holding companies under the Capital Purchase Program—while total assets declined. Despite a decline in loans outstanding, unused commitments to fund loans to both households and businesses shrank at an annual rate of more than 30 percent in the first quarter of 2009 (figure 42).

Commercial bank lending contracted at an annual rate of nearly 7 percent during the first half of 2009, reflecting weak loan demand and tight credit conditions. C&I loans fell at an annual rate of about 14 percent over this period, partly as a result of broad and sustained paydowns of outstanding loans amid weak

42. Change in unused bank loan commitments to businesses and households, 1990–2009



NOTE: The data, which are not seasonally adjusted, are quarterly and extend through 2009:Q1.  
SOURCE: Federal Financial Institutions Examination Council, Consolidated Reports of Condition and Income (Call Report).



investment spending by businesses. Some of these pay-downs also were likely related to increased issuance of longer-term corporate debt, as nonfinancial firms—especially those rated as investment grade—tapped the corporate bond market. CRE loans ran off steadily, likely a result of continued weakness in that sector. Bank loans to households also fell over the first half of the year, particularly in the spring, as banks reportedly sold or securitized large volumes of residential mortgages and consumer credit card loans. Loan loss reserves reported by large banks increased considerably in the second quarter, suggesting continued deterioration in credit quality and further pressure on earnings.

The Senior Loan Officer Opinion Survey conducted in April 2009 indicated that large fractions of banks continued to tighten standards and terms on loans to businesses and households over the preceding three months. For most loan categories, however, the fractions of banks that reported having done so decreased from the January survey. The majority of respondents to the April survey indicated that they expected the credit quality of their loan portfolios to worsen over the remainder of the year. Demand for most types of loans also reportedly weakened over the survey period, with the noticeable exception of demand from prime borrowers for mortgages to purchase homes—a development that coincided with a temporary rise in applications to refinance home mortgages.

Data from the February and May Surveys of Terms of Business Lending indicated that the spreads of yields on C&I loans over those on comparable-maturity market instruments rose noticeably. The increase in the May survey was partly attributable to a steep increase in spreads on loans made under commitment, as a larger share of loans in the May survey were drawn from commitments arranged after the onset of the financial crisis.

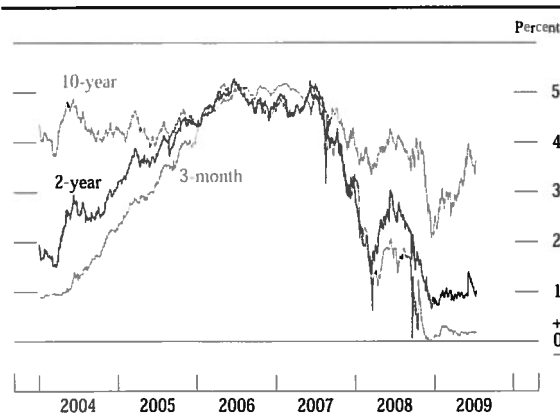
## Monetary Policy Expectations and Treasury Rates

The current target range for the federal funds rate, 0 to ¼ percent, is in line with the level that investors expected at the end of 2008. However, over the first half of 2009, investors marked down, on balance, their expectation for the path of the federal funds rate for the remainder of the year. Early in the year, the markdown was attributable to continued concerns about the health of financial institutions, weakness in the real economy, and a moderation in inflation pressures. Later in the period, FOMC communications indicating that the federal funds rate would likely remain low for an extended period reportedly also contributed to the downward

revision to policy expectations. In contrast, investors marked up their expectations about the pace with which policy accommodation will be removed in 2010, likely in light of increased optimism about the economic outlook. Futures quotes currently suggest that investors expect the federal funds rate to remain within the current target range for the remainder of this year and then to rise in 2010. However, uncertainty about the size of term premiums and potential distortions created by the zero lower bound for the federal funds rate continue to make it difficult to obtain a definitive reading on the policy expectations of market participants from futures prices. Options prices suggest that investor uncertainty about the future path for policy increased, on balance, during the first half of 2009.

Yields on longer-maturity Treasury securities increased substantially, on net, over the first half of 2009, in response to better-than-expected economic data releases, declines in the weight investors attached to highly adverse economic outcomes, signs of thawing in the credit markets, technical factors related to the hedging of mortgage holdings, and the large increase in the expected supply of such securities (figure 43). The rise in Treasury yields has likely been mitigated somewhat by the implementation of the Federal Reserve's large-scale asset purchases, under which the Federal Reserve is conducting substantial purchases of agency debt, agency MBS, and longer-maturity Treasury securities. On net, yields on 2- and 10-year Treasury notes rose about 50 and 115 basis points, respectively, during the first half of 2009, with the rise concentrated in the second quarter, after having declined about 200 and 140 basis points, respectively, during the second half of 2008.

43. Interest rates on selected Treasury securities, 2004–09



NOTE: The data are daily and extend through July 15, 2009.  
SOURCE: Department of the Treasury.

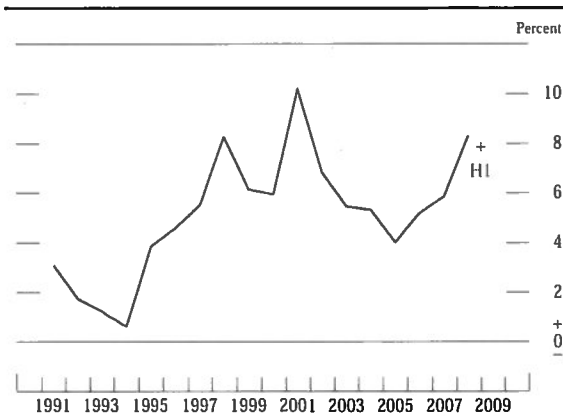
In contrast to yields on their nominal counterparts, yields on Treasury inflation-protected securities (TIPS) declined over the first half of 2009, which resulted in a noticeable increase in measured inflation compensation—the difference between comparable-maturity nominal yields and TIPS yields. Inferences about inflation expectations from inflation compensation have been difficult to make since the second half of 2008 because yields on nominal and TIPS issues appear to have been affected significantly by movements in liquidity premiums, and because other special factors have buffeted yields on nominal Treasury issues. Some of these special factors have begun to subside in recent months, suggesting that the increase in inflation compensation since year-end is partly due to an improvement in market functioning and other special factors, although near-term inflation expectations may have been boosted by rising energy prices.

## Monetary Aggregates and the Federal Reserve's Balance Sheet

The M2 monetary aggregate expanded at an annual rate of 7¾ percent during the first half of 2009, reflecting robust growth in the first quarter and more moderate growth in the second (figure 44).<sup>12</sup> This expansion was due in part to the relatively small difference between market interest rates and the rates offered on M2 assets, as well as an increased desire of households and firms to hold safe and liquid assets because of the financial turmoil. Strong growth in liquid deposits was partially offset by rapid declines in small time deposits and retail money market mutual funds, as yields on the latter two assets dropped relative to rates on liquid deposits. The currency component of the money stock also increased, with a notable rise in the first quarter that appeared to reflect strong demand for U.S. banknotes from both foreign and domestic sources. The monetary base—essentially the sum of currency in the hands of the public and

12. M2 consists of (1) currency outside the U.S. Treasury, Federal Reserve Banks, and the vaults of depository institutions; (2) traveler's checks of nonbank issuers; (3) demand deposits at commercial banks (excluding those amounts held by depository institutions, the U.S. government, and foreign banks and official institutions) less cash items in the process of collection and Federal Reserve float; (4) other checkable deposits (negotiable order of withdrawal, or NOW, accounts and automatic transfer service accounts at depository institutions; credit union share draft accounts; and demand deposits at thrift institutions); (5) savings deposits (including money market deposit accounts); (6) small-denomination time deposits (time deposits issued in amounts of less than \$100,000) less individual retirement account (IRA) and Keogh balances at depository institutions; and (7) balances in retail money market mutual funds less IRA and Keogh balances at money market mutual funds.

44. M2 growth rate, 1991–2009



NOTE: The data extend through 2009:Q1 and are estimated for 2009:Q2. Through 2008, the data are annual on a fourth-quarter over fourth-quarter basis; the final observation refers to 2009:Q2 relative to 2008:Q4 at an annual rate. For definition of M2, see text note 13.

SOURCE: Federal Reserve Board, Statistical Release H.6, "Money Stock Measures."

the reserve balances of depository institutions held at the Federal Reserve—continued to expand rapidly in the first quarter of 2009, albeit at a slower pace than in the second half of 2008. The expansion of the monetary base slowed further in the second quarter of 2009, as a decline in amounts outstanding under the Federal Reserve's credit and liquidity programs partially offset the effects on reserve balances of the Federal Reserve's large-scale asset purchases.

The nontraditional monetary policy actions employed by the Federal Reserve since the onset of the current episode of financial turmoil have resulted in a considerable expansion of the Federal Reserve's balance sheet (table 1). On December 31, 2007, prior to much of the financial market turmoil, the Federal Reserve's assets totaled nearly \$920 billion, the bulk of which was Treasury securities. Its liabilities included nearly \$800 billion in Federal Reserve notes (currency in circulation) and about \$20 billion in reserve balances held by depository institutions.

By December 31, 2008, after the introduction of several new Federal Reserve policy initiatives, assets had more than doubled to about \$2.2 trillion. Holdings of U.S. Treasury securities had declined by nearly one-half. At that point, the majority of Federal Reserve assets consisted of credit extended to depository institutions, other central banks, and primary dealers.<sup>13</sup> The Federal Reserve had extended about \$330 billion in funding to the CPFF and was providing more than

13. Primary dealers are broker-dealers that trade in U.S. government securities with the Federal Reserve Bank of New York.

## 1. Selected components of the Federal Reserve balance sheet, 2007–09

Millions of dollars

Balance sheet item	Dec. 31, 2007	Dec. 31, 2008	July 15, 2009
<b>Total assets</b> .....	<b>917,922</b>	<b>2,240,946</b>	<b>2,074,822</b>
<b>Selected assets</b>			
<i>Credit extended to depository institutions and dealers</i>			
Primary credit .....	8,620	93,769	34,743
Term auction credit .....	40,000	450,219	273,691
Central bank liquidity swaps .....	24,000	553,728	111,641
Primary Dealer Credit Facility and other broker-dealer credit .....	...	37,404	0
<i>Credit extended to other market participants</i>			
Asset-Backed Commercial Paper Money Market Mutual Fund Liquidity Facility .....	...	23,765	5,469
Net portfolio holdings of Commercial Paper Funding Facility LLC .....	...	334,102	111,053
Net portfolio holdings of LLCs funded through the Money Market Investor Funding Facility .....	...	0	0
Term Asset-Backed Securities Loan Facility .....	...	...	30,121
<i>Support of critical institutions</i>			
Net portfolio holdings of Maiden Lane LLC, Maiden Lane II LLC, and Maiden Lane III LLC <sup>1</sup> .....	...	73,925	60,546
Credit extended to American International Group, Inc. ....	...	38,914	42,871
<i>Securities held outright</i>			
U.S. Treasury securities .....	740,611	475,921	684,030
Agency debt securities .....	0	19,708	101,701
Agency mortgage-backed securities (MBS) <sup>2</sup> .....	...	...	526,418
<b>MEMO</b>			
Term Securities Lending Facility <sup>3</sup> .....	...	171,600	4,250
<b>Total liabilities</b> .....	<b>881,023</b>	<b>2,198,794</b>	<b>2,025,348</b>
<b>Selected liabilities</b>			
Federal Reserve notes in circulation .....	791,691	853,168	870,327
Reserve balances of depository institutions .....	20,767	860,000	808,824
U.S. Treasury, general account .....	16,120	106,123	65,234
U.S. Treasury, supplemental financing account .....	...	259,325	199,939
<b>Total capital</b> .....	<b>36,899</b>	<b>42,152</b>	<b>49,474</b>

NOTE: LLC is a limited liability company.

1. The Federal Reserve has extended credit to several LLCs in conjunction with efforts to support critical institutions. Maiden Lane LLC was formed to acquire certain assets of The Bear Stearns Companies, Inc. Maiden Lane II LLC was formed to purchase residential mortgage-backed securities from the U.S. securities lending reinvestment portfolio of subsidiaries of American International Group, Inc. (AIG). Maiden Lane III LLC was formed to purchase multi-sector collateralized debt obligations on which the Financial Products group of AIG has written credit default swap contracts.

2. Includes only MBS purchases that have already settled.

3. The Federal Reserve retains ownership of securities lent through the Term Securities Lending Facility.

... Not applicable.

SOURCE: Federal Reserve Board.

\$100 billion in support of certain critical institutions. The growth in assets was largely funded by an increase in reserve balances, which, at \$860 billion, slightly exceeded currency in circulation.

Over the first half of this year, total Federal Reserve assets decreased slightly, on net, to about \$2.1 trillion,

though there were large changes in the composition of those assets. Holdings of Treasury securities increased to nearly \$685 billion, and holdings of agency debt and MBS rose to more than \$625 billion as a result of large-scale asset purchases. Credit extended to depository institutions, primary dealers, and other market participants fell as market functioning improved. The decline importantly reflected a decrease in foreign central banks' draws on dollar liquidity swap lines and a runoff in credit extended through the CPFF and the Term Auction Facility (TAF). The amount of credit extended in support of certain critical institutions remained about unchanged. On the liability side, reserve balances fell somewhat, while currency in circulation rose.

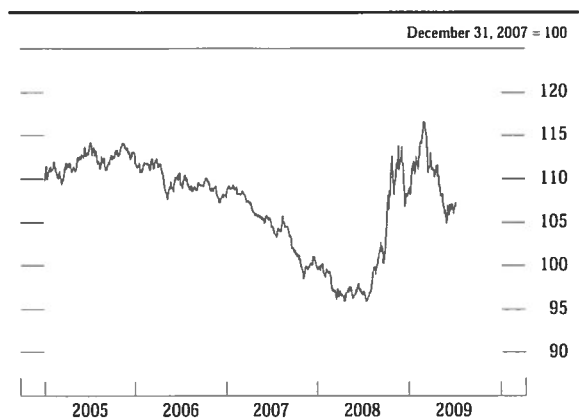
## INTERNATIONAL DEVELOPMENTS

## International Financial Markets

During most of the first quarter of 2009, fears that global economic activity would spiral further downward led to a sharp selloff in foreign equity markets and to rising spreads on foreign corporate debt. Stock indexes in Europe and Japan fell about 20 percent, and European bank shares fell more than 40 percent in response to weak earnings reports and rising fears about the exposure of many Western European banks to emerging Europe. Interbank funding markets were supported by government guarantees of bank debt and other policies put in place during 2008 to aid wholesale funding. These markets remained more stressed than before the financial crisis, but their functioning continued to gradually improve from the serious disarray that occurred last fall.

Rapidly easing monetary policies in many foreign economies, along with further safe-haven flows into Treasury securities, fueled continued dollar appreciation over the first two months of the year. The Federal Reserve's broadest measure of the nominal trade-weighted foreign exchange value of the dollar rose more than 6 percent during January and February (figure 45). However, beginning in March, the dollar depreciated as the global outlook improved a bit and investors accordingly shifted away from Treasury securities to riskier assets abroad, reversing the pattern observed in the fourth quarter of 2008. During the spring, the dollar fell most sharply against currencies of major commodity-producing economies such as Australia and Canada, as the improvement in the global outlook also boosted commodity prices (figure 46). On net, the Federal Reserve's broad measure of the nominal exchange value of the dollar is about 2 percent lower than it was

45. U.S. dollar nominal exchange rate, broad index, 2005–09



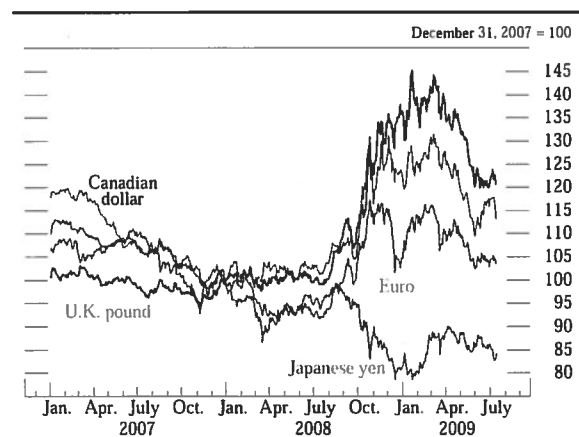
NOTE: The data, which are in foreign currency units per dollar, are daily. The last observation for the series is July 15, 2009. The broad index is a weighted average of the foreign exchange values of the U.S. dollar against the currencies of a large group of the most important U.S. trading partners. The index weights, which change over time, are derived from U.S. export shares and from U.S. and foreign import shares.

SOURCE: Federal Reserve Board.

at the start of the year but remains well above its mid-2008 lows.

Stock markets around the world rebounded in the second quarter along with prospects for global growth (figure 47). Financial stocks led this rise in the advanced foreign economies as some large banks reported strong earnings growth, which benefited from the low interest rate environment. On net, headline European stock indexes are now about where they were at the start of the year. Equity prices in the emerg-

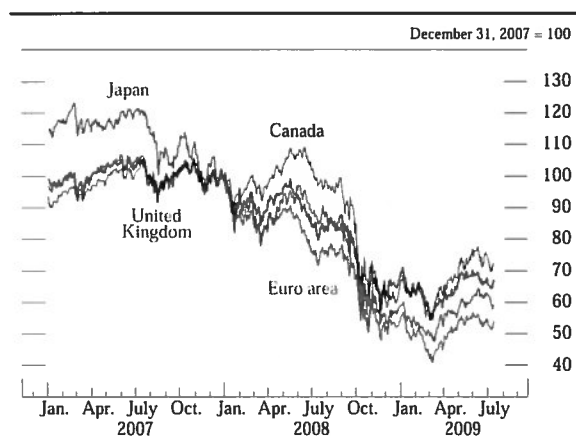
46. U.S. dollar exchange rate against selected major currencies, 2007–09



NOTE: The data, which are in foreign currency units per dollar, are daily. The last observation for each series is July 15, 2009.

SOURCE: Federal Reserve Board, Statistical Release H.10. "Foreign Exchange Rates."

47. Equity indexes in selected advanced foreign economies, 2007–09



NOTE: The data are daily. The last observation for each series is July 15, 2009. Because the Tokyo Exchange was closed on December 31, 2007, the Japan index is scaled so that the December 28, 2007, closing value equals 100.

SOURCE: For euro area, Dow Jones Euro STOXX Index; for Canada, Toronto Stock Exchange 300 Composite Index; for Japan, Tokyo Stock Exchange (TOPIX); and for the United Kingdom, London Stock Exchange (FTSE 350), as reported by Bloomberg.

ing market economies, which were helped both by the improved outlook and by an increased willingness on the part of investors to hold riskier assets, are now 20 to 75 percent higher than at the start of the year (figure 48).

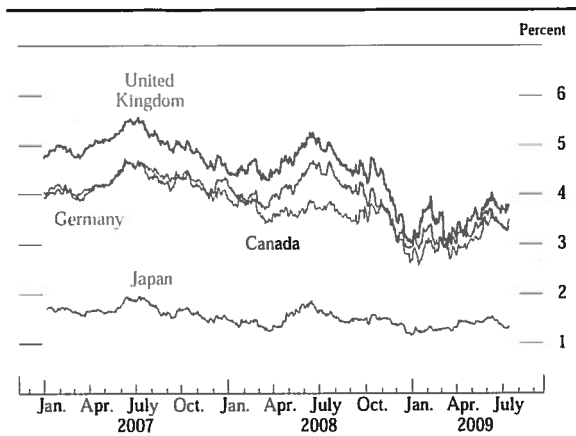
48. Equity indexes in selected emerging market economies, 2007–09



NOTE: The data are daily. The last observation for each series is July 15, 2009. Because the Shanghai Stock Exchange was closed on December 31, 2007, the China index is scaled so that the December 28, 2007, closing value equals 100. The Latin American economies are Argentina, Brazil, Chile, Colombia, Mexico, and Peru. The emerging Asian economies are China, India, Indonesia, Malaysia, Pakistan, the Philippines, South Korea, Taiwan, and Thailand.

SOURCE: For Latin America and emerging Asia, Morgan Stanley Capital International (MSCI) index; for China, Shanghai Composite Index, as reported by Bloomberg.

49. Yields on benchmark government bonds in selected advanced foreign economies, 2007–09



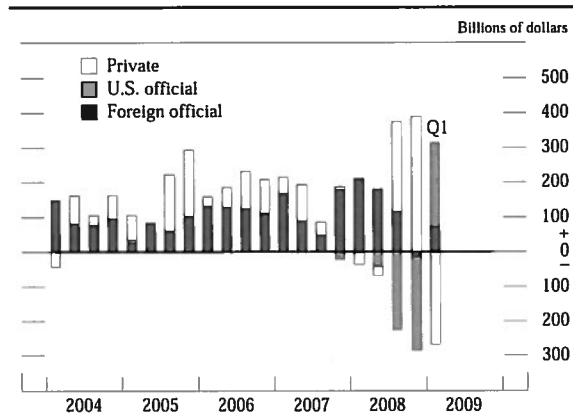
NOTE: The data, which are for 10-year bonds, are daily. The last observation for each series is July 15, 2009.  
SOURCE: Bloomberg.

The decisions of several foreign central banks to engage in nontraditional monetary policies appeared to have some effect on longer-term interest rates (figure 49). Yields on long-term British gilts fell 60 basis points around the March 5 announcement by the Bank of England that it would begin purchasing government securities, and yields on European covered bonds fell nearly 30 basis points over the week following the May 7 announcement by the European Central Bank (ECB) that it would purchase covered bonds. However, as the economic outlook improved some in the second quarter, and amid concerns about mounting fiscal deficits and debts, yields on nominal benchmark bonds rose. On balance, nominal benchmark bond yields in major foreign countries are higher than at the start of the year, even as yields on inflation-protected bonds have fallen.

### The Financial Account

The pattern of financial flows between the United States and the rest of the world was strongly affected by the intensification of financial turmoil in the fall of 2008 and, more recently, by the easing of strains in financial markets (figure 50). In the second half of 2008, U.S. investors withdrew to some extent from foreign securities, and foreigners slowed their purchases of U.S. assets. At the same time, foreigners noticeably shifted their purchases away from U.S. corporate and agency securities and toward safer U.S. Treasury securities (figure 51). For 2008 as a whole, the size of the purchases

50. U.S. net financial inflows, 2004–09



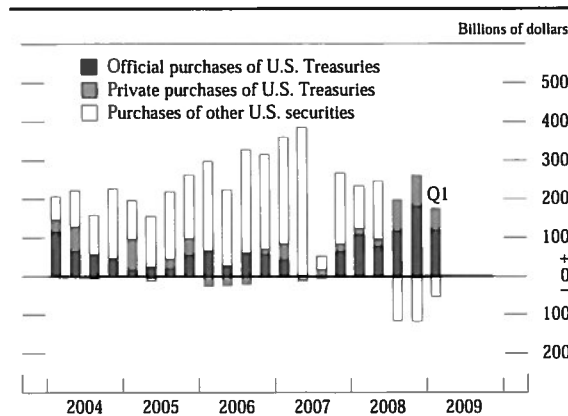
NOTE: U.S. official flows include foreign central banks' drawings on their swap lines with the Federal Reserve.  
SOURCE: Department of Commerce, Bureau of Economic Analysis.

of U.S. Treasury securities by foreigners was unprecedented, nearly doubling the previous record.

The pattern of flows has normalized somewhat this year. The pace of private foreign net Treasury purchases slowed in the first quarter, and in April flows turned to net sales, primarily of short-term Treasury securities, signaling some reversal of the flight to safety. Foreign demand for most other U.S. securities, however, remained extremely weak throughout the first part of 2009. Foreigners continued to sell U.S. corporate and agency securities through April, although they did show renewed interest in U.S. corporate stocks in March, April, and particularly May.

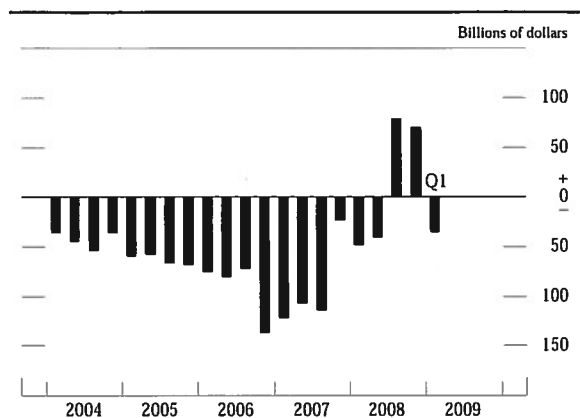
Foreign official institutions resumed strong net purchases of U.S. assets in the first several months of 2009, although acquisitions remained centered on U.S.

51. Net foreign purchases of U.S. securities, 2004–09



NOTE: Other U.S. securities include corporate equities and bonds, agency bonds, and municipal bonds.  
SOURCE: Department of Commerce, Bureau of Economic Analysis.

52. Net U.S. purchases of foreign securities, 2004–09



NOTE: Negative numbers indicate a balance-of-payments outflow associated with positive U.S. purchases of foreign securities.

SOURCE: Department of Commerce, Bureau of Economic Analysis.

Treasury securities. This development followed net sales in the fourth quarter of 2008 as some countries sold reserves to support their currencies; although foreign official institutions made large net purchases of Treasury securities, they sold larger amounts of other U.S. assets. Foreign official acquisitions of Treasury securities were concentrated in short-term bills for some months during the winter, but official acquisitions of long-term notes and bonds have been similar to those of bills over the period since February.

Resumption of portfolio investment abroad by U.S. investors in 2009 also pointed to reduced risk aversion in financial markets. Following unprecedented net inflows in this category in 2008 resulting from U.S. residents bringing home their foreign investments, outflows resumed in early 2009 as U.S. investors returned to net purchases of foreign securities (figure 52). Finally, starting this year, improvements in the tone of interbank funding markets led to a resumption of net lending abroad by U.S. banks after a sharp contraction of lending in the fourth quarter. As private sources of dollar liquidity reemerged, foreign banks were able to repay the loans they had received from their central banks. These foreign central banks, in turn, reduced the outstanding amounts of U.S. dollars drawn on swap lines from the Federal Reserve.

### Advanced Foreign Economies

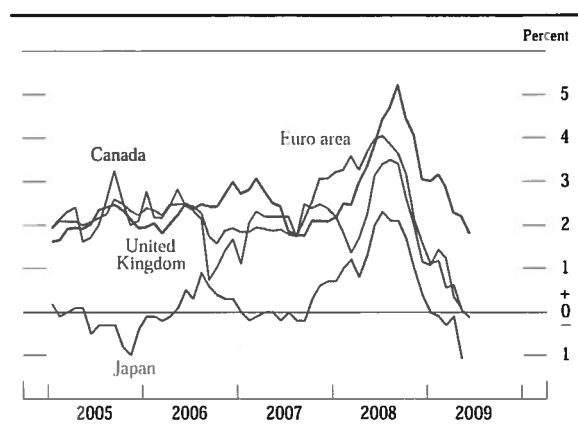
The contraction of economic activity in the major advanced foreign economies deepened in the first quarter, as financial turbulence, shrinking world trade, adverse wealth effects, and eroding business and con-

sumer confidence continued to weigh on activity. GDP fell particularly sharply in Germany and Japan, which were hit hard by a contraction in manufacturing exports. Domestic demand plummeted across the advanced foreign economies, with double-digit declines in investment spending and sizable negative contributions of inventories to economic growth. Housing markets also continued to weaken in the first quarter, with prices and building activity declining. By the second quarter, however, monthly indicators of economic activity in these economies began to show some moderation in the pace of contraction. Purchasing managers indexes and surveys of business confidence rebounded in the second quarter from the exceptionally low levels reached in the first quarter, while industrial production stabilized somewhat.

Twelve-month consumer price inflation continued to decline during the first half of the year, driven down by the fall in oil and other commodity prices since mid-2008 and the significant increase in economic slack (figure 53). Headline inflation fell to near or below zero in all major economies except the United Kingdom, where the depreciation of the pound late last year contributed to keeping inflation around 2 percent. Excluding food and energy prices, the slowing in consumer prices in these economies was more limited.

Foreign central banks responded to worsening economic conditions and reduced inflation by aggressively cutting policy rates and, in some cases, initiating unconventional monetary easing. The ECB and Bank of England each reduced its key policy rate 150 basis points over the first half of 2009, while the Bank of Canada

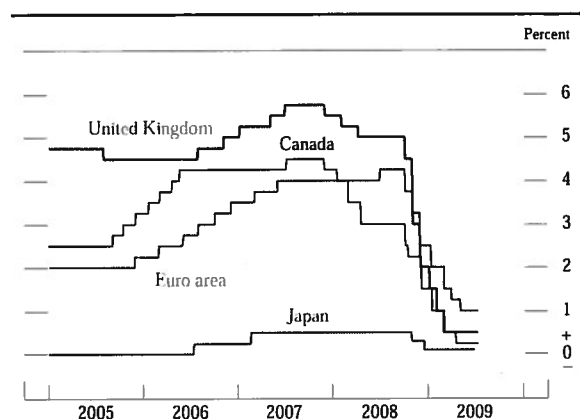
53. Change in consumer prices for major foreign economies, 2005–09



NOTE: The data are monthly, and the percent change is from one year earlier. The data extend through June 2009 for the euro area and the United Kingdom and May 2009 for Japan and Canada.

SOURCE: Haver Analytics.

54. Official or targeted interest rates in selected advanced foreign economies, 2005–09



NOTE: The data are daily and extend through July 15, 2009. The data shown are, for Canada, the overnight rate; for the euro area, the minimum bid rate on main refinancing operations; for Japan, the call money rate; and, for the United Kingdom, the official bank rate paid on commercial reserves.

SOURCE: The central bank of each area or country shown.

lowered its rate 125 basis points (figure 54). The Bank of Japan, which had already cut the overnight uncollateralized call rate to 10 basis points, kept rates at that minimal level. As policy rates fell to very low levels, central banks implemented nontraditional policies to provide further support to activity. The Bank of England established an Asset Purchase Facility to purchase up to £125 billion in government and corporate debt; the Bank of Japan announced that it would increase its purchase of Japanese government bonds, including longer-term bonds, and would purchase commercial paper outright; and the ECB announced plans to purchase as much as €60 billion in covered bonds over the next year and conducted its first one-year financing operations on June 24, allocating €442 billion.

## Emerging Market Economies

The global financial crisis took its toll on the emerging market economies as well. After falling steeply in the fourth quarter, economic activity contracted sharply again in the first quarter. However, recent data on business sentiment, production, and retail sales suggest that economic activity may be starting to recover.

Among the larger developing economies, only China and India have maintained positive growth during the global slowdown. Chinese growth was supported in the first quarter and boosted significantly further in the second quarter by a large fiscal stimulus package, which focused on infrastructure investment, and by an

enormous jump in credit growth. India's economy also was supported by fiscal stimulus and was relatively insulated from the negative global shock because it is less open. Elsewhere in emerging Asia, the economies of Hong Kong, Malaysia, Singapore, South Korea, Taiwan, and Thailand all contracted at double-digit annual rates in at least one quarter, in line with their deep trade and financial linkages with the global economy. More recently, however, indicators such as industrial production have turned up in some of these countries. In addition, exports, although they remain weak, have edged higher in some countries, partly because of stimulus-driven demand from China.

Economic activity in Mexico contracted sharply late last year and again in the first quarter, owing largely to Mexico's strong ties to the United States. The outbreak of the H1N1 virus was a significant drag on Mexican economic activity in the second quarter. In addition, the economies of Mexico and some other Latin American countries continued to be negatively affected by the sharp fall in commodity prices in the second half of last year. However, as in Asia, industrial production in several Latin American countries has recently turned higher. In Brazil, the automobile sector, which has received government support, appears to have led a rebound in output.

Several countries in emerging Europe continued to experience intense financial stress and sharp economic contractions in the first quarter, with activity declining at an especially precipitous rate in Latvia. The region has faced external financing difficulties as a result of large external imbalances and high dependence on foreign capital flows. Hungary, Latvia, Romania, and Ukraine are among the countries that have received official assistance from the International Monetary Fund.

As the global economy has slowed, inflation in emerging market economies has diminished. Inflation in emerging Asia has decreased significantly, especially in China where consumer prices in June were below their year-earlier levels. Reduced price pressures and weak economic growth prompted significant monetary easing in several Asian emerging market economies. Inflation in Latin America has fallen less sharply. Notably, Mexican inflation remains near its recent high, due in part to pass-through from the peso's depreciation earlier this year. In these circumstances, monetary easing has taken place in Latin America, but nominal interest rates remain somewhat higher than in Asia. Many emerging market economies have undertaken fiscal stimulus this year, although the degree has varied and all stimulus packages have been smaller than that in China.

## Part 3

# Monetary Policy: Recent Developments and Outlook

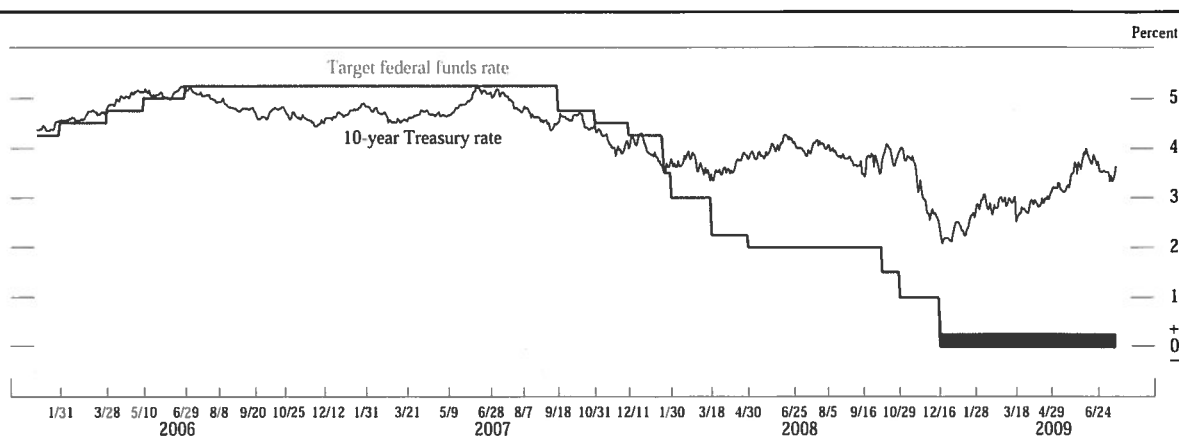
### Monetary Policy over the First Half of 2009

Over the second half of 2008, the Federal Open Market Committee (FOMC) eased the stance of monetary policy by decreasing its target for the federal funds rate from 2 percent to a range between 0 and  $\frac{1}{4}$  percent and took a number of additional actions to increase liquidity and improve the functioning of financial markets (figure 55). During the first half of 2009, the FOMC maintained its target range for the federal funds rate of 0 to  $\frac{1}{4}$  percent, and it extended and modified the nontraditional policy actions taken previously.

The data reviewed at the January 27–28 FOMC meeting indicated a continued sharp contraction in economic activity. The housing market remained on a steep downward trajectory, consumer spending continued its significant decline, the slowdown in business equipment investment intensified, and foreign demand had weakened. Conditions in the labor market had continued to deteriorate rapidly, and the drop in industrial production had accelerated. Headline consumer prices fell in November and December, reflecting declines in consumer energy prices; core consumer prices were

about flat in those months. Although credit conditions generally had remained tight, some financial markets—particularly those that were receiving support from Federal Reserve liquidity facilities and other government actions—exhibited modest signs of improvement. Meeting participants—Federal Reserve Board governors and Federal Reserve Bank presidents—anticipated that a gradual recovery in U.S. economic activity would begin in the second half of the year in response to monetary easing, additional fiscal stimulus, relatively low energy prices, and continued efforts by the government to stabilize the financial sector and increase the availability of credit. Committee members agreed that keeping the target range for the federal funds rate at 0 to  $\frac{1}{4}$  percent would be appropriate. In its January statement, the FOMC reiterated that the Federal Reserve would use all available tools to promote the resumption of sustainable economic growth and to preserve price stability. The Committee also stated that, in addition to the purchases of agency debt and mortgage-backed securities (MBS) already under way, it was prepared to purchase longer-term Treasury securities if evolving circumstances indicated that such transactions

55. Selected interest rates, 2006–09



NOTE: The data are daily and extend through July 15, 2009. The 10-year Treasury rate is the constant-maturity yield based on the most actively traded securities. The dates on the horizontal axis are those of regularly scheduled Federal Open Market Committee meetings.  
SOURCE: Department of the Treasury and the Federal Reserve.



would be particularly effective in improving conditions in private credit markets. The Committee indicated that it would continue to monitor carefully the size and composition of the Federal Reserve's balance sheet in light of evolving financial market developments. It would also continue to assess whether expansions of, or modifications to, lending facilities would serve to further support credit markets and economic activity and help preserve price stability.

On February 7, 2009, the Committee met by conference call in a joint session with the Board of Governors to discuss the potential role of the Federal Reserve in the Treasury's forthcoming Financial Stability Plan. The Federal Reserve's primary direct role in the plan would be through an expansion of the previously announced Term Asset-Backed Securities Loan Facility (TALF), which would be supported by additional funds from the Treasury's Troubled Asset Relief Program (TARP). It was anticipated that such an expansion would provide additional assistance to financial markets and institutions in meeting the credit needs of households and businesses and thus would support overall economic activity.

At the March FOMC meeting, nearly all participants indicated that economic conditions had deteriorated relative to their expectations at the time of the January meeting. Economic activity continued to fall sharply, with widespread declines in payroll employment and industrial production. Consumer spending had remained flat at a low level, the housing market weakened further, and nonresidential construction fell. Business spending on equipment and software had continued to decline across a broad range of categories. Despite the cutbacks in production, inventory overhangs appeared to have worsened in a number of areas. Of particular note was the sharp fall in foreign economic activity, which was having a negative effect on U.S. exports. Both headline and core consumer prices had edged up in January and February. Credit conditions remained very tight, and financial markets continued to be fragile and unsettled, with pressures on financial institutions generally having intensified over the past few months. Overall, participants expressed concern about downside risks to an outlook for activity that was already weak. Nonetheless, looking beyond the very near term, participants saw a number of market forces and policies then in place as eventually leading to economic recovery. Notably, the low level of mortgage interest rates, reduced house prices, and the Administration's new programs to encourage mortgage refinancing and mitigate foreclosures ultimately could bring about a lower cost of homeownership, a sustained increase in home sales, and a stabilization of house prices.

In light of the deterioration in the economic situation and outlook, Committee members agreed that substantial additional purchases of longer-term assets would be appropriate. In its March statement, the Committee announced that, to provide greater support to mortgage lending and housing markets, it would increase the size of the Federal Reserve's balance sheet further by purchasing up to an additional \$750 billion of agency MBS, bringing its total purchases of these securities to up to \$1.25 trillion in 2009, and that it would increase its purchases of agency debt this year by up to \$100 billion to a total of up to \$200 billion. Moreover, to help improve conditions in private credit markets, the Committee decided to purchase up to \$300 billion of longer-term Treasury securities over the next six months. The Committee decided to maintain the target range for the federal funds rate at 0 to ¼ percent and noted in its March statement that it anticipated that economic conditions were likely to warrant exceptionally low levels of the federal funds rate for an extended period. The Committee also noted that the Federal Reserve had launched the TALF to facilitate the extension of credit to households and small businesses, and it anticipated that the range of eligible collateral for this facility was likely to be expanded to include other financial assets. The Committee stated that it would continue to carefully monitor the size and composition of the Federal Reserve's balance sheet in light of evolving financial and economic developments.

On March 23, the Federal Reserve and the Treasury issued a joint statement on the role of the Federal Reserve in preserving financial and monetary stability. In the statement, the Federal Reserve and the Treasury agreed to continue to cooperate on measures to improve the stability and functioning of the financial system while minimizing the associated credit risk to the Federal Reserve and preserving the ability of the Federal Reserve to achieve its monetary policy objectives. The two government entities also agreed to work together with the Congress on a comprehensive resolution regime for systemically important financial institutions, and the Treasury promised to remove the emergency loans for systemically important institutions from the Federal Reserve's balance sheet over time to the extent its authorities permit.

At the FOMC meeting on April 28 and 29, participants noted that the pace of decline in some components of final demand appeared to have slowed. Consumer spending firmed in the first quarter after dropping markedly during the second half of 2008. Housing activity remained depressed but seemed to have leveled off in February and March. In contrast, businesses had cut production and employment substantially in

recent months—reflecting, in part, inventory overhangs that had persisted into the early part of the year—and fixed investment continued to contract. Headline and core consumer prices rose at a moderate pace over the first three months of the year. Participants noted that financial market conditions had generally strengthened, and surveys and anecdotal reports pointed to a pickup in household and business confidence, which nonetheless remained at very low levels. Yields on Treasury and agency securities had fallen after the release of the March FOMC statement, which noted the increase in planned purchases of longer-term securities. However, this initial drop was subsequently reversed amid the improved economic outlook, an easing of concerns about financial institutions, and perhaps some unwinding of flight-to-quality flows. Participants anticipated that the acceleration in final demand and economic activity over the next few quarters would be modest, with growth of consumption expenditures likely to be restrained and business investment spending probably shrinking further. Looking further ahead, participants considered a number of factors that would be likely to restrain the pace of economic recovery over the medium term. Strains in credit markets were expected to recede only gradually as financial institutions continued to rebuild their capital and remained cautious in their approach to asset-liability management, especially given that the outlook for credit performance would probably remain weak. Households would likely continue to be cautious, and their desired saving rates would be relatively high over the extended period that would be required to bring their wealth back up to more normal levels relative to income. The stimulus from fiscal policy was expected to diminish over time as the government budget moved to a sustainable path. Demand for U.S. exports would also take time to revive, reflecting the gradual recovery of economic activity in our major trading partners.

Against this backdrop, the FOMC indicated that it would maintain the target range for the federal funds rate at 0 to ¼ percent and anticipated that economic conditions would be likely to warrant exceptionally low levels of the federal funds rate for an extended period. The Committee reiterated that, to provide support to mortgage lending and housing markets and to improve overall conditions in private credit markets, the Federal Reserve would purchase a total of up to \$1.25 trillion of agency MBS and up to \$200 billion of agency debt by the end of the year. In addition, the Federal Reserve would buy up to \$300 billion of Treasury securities by autumn. The Committee would continue to evaluate the timing and overall amounts of its purchases of securities in light of the evolving economic outlook and

conditions in financial markets. The Federal Reserve was facilitating the extension of credit to households and businesses and supporting the functioning of financial markets through a range of liquidity programs. The Committee indicated that it would continue to carefully monitor the size and composition of the Federal Reserve's balance sheet in light of financial and economic developments.

The information reviewed at the June 23–24 FOMC meeting suggested that the economy remained weak, though declines in activity seemed to be lessening. Consumer spending appeared to have stabilized, sales and starts of new homes flattened out, and the recent declines in capital spending did not look as severe as those that had occurred around the turn of the year. At the same time, labor markets and industrial production continued to deteriorate sharply. Apart from a tax-induced jump in tobacco prices, consumer price inflation was fairly quiescent in recent months, although an upturn in energy prices appeared likely to boost headline inflation in June. Conditions and sentiment in financial markets had continued to show signs of improvement since the last meeting. The results of the Supervisory Capital Assessment Program (SCAP) were positively received by financial markets, credit default swap spreads of banking organizations declined considerably, and the institutions involved in the SCAP were subsequently able to issue significant amounts of public equity and nonguaranteed debt. The functioning of short-term funding markets improved, broad stock price indexes increased, and spreads on corporate bonds continued to narrow. Nominal Treasury yields climbed steeply, reflecting investors' perceptions of an improved economic outlook, a reversal of flight-to-quality flows, and technical factors related to the hedging of mortgage holdings.

In its June statement, the FOMC reiterated that it would employ all available tools to promote economic recovery and preserve price stability. It noted that it would maintain its target range for the federal funds rate at 0 to ¼ percent and continued to anticipate that economic conditions would likely warrant exceptionally low levels of the federal funds rate for an extended period. The FOMC indicated that, as it had previously announced, to provide support to mortgage lending and housing markets and to improve overall conditions in private credit markets, the Federal Reserve would purchase a total of up to \$1.25 trillion of agency MBS and up to \$200 billion of agency debt by the end of the year. In addition, the Federal Reserve would buy up to \$300 billion of Treasury securities by autumn. The Committee noted that it would continue to evaluate the timing and overall amounts of its purchases of securities in

light of the evolving economic outlook and conditions in financial markets. The FOMC also stated that the Federal Reserve was monitoring the size and composition of its balance sheet and would make adjustments to its credit and liquidity programs as warranted.

Conditions in financial markets had improved notably by the end of June, although market functioning in many areas remained impaired and seemed likely to remain strained for some time. Usage of some of the Federal Reserve's liquidity programs had also decreased in recent months. Against this backdrop, on June 25, the Federal Reserve announced extensions of and modifications to a number of its liquidity programs (see table 2 for a summary of the changes).<sup>14</sup> The Federal Reserve noted that the Board and the FOMC would continue to monitor closely the condition of financial markets and the need for and effectiveness of the Federal Reserve's special liquidity facilities and arrangements. Should the recent improvements in market conditions continue, the Board and the FOMC anticipated that a number of the facilities might not need to be extended beyond February 1, 2010. However, if financial stresses did not moderate as expected, the Board and the FOMC were prepared to extend the terms of some or all of the facilities as needed to promote financial stability and economic growth. The public would receive timely notice of planned extensions, discontinuations, or modifications of Federal Reserve programs. The next section of this report, "Monetary Policy as the Economy Recovers,"

14. For more details, see Board of Governors of the Federal Reserve System (2009), "Federal Reserve Announces Extensions of and Modifications to a Number of Its Liquidity Programs," press release, June 25, [www.federalreserve.gov/newsevents/press/monetary/20090625a.htm](http://www.federalreserve.gov/newsevents/press/monetary/20090625a.htm).

has further discussion related to the evolution of these programs.

Over the first half of the year, the Federal Reserve also undertook a number of initiatives to improve communications about its policy actions. These initiatives are described more fully in the box titled "Federal Reserve Initiatives to Increase Transparency."

## Monetary Policy as the Economy Recovers

At present, the focus of monetary policy is on stimulating economic activity in order to limit the degree to which the economy falls short of full employment and to prevent a sustained decline in inflation below levels consistent with the Federal Reserve's legislated objectives. Economic conditions are likely to warrant accommodative monetary policy for an extended period. At some point, however, economic recovery will take hold, labor market conditions will improve, and the downward pressures on inflation will diminish. When this process has advanced sufficiently, the stance of policy will need to be tightened to prevent inflation from rising above levels consistent with price stability and to keep economic activity near its maximum sustainable level. The FOMC is confident that it has the necessary tools to withdraw policy accommodation, when such action becomes appropriate, in a smooth and timely manner.

Monetary policy actions taken over the past year have led to a considerable increase in the assets held by the Federal Reserve. This increase in assets reflects both the expansion of Federal Reserve liquidity facilities and the purchases of longer-term securities. On the margin, the extension of credit and acquisition of assets

### 2. Extensions and modifications of Federal Reserve liquidity programs

Liquidity program	Extension	Modification
Asset-Backed Commercial Paper Money Market Mutual Fund Liquidity Facility (AMLF) .....	Extended to February 1, 2010	Money market mutual funds have to experience material outflows before being able to sell asset-backed commercial paper that would be eligible collateral for AMLF loans.
Central bank swap lines .....	Extended to February 1, 2010	...
Commercial Paper Funding Facility .....	Extended to February 1, 2010	...
Money Market Investor Funding Facility .....	Expiration date remains at October 30, 2009	...
Primary Dealer Credit Facility .....	Extended to February 1, 2010	...
Term Asset-Backed Securities Loan Facility .....	Expiration date remains at December 31, 2009	...
Term Auction Facility .....	No fixed expiration date	Auction amounts reduced initially to \$125 billion.
Term Securities Lending Facility .....	Extended to February 1, 2010	Auctions backed by Schedule 1 collateral suspended effective July 1, 2009. Auctions backed by Schedule 2 collateral now conducted every four weeks. Total amount offered reduced initially to \$75 billion.

... Not applicable.  
SOURCE: Federal Reserve Board.

## Federal Reserve Initiatives to Increase Transparency

The Federal Reserve took a number of nontraditional policy actions during the current episode of financial turmoil. In late 2008, Chairman Bernanke asked Vice Chairman Kohn to lead a review of how Federal Reserve disclosure policies should be adapted to make more information about these programs available to the public and to the Congress. A guiding principle of the review was that the Federal Reserve would seek to provide to the public as much information and analysis as possible, consistent with its objectives of promoting maximum employment and price stability. The Federal Reserve subsequently created a separate section of its website devoted to providing data, explanations, and analyses of its lending programs and balance sheet.<sup>1</sup> Postings in the first half of 2009 included additional explanatory material and details about a number of Federal Reserve credit and liquidity programs, the annual financial statements of the 12 Federal Reserve Banks, the Board of Governors, and the limited liability companies (LLCs) created in 2008 to avert the disorderly failures of The Bear Stearns Companies, Inc., and American International Group, Inc., as well as the most

1. This section of the Board's website is available at [www.federalreserve.gov/monetarypolicy/bst.htm](http://www.federalreserve.gov/monetarypolicy/bst.htm).

recent reports to the Congress on the Federal Reserve's emergency lending programs.

On June 10, the Federal Reserve issued the first of a series of monthly reports to provide more information on its credit and liquidity programs.<sup>2</sup> For many of those programs, the new information provided in the report includes the number of borrowers and the amounts borrowed by type of institution, collateral by type and credit rating, and data on the concentration of borrowing. The report also includes information on liquidity swap usage by country, quarterly income earned on different classes of Federal Reserve assets, and asset distribution and other information on the LLCs. In addition, the report summarizes and discusses recent developments across a number of Federal Reserve programs. In addition to the new report, the Federal Reserve Bank of New York recently made available the investment management agreements related to its financial stability and liquidity activities.<sup>3</sup>

2. See Board of Governors of the Federal Reserve System (2009), *Federal Reserve System Monthly Report on Credit and Liquidity Programs and the Balance Sheet* (Washington: Board of Governors, July), [www.federalreserve.gov/files/monthlyclb-sreport200907.pdf](http://www.federalreserve.gov/files/monthlyclb-sreport200907.pdf).

3. Federal Reserve Bank of New York (2009), "Vendor Information," [www.newyorkfed.org/aboutthefed/vendor\\_information.html](http://www.newyorkfed.org/aboutthefed/vendor_information.html).

by the Federal Reserve has been funded by crediting the reserve accounts of depository institutions (henceforth referred to as banks). Thus, the increase in Federal Reserve assets has been associated with substantial growth in banks' reserve balances, leaving the level of reserves far above that typically observed when short-term interest rates were significantly greater than zero.

To some extent, a contraction in the stock of reserve balances will occur automatically as financial conditions improve. In particular, most of the liquidity facilities deployed by the Federal Reserve in the current period of financial turmoil are priced at a premium over normal interest rate spreads or have a minimum bid rate that is high enough to make them unattractive under normal market conditions. Thus, the sizes of these programs, as well as the stock of reserve balances they create, will tend to diminish automatically as financial strains abate. Indeed, as noted elsewhere in this report, total credit extended to banks and other market participants (excluding support of critical institutions)

declined from about \$1.5 trillion as of December 31, 2008, to less than \$600 billion as of July 15, 2009, as financial conditions improved. In addition, redemptions of the Federal Reserve's holdings of agency debt, agency MBS, and longer-term Treasury securities are expected to occur at a rate of \$100 billion to \$200 billion per year over the next few years, leading to further reductions in reserve balances.

But even after lending facilities have wound down and holdings of long-term assets have begun to run off, the volume of assets on the Federal Reserve's balance sheet may remain very large for some time. Without additional actions, the level of bank reserves would continue to remain elevated as well.

Despite continued large holdings of assets, the Federal Reserve will have at its disposal two broad means of tightening monetary policy at the appropriate time. In principle, either of these methods would suffice to raise short-term interest rates; however, to ensure effectiveness, the two methods will most likely be used in combination.

The first method for tightening monetary policy relies on the authority that the Congress granted to the Federal Reserve last fall to pay interest on the balances maintained by banks. By raising the rate it pays on banks' reserve balances, the Federal Reserve will be able to tighten monetary policy by inducing increases in the federal funds rate and other short-term market interest rates. In general, banks will not supply funds to the money market at an interest rate lower than the rate they can earn risk free at the Federal Reserve. Moreover, they should compete to borrow any funds that are offered in the market at rates below the rate of interest paid by the Federal Reserve, as such borrowing allows them to earn a spread without any risk. Thus, raising the interest rate paid on balances that banks hold at the Federal Reserve should provide a powerful upward influence on short-term market interest rates, including the federal funds rate, without the need to drain reserve balances. A number of foreign central banks have been able to maintain overnight interbank interest rates at or above the level of interest paid on bank reserves even in the presence of unusually high levels of reserve balances (see the box titled "Foreign Experience with Interest on Reserves").

Despite this logic, the federal funds rate has been somewhat lower than the rate of interest banks earn on reserve balances; the gap was especially noticeable in October and November 2008, when payment of interest on reserves first began. This gap appears to have reflected several factors: First, the Federal Reserve is not allowed to pay interest on balances held by non-depository institutions, including some large lenders in the federal funds market such as the government-sponsored enterprises (GSEs). Such institutions may have an incentive to lend at rates below the rate that banks receive on reserve balances. Second, the payment of interest on reserves was a new policy at the time that the gap was particularly noticeable, and banks may not have had time to adjust their operations to the new regime. Third, the unusually strained conditions in financial markets at that time may have reduced the willingness of banks to arbitrage by borrowing in the federal funds market at rates below the rate paid on reserve balances and earning a higher rate by increasing their deposits at the Federal Reserve. The latter two factors are not likely to persist, particularly as the economy and financial markets recover. Moreover, if, as the economy recovers, large-scale lending in the federal funds market by nondepository institutions threatens to hold the federal funds rate below its target, the Federal Reserve has various options to deal with the problem. For example, it could offer these institutions the option of investing in reverse repurchase agreements. Under

these transactions, the Federal Reserve sells securities from its portfolio, thereby removing funds from the market, and agrees to buy back the securities at a later date.<sup>15</sup> Eliminating the incentive of nondepository institutions to lend their excess funds into short-term money markets would help ensure that raising the rate of interest paid on reserves would raise the federal funds rate and tighten monetary conditions even if the level of reserve balances were to remain high.

The second method for tightening monetary policy, despite a high level of assets on the Federal Reserve's balance sheet, is to take steps to reduce the overall level of reserve balances. Policymakers have several options for reducing the level of reserve balances should such action be desired. First, the Federal Reserve could engage in large-scale reverse repurchase agreements with financial market participants, including the GSEs as well as other institutions. Reverse repurchase agreements are a traditional tool of Federal Reserve monetary policy implementation. Second, the Treasury could sell more bills and deposit the proceeds with the Federal Reserve. The Treasury has been conducting such operations since last fall; the resulting deposits are reported on the Federal Reserve balance sheet as the Supplementary Financing Account. One limitation on this option is that the associated Treasury debt is subject to the statutory debt ceiling. Also, to preserve monetary policy independence, the Federal Reserve must ensure that it can achieve its policy objectives without reliance on the Treasury if necessary. A third option is for the Federal Reserve to offer banks the opportunity to hold some of their balances as term deposits. Such deposits would pay interest but would not have the liquidity and transactions features of reserve balances. Term deposits could not be counted toward reserve requirements, nor could they be used to avoid overnight overdraft penalties in reserve accounts.<sup>16</sup> Each of these three policy options would allow a tightening of monetary policy by draining reserve balances and raising short-term interest rates. As noted earlier, measures to drain reserves will likely be used in conjunction with increases in the interest rate paid on reserves to tighten conditions in short-term money markets.

15. These transactions are referred to as reverse repurchase agreements to distinguish them from repurchase agreements in which the Federal Reserve is the investor.

16. To be successful, especially in a period of rising interest rates, such deposits likely would have to pay rates of interest above the overnight rate on reserve balances. To prevent banks from earning risk-free profits by borrowing from the Federal Reserve and investing the proceeds in term deposits, the rate of remuneration on term deposits would have to be kept lower than the rates the Federal Reserve charges on its lending facilities, such as the discount window.

Raising the rate of interest on reserve balances and draining reserves through the options just described would allow policy to be tightened even if the level of assets on the Federal Reserve's balance sheet remained very high. In addition, the Federal Reserve retains the option to reduce its stock of assets by selling off a portion of its holdings of longer-term securities before they mature. Asset sales by the Federal Reserve would serve to raise short-term interest rates and tighten monetary policy by reducing the level of reserve balances; in addition, such sales could put upward pressure on longer-term interest rates by expanding the supply of longer-term assets available to investors. In an environment of strengthening economic activity and rising

inflation pressures, broad-based increases in interest rates could facilitate the achievement of the Federal Reserve's dual mandate.

In short, the Federal Reserve has a wide range of tools that can be used to tighten the stance of monetary policy at the point that the economic outlook calls for such action. However, economic conditions are not likely to warrant a tightening of monetary policy for an extended period. The timing and pace of any future tightening, together with the mix of tools employed, will be calibrated to best foster the Federal Reserve's dual objectives of maximum employment and price stability.

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### Foreign Experience with Interest on Reserves

Paying interest on excess reserve balances, either directly or by allowing banks to place excess balances into an interest-bearing account, is a standard tool used by major foreign central banks. Many have used interest on reserves, in combination with other tools, to maintain a floor under overnight interbank interest rates both in normal circumstances and during the period of financial turmoil. The European Central Bank (ECB), for example, has long allowed banks to place excess reserves into a deposit facility that pays interest at a rate below the ECB's main refinancing rate (its bellwether policy rate). The quantity of funds that banks hold in that facility increased sharply as the ECB expanded its liquidity-providing operations last fall and has remained well above pre-crisis levels; as a result, the euro-area overnight interbank rate fell from a level close to the main refinancing rate

toward the rate the ECB pays on deposits—but, importantly, not below that rate. Since November 2008, the Bank of Japan (BOJ) on a temporary basis has paid interest on excess reserve balances, at a rate of 10 basis points per year, which is also its current target for the overnight uncollateralized call rate; the BOJ noted that its action was intended to keep the call rate close to the targeted level as it supplied additional liquidity to the banking system. Indeed, the overnight rate has traded near 10 basis points in recent months, even as reserve balances at the BOJ have risen substantially, returning to their level during much of 2002, when the BOJ was implementing its Quantitative Easing Policy and the call rate was trading at 1 basis point or below. The Bank of Canada and the Bank of England also have used their standing deposit facilities to help manage interbank interest rates.

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## Part 4

# Summary of Economic Projections

*The following material appeared as an addendum to the minutes of the June 23–24, 2009, meeting of the Federal Open Market Committee.*

In conjunction with the June 23–24, 2009, FOMC meeting, the members of the Board of Governors and the presidents of the Federal Reserve Banks, all of whom participate in deliberations of the FOMC, submitted projections for output growth, unemployment, and inflation in 2009, 2010, 2011, and over the longer run. Projections were based on information available through the end of the meeting and on each participant's assumptions about factors likely to affect economic outcomes, including his or her assessment of appropriate monetary policy. "Appropriate monetary policy" is defined as the future path of policy that the participant deems most likely to foster outcomes for economic activity and inflation that best satisfy his or her interpretation of the Federal Reserve's dual objectives of maximum employment and stable prices. Longer-run projections represent each participant's assessment of the rate to which each variable would be expected to converge over time under appropriate monetary policy and in the absence of further shocks.

FOMC participants generally expected that, after declining over the first half of this year, output would expand sluggishly over the remainder of the year.

Consequently, as indicated in table 1 and depicted in figure 1, all FOMC participants projected that real gross domestic product (GDP) would contract over the entirety of this year and that the unemployment rate would increase in coming quarters. All participants also expected that overall inflation would be somewhat slower this year than in recent years, and most projected that core inflation would edge down this year. Almost all participants viewed the near-term outlook for domestic output as having improved modestly relative to the projections they made at the time of the April FOMC meeting, reflecting both a slightly less severe contraction in the first half of 2009 and a moderately stronger, but still sluggish, recovery in the second half. With the strong adverse forces that have been acting on the economy likely to abate only slowly, participants generally expected the recovery to be gradual in 2010. Even though all participants had raised their near-term outlook for real GDP, in light of incoming data on labor markets, they increased their projections for the path of the unemployment rate from those published in April. Participants foresaw only a gradual improvement in labor market conditions in 2010 and 2011, leaving the unemployment rate at the end of 2011 well above the level they viewed as its longer-run sustainable rate. Participants projected low inflation this year. For 2010 and 2011, the central tendencies of the participants' inflation

Table 1. Economic projections of Federal Reserve Governors and Reserve Bank presidents, June 2009

Percent

Variable	Central tendency <sup>1</sup>				Range <sup>2</sup>			
	2009	2010	2011	Longer run	2009	2010	2011	Longer run
Change in real GDP .....	-1.5 to -1.0	2.1 to 3.3	3.8 to 4.6	2.5 to 2.7	-1.6 to -0.6	0.8 to 4.0	2.3 to 5.0	2.4 to 2.8
April projection .....	-2.0 to -1.3	2.0 to 3.0	3.5 to 4.8	2.5 to 2.7	-2.5 to -0.5	1.5 to 4.0	2.3 to 5.0	2.4 to 3.0
Unemployment rate.....	9.8 to 10.1	9.5 to 9.8	8.4 to 8.8	4.8 to 5.0	9.7 to 10.5	8.5 to 10.6	6.8 to 9.2	4.5 to 6.0
April projection .....	9.2 to 9.6	9.0 to 9.5	7.7 to 8.5	4.8 to 5.0	9.1 to 10.0	8.0 to 9.6	6.5 to 9.0	4.5 to 5.3
PCE inflation.....	1.0 to 1.4	1.2 to 1.8	1.1 to 2.0	1.7 to 2.0	1.0 to 1.8	0.9 to 2.0	0.5 to 2.5	1.5 to 2.1
April projection .....	0.6 to 0.9	1.0 to 1.6	1.0 to 1.9	1.7 to 2.0	-0.5 to 1.2	0.7 to 2.0	0.5 to 2.5	1.5 to 2.0
Core PCE inflation <sup>3</sup> .....	1.3 to 1.6	1.0 to 1.5	0.9 to 1.7		1.2 to 2.0	0.5 to 2.0	0.2 to 2.5	
April projection .....	1.0 to 1.5	0.7 to 1.3	0.8 to 1.6		0.7 to 1.6	0.5 to 2.0	0.2 to 2.5	

NOTE: Projections of change in real gross domestic product (GDP) and in inflation are from the fourth quarter of the previous year to the fourth quarter of the year indicated. PCE inflation and core PCE inflation are the percentage rates of change in, respectively, the price index for personal consumption expenditures (PCE) and the price index for PCE excluding food and energy. Projections for the unemployment rate are for the average civilian unemployment rate in the fourth quarter of the year indicated. Each participant's projections are based on his or her assessment of appropriate monetary policy. Longer-run projections represent each participant's assessment of the rate to which each variable would

be expected to converge under appropriate monetary policy and in the absence of further shocks to the economy. The April projections were made in conjunction with the meeting of the Federal Open Market Committee on April 28–29, 2009.

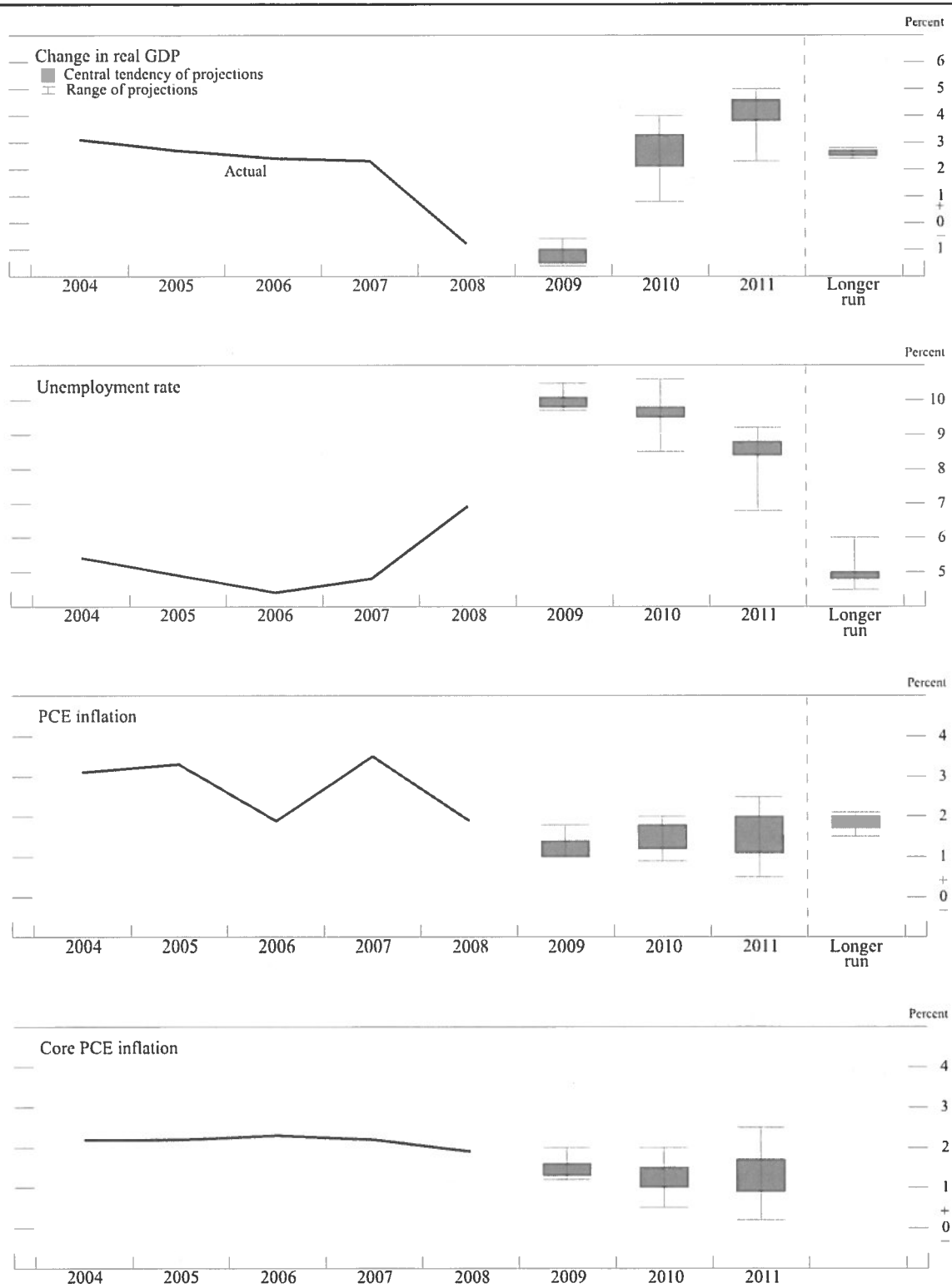
1. The central tendency excludes the three highest and three lowest projections for each variable in each year.

2. The range for a variable in a given year consists of all participants' projections, from lowest to highest, for that variable in that year.

3. Longer-run projections for core PCE inflation are not collected.



Figure 1. Central tendencies and ranges of economic projections, 2009–11 and over the longer run



NOTE: Definitions of variables are in the notes to table 1. The data for the actual values of the variables are annual.

forecasts pointed to fairly stable inflation that would be modestly below most participants' estimates of the rate consistent with the dual objectives; however, the divergence of participants' views about the inflation outlook remained wide. Most participants indicated that they expected the economy to take five or six years to converge to a longer-run path characterized by a sustainable rate of output growth and by rates of unemployment and inflation consistent with the Federal Reserve's dual objectives, but several said full convergence would take longer. In contrast to recent projections, a majority of participants perceived the risks to growth as roughly balanced, although several still viewed those risks as tilted to the downside. Most participants saw the risks surrounding their inflation outlook as roughly balanced, and fewer participants than in April characterized those risks as skewed to the downside. With few exceptions, participants judged that the projections for economic activity and inflation remained subject to a degree of uncertainty exceeding historical norms.

## The Outlook

Participants' projections for the change in real GDP in 2009 had a central tendency of negative 1.5 percent to negative 1.0 percent, somewhat above the central tendency of negative 2.0 percent to negative 1.3 percent for their April projections. Participants noted that the data received between the April and June FOMC meetings pointed to a somewhat smaller decline in output during the first half of the year than they had anticipated at the time of the April meeting. Moreover, participants saw additional indications that the economic downturn in the United States and worldwide was moderating in the second quarter, and they continued to expect that sales and production would begin to recover gradually during the second half of the year, reflecting the effects of monetary and fiscal stimulus, measures to support credit markets, and diminishing financial stresses. As reasons for marking up their projections for near-term economic activity, participants pointed to a further improvement in financial conditions during the intermeeting period, signs of stabilization in consumer spending, and tentative indications of a leveling out of activity in the housing sector. In addition, they observed that aggressive inventory reductions during the first half of this year appeared to have left firms' stocks in better balance with sales, suggesting that production is likely to increase as sales stabilize and then start to turn up later this year. Participants expected, however, that recoveries in consumer spending and residential investment initially would be damped by further deterioration

in labor markets, the continued repair of household balance sheets, persistently tight credit conditions, and still-weak housing demand. They also anticipated that very low capacity utilization, sluggish growth in sales, uncertainty about the economic environment, and a continued elevated cost and limited availability of financing would contribute to continued weakness in business fixed investment this year. Some participants noted that weak economic conditions in other countries probably would hold down growth in U.S. exports. A number of participants also saw recent increases in some long-term interest rates and in oil prices as factors that could damp a near-term economic recovery.

Looking further ahead, participants' projections for real GDP growth in 2010 and 2011 were not materially different from those provided in April. The projections for growth in 2010 had a central tendency of 2.1 to 3.3 percent, and those for 2011 had a central tendency of 3.8 to 4.6 percent. Participants generally expected that household financial positions would improve only gradually and that strains in credit markets and in the banking system would ebb slowly; hence, the pace of recovery would continue to be damped in 2010. But they anticipated that the upturn would strengthen in late 2010 and in 2011 to a pace exceeding the growth rate of potential GDP. Participants noted several factors contributing to this pickup, including accommodative monetary policy, fiscal stimulus, and continued improvement in financial conditions and household balance sheets. Beyond 2011, they expected that output growth would remain above that of potential GDP for a time, leading to a gradual elimination of slack in resource utilization. Over the longer run, most participants expected that, without further shocks, real GDP growth eventually would converge to a rate of 2.5 to 2.7 percent per year, reflecting longer-term trends in the growth of productivity and the labor force.

Even though participants raised their output growth forecasts, they also moved up their unemployment rate projections and continued to anticipate that labor market conditions would deteriorate further over the remainder of the year. Their projections for the average unemployment rate during the fourth quarter of 2009 had a central tendency of 9.8 to 10.1 percent, about  $\frac{1}{2}$  percentage point above the central tendency of their April projections and noticeably higher than the actual unemployment rate of 9.4 percent in May—the latest reading available at the time of the June FOMC meeting. All participants raised their forecasts of the unemployment rate at the end of this year, reflecting the sharper-than-expected rise in unemployment that occurred over the intermeeting period. With little material change in projected output growth in 2010

and 2011, participants still expected unemployment to decline in those years, but the projected unemployment rate in each year was about ½ percentage point above the April forecasts, reflecting the higher starting point of the projections. Most participants anticipated that output growth next year would not substantially exceed its longer-run sustainable rate and hence that the unemployment rate would decline only modestly in 2010; some also pointed to frictions associated with the reallocation of labor from shrinking economic sectors to expanding sectors as likely to restrain progress in reducing unemployment. The central tendency of the unemployment rate at the end of 2010 was 9.5 to 9.8 percent. With output growth and job creation generally projected to pick up appreciably in 2011, participants anticipated that joblessness would decline more noticeably, as evident from the central tendency of 8.4 to 8.8 percent for their projections of the unemployment rate in the fourth quarter of 2011. They expected that the unemployment rate would decline considerably further in subsequent years as it moved back toward its longer-run sustainable level, which most participants still saw as between 4.8 and 5.0 percent; however, a few participants raised their estimates of the longer-run unemployment rate.

The central tendency of participants' projections for personal consumption expenditures (PCE) inflation in 2009 was 1.0 to 1.4 percent, about ½ percentage point above the central tendency of their April projections. Participants noted that higher-than-expected inflation data over the intermeeting period and the anticipated influence of higher oil and commodity prices on consumer prices were factors contributing to the increase in their inflation forecasts. Looking beyond this year, participants' projections for total PCE inflation had central tendencies of 1.2 to 1.8 percent for 2010 and 1.1 to 2.0 percent for 2011, modestly higher than the central tendencies from the April projections. Reflecting the large increases in energy prices over the intermeeting period, the forecasts for core PCE inflation (which excludes the direct effects of movements in food and energy prices) in 2009 were raised by less than the projections for total PCE inflation, while the forecasts for core and total PCE inflation in 2010 and 2011 increased by similar amounts. The central tendency of projections for core inflation in 2009 was 1.3 to 1.6 percent; those for 2010 and 2011 were 1.0 to 1.5 percent and 0.9 to 1.7 percent, respectively. Most participants expected that sizable economic slack would continue to damp inflation pressures for the next few years and hence that total PCE inflation in 2011 would still be below their assessments of its appropriate longer-run level. Some thought that such slack would generate a decline

in inflation over the next few years. Most, however, projected that, as the economy recovers, inflation would increase gradually and move closer to their individual assessments of the measured rate of inflation consistent with the Federal Reserve's dual mandate for maximum employment and price stability. Several participants, noting that the public's longer-run inflation expectations had not changed appreciably, expected that inflation would return more promptly to levels consistent with their judgments about longer-run inflation than these participants had projected in April. A few participants also anticipated that projected inflation in 2011 would be modestly above their longer-run inflation projections because of the possible effects of very low short-term interest rates and of the large expansion of the Federal Reserve's balance sheet on the public's inflation expectations. Overall, the range of participants' projections of inflation in 2011 remained quite wide.

As in April, the central tendency of projections of the longer-run inflation rate was 1.7 to 2.0 percent. Most participants judged that a longer-run PCE inflation rate of 2 percent would be consistent with the Federal Reserve's dual mandate; others indicated that inflation of 1½ percent or 1¾ percent would be appropriate. Modestly positive longer-run inflation would allow the Committee to stimulate economic activity and support employment by setting the federal funds rate temporarily below the inflation rate when the economy suffers a large negative shock to demands for goods and services.

## Uncertainty and Risks

In contrast to the participants' views over the past several quarters, in June a majority of participants saw the risks to their projections for real GDP growth and the unemployment rate as broadly balanced. In explaining why they perceived a reduction in downside risks to the outlook, these participants pointed to the tentative signs of economic stabilization, indications of some effectiveness of monetary and fiscal policy actions, and improvements in financial conditions. In contrast, several participants still saw the risks to their GDP growth forecasts as skewed to the downside and the associated risks to unemployment as skewed to the upside. Almost all participants shared the judgment that their projections of future economic activity and unemployment continued to be subject to greater-than-average uncertainty.<sup>17</sup> Many participants again high-lighted the still-

17. Table 2 provides estimates of forecast uncertainty for the change in real GDP, the unemployment rate, and total consumer price inflation over the period from 1989 to 2008. At the end of this sum-

Table 2. Average historical projection error ranges

Variable	2009	2010	2011
Change in real GDP <sup>1</sup> .....	±1.0	±1.5	±1.6
Unemployment rate <sup>1</sup> .....	±0.4	±0.8	±1.0
Total consumer prices <sup>2</sup> .....	±0.9	±1.0	±1.0

NOTE: Error ranges shown are measured as plus or minus the root mean squared error of projections for 1989 through 2008 that were released in the summer by various private and government forecasters. As described in the box titled "Forecast Uncertainty," under certain assumptions, there is about a 70 percent probability that actual outcomes for real GDP, unemployment, and consumer prices will be in ranges implied by the average size of projection errors made in the past. Further information is in David Reifschneider and Peter Tulip (2007), "Gauging the Uncertainty of the Economic Outlook from Historical Forecasting Errors," Finance and Economics Discussion Series 2007-60 (Washington: Board of Governors of the Federal Reserve System, November).

1. For definitions, refer to general note in table 1.

2. Measure is the overall consumer price index, the price measure that has been most widely used in government and private economic forecasts. Projection is percent change, fourth quarter of the previous year to the fourth quarter of the year indicated.

considerable uncertainty about the future course of the financial crisis and the risk that a resurgence of financial turmoil could adversely impact the real economy. In addition, some noted the difficulty in gauging the macroeconomic effects of the credit-easing policies that have been employed by the Federal Reserve and other central banks, given the limited experience with such tools.

Most participants judged the risks to the inflation outlook as roughly balanced, with the number doing so higher than in April. A few participants continued to view these risks as skewed to the downside, and one saw the inflation risks as tilted to the upside. Some participants noted the risk that inflation expectations might drift downward in response to persistently low inflation outcomes and continued significant slack in resource utilization. Several participants pointed to the possibility of an upward shift in expected and actual inflation if the stimulative monetary policy measures and the attendant expansion of the Federal Reserve's balance sheet were not unwound in a timely fashion as the economy recovers. Most participants again saw the uncertainty surrounding their inflation projections as exceeding historical norms.

## Diversity of Views

Figures 2.A and 2.B provide further details on the diversity of participants' views regarding likely outcomes

mary, the box titled "Forecast Uncertainty" discusses the sources and interpretation of uncertainty in economic forecasts and explains the approach used to assess the uncertainty and risks attending participants' projections.

for real GDP growth and the unemployment rate in 2009, 2010, 2011, and over the longer run. The dispersion in participants' June projections for the next three years reflects, among other factors, the diversity of their assessments regarding the effects of fiscal stimulus and nontraditional monetary policy actions as well as the likely pace of improvement in financial conditions. For real GDP growth, the distribution of projections for 2009 narrowed and shifted slightly higher, reflecting the somewhat better-than-expected data received during the intermeeting period. The distributions for 2010 and 2011 changed little. For the unemployment rate, the surprisingly large increases in unemployment reported during the intermeeting period prompted an upward shift in the distribution. Because of the persistence exhibited in many of the unemployment forecasts, there were similar upward shifts in the distributions for 2010 and 2011. The dispersion of these forecasts for all three years was roughly similar to that of April. The distribution of participants' projections of longer-run real GDP growth was about unchanged. A few participants raised their longer-run projections of the unemployment rate, widening the dispersion of these estimates, as they incorporated the effects of unexpectedly high recent unemployment data and of the reallocation of labor from declining sectors to expanding ones. The dispersion in participants' longer-run projections reflected differences in their estimates regarding the sustainable rates of output growth and unemployment to which the economy would converge under appropriate monetary policy and in the absence of any further shocks.

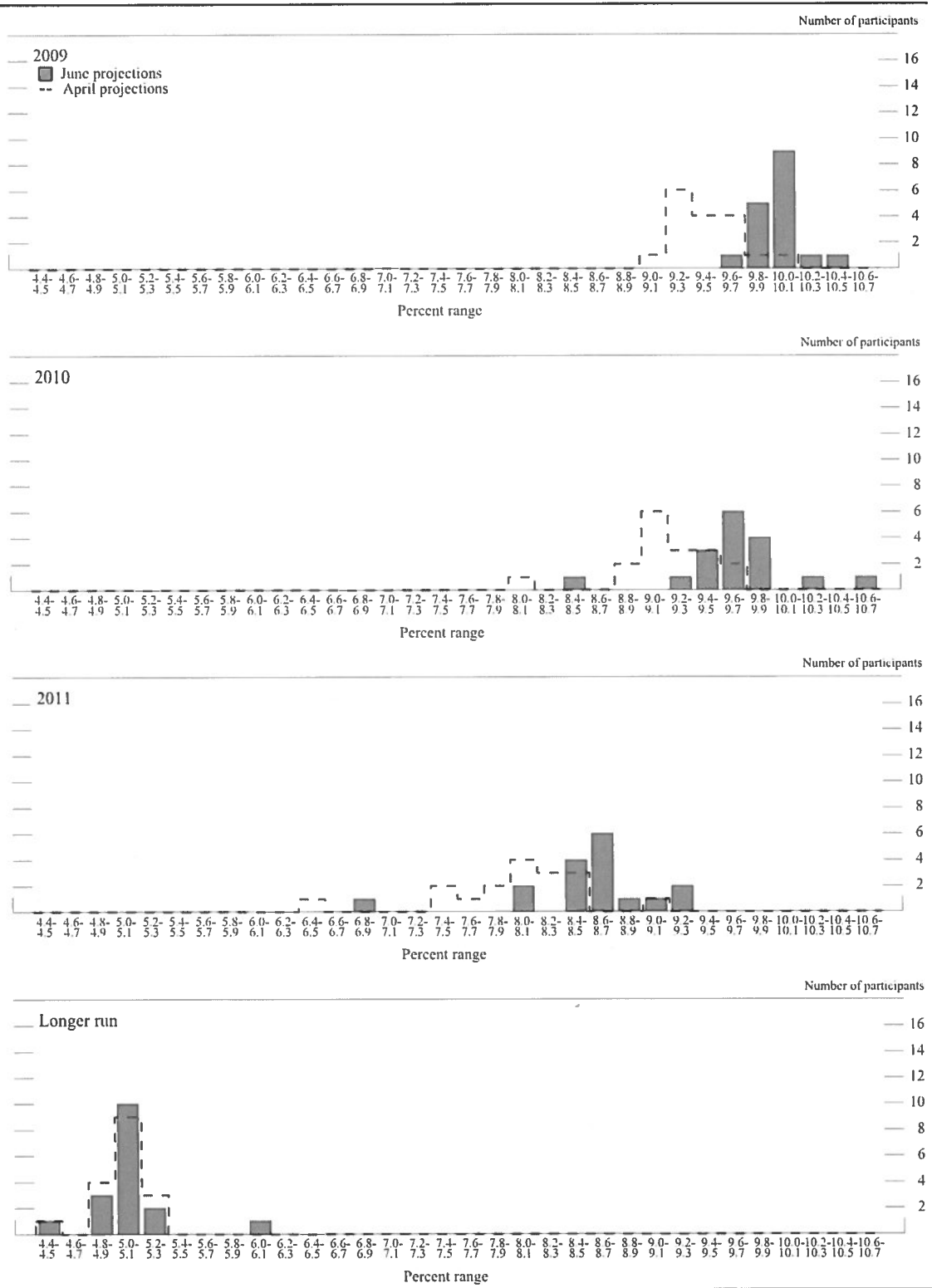
Figures 2.C and 2.D provide corresponding information about the diversity of participants' views regarding the inflation outlook. The distribution of the projections for total and core PCE inflation in 2009 moved upward, reflecting the higher inflation data released over the intermeeting period, while distributions for the projections in 2010 and 2011 did not change significantly. The dispersion in participants' projections for total and core PCE inflation for 2009, 2010, and 2011 illustrates their varying assessments of the effects on inflation and inflation expectations of persistent economic slack as well as of the recent expansion of the Federal Reserve's balance sheet. These varying assessments are especially evident in the wide dispersion of inflation projections for 2011. In contrast, the tight distribution of participants' projections for longer-run inflation illustrates their substantial agreement about the measured rate of inflation that is most consistent with the Federal Reserve's dual objectives of maximum employment and stable prices.

Figure 2.A. Distribution of participants' projections for the change in real GDP, 2009–11 and over the longer run



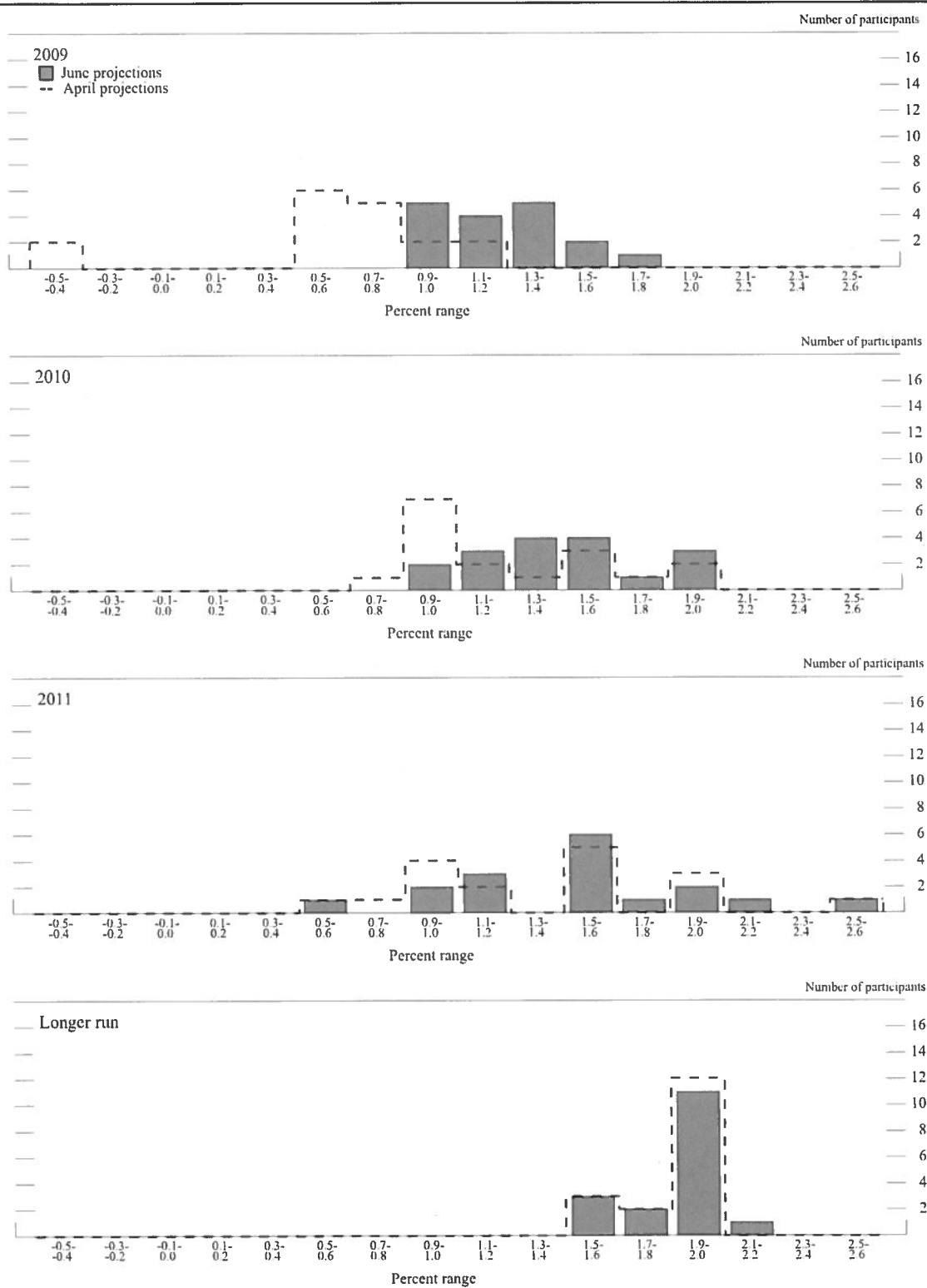
NOTE: Definitions of variables are in the general note to table 1.

Figure 2.B. Distribution of participants' projections for the unemployment rate, 2009–11 and over the longer run



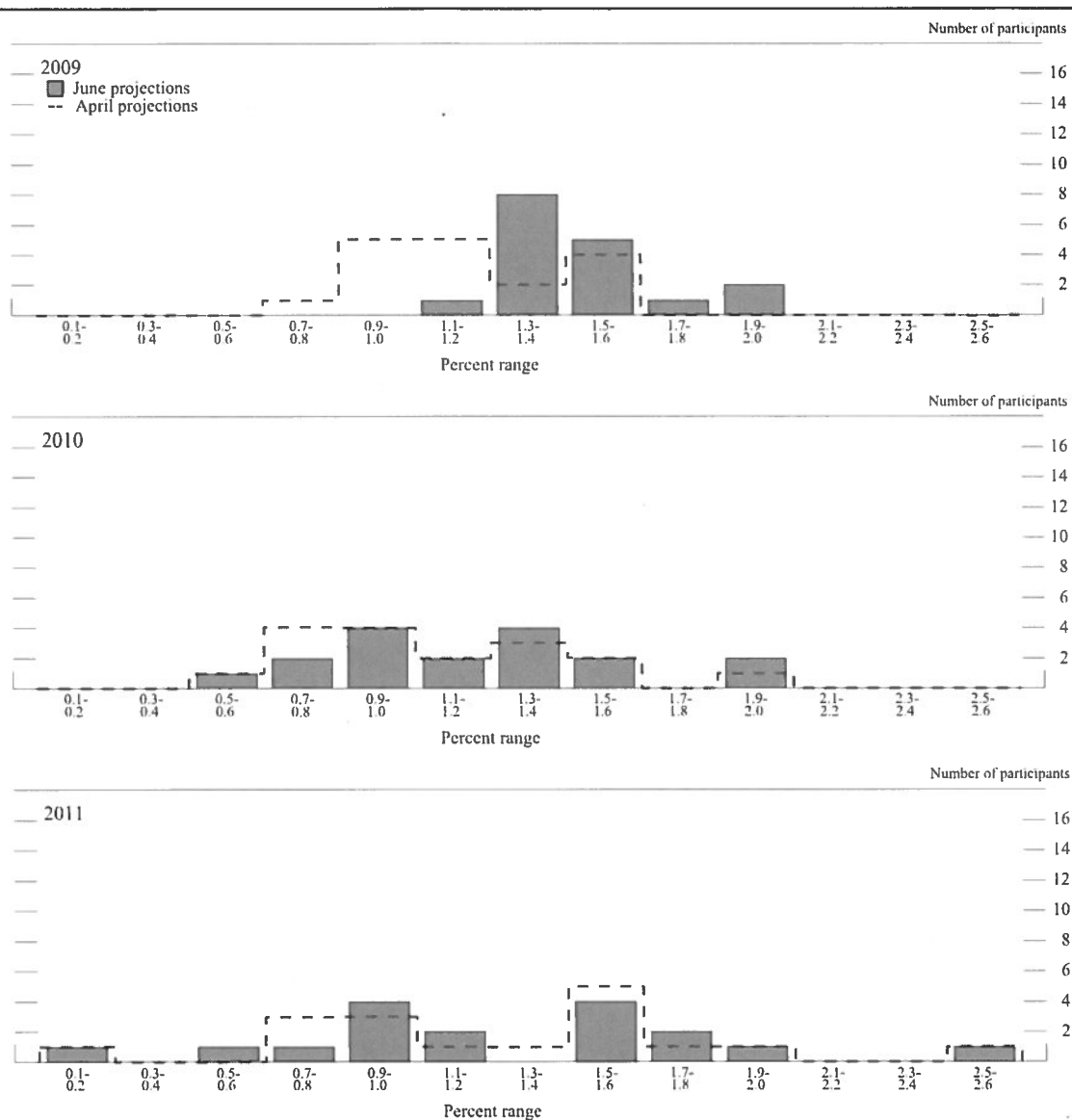
NOTE: Definitions of variables are in the general note to table 1.

Figure 2.C. Distribution of participants' projections for PCE inflation, 2009–11 and over the longer run



NOTE: Definitions of variables are in the general note to table 1.

Figure 2.D. Distribution of participants' projections for core PCE inflation, 2009–11



NOTE: Definitions of variables are in the general note to table 1.



## Forecast Uncertainty

The economic projections provided by the members of the Board of Governors and the presidents of the Federal Reserve Banks inform discussions of monetary policy among policymakers and can aid public understanding of the basis for policy actions. Considerable uncertainty attends these projections, however. The economic and statistical models and relationships used to help produce economic forecasts are necessarily imperfect descriptions of the real world. And the future path of the economy can be affected by myriad unforeseen developments and events. Thus, in setting the stance of monetary policy, participants consider not only what appears to be the most likely economic outcome as embodied in their projections, but also the range of alternative possibilities, the likelihood of their occurring, and the potential costs to the economy should they occur.

Table 2 summarizes the average historical accuracy of a range of forecasts, including those reported in past Monetary Policy Reports and those prepared by Federal Reserve Board staff in advance of meetings of the Federal Open Market Committee. The projection error ranges shown in the table illustrate the considerable uncertainty associated with economic forecasts. For example, suppose a participant projects that real gross domestic product (GDP) and total consumer prices will rise steadily at annual rates of, respectively, 3 percent and 2 percent. If the uncertainty attending those projections is simi-

lar to that experienced in the past and the risks around the projections are broadly balanced, the numbers reported in table 2 would imply a probability of about 70 percent that actual GDP would expand within a range of 2.0 to 4.0 percent in the current year, 1.5 to 4.5 percent in the second year, and 1.4 to 4.6 percent in the third year. The corresponding 70 percent confidence intervals for overall inflation would be 1.1 to 2.9 percent in the current year and 1.0 to 3.0 percent in the second and third years.

Because current conditions may differ from those that prevailed, on average, over history, participants provide judgments as to whether the uncertainty attached to their projections of each variable is greater than, smaller than, or broadly similar to typical levels of forecast uncertainty in the past as shown in table 2. Participants also provide judgments as to whether the risks to their projections are weighted to the upside, are weighted to the downside, or are broadly balanced. That is, participants judge whether each variable is more likely to be above or below their projections of the most likely outcome. These judgments about the uncertainty and the risks attending each participant's projections are distinct from the diversity of participants' views about the most likely outcomes. Forecast uncertainty is concerned with the risks associated with a particular projection rather than with divergences across a number of different projections.

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# Abbreviations

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ABCP	asset-backed commercial paper
ABS	asset-backed securities
AIG	American International Group, Inc.
BHC	bank holding company
BOJ	Bank of Japan
CAP	Capital Assistance Program
CDS	credit default swap
C&I	commercial and industrial
CMBS	commercial mortgage-backed securities
CP	commercial paper
CPFF	Commercial Paper Funding Facility
CPH	compensation per hour
CPP	Capital Purchase Program
CRE	commercial real estate
DPI	disposable personal income
ECB	European Central Bank
ECI	employment cost index
FDIC	Federal Deposit Insurance Corporation
FOMC	Federal Open Market Committee; also, the Committee
GDP	gross domestic product
GSE	government-sponsored enterprise
IRA	individual retirement account
Libor	London interbank offered rate
LLC	limited liability company
MBS	mortgage-backed securities
NIPA	national income and product accounts
NOW	negotiable order of withdrawal
OCC	Office of the Comptroller of the Currency
OIS	overnight index swap
OTTI	other-than-temporary impairment
PCE	personal consumption expenditures
PPIP	Public-Private Investment Program
SCAP	Supervisory Capital Assessment Program
SPV	special purpose vehicle
TAF	Term Auction Facility
TALF	Term Asset-Backed Securities Loan Facility
TARP	Troubled Asset Relief Program
TIPS	Treasury inflation-protected securities
VRDO	variable-rate demand obligation
WTI	West Texas intermediate

# kwalton

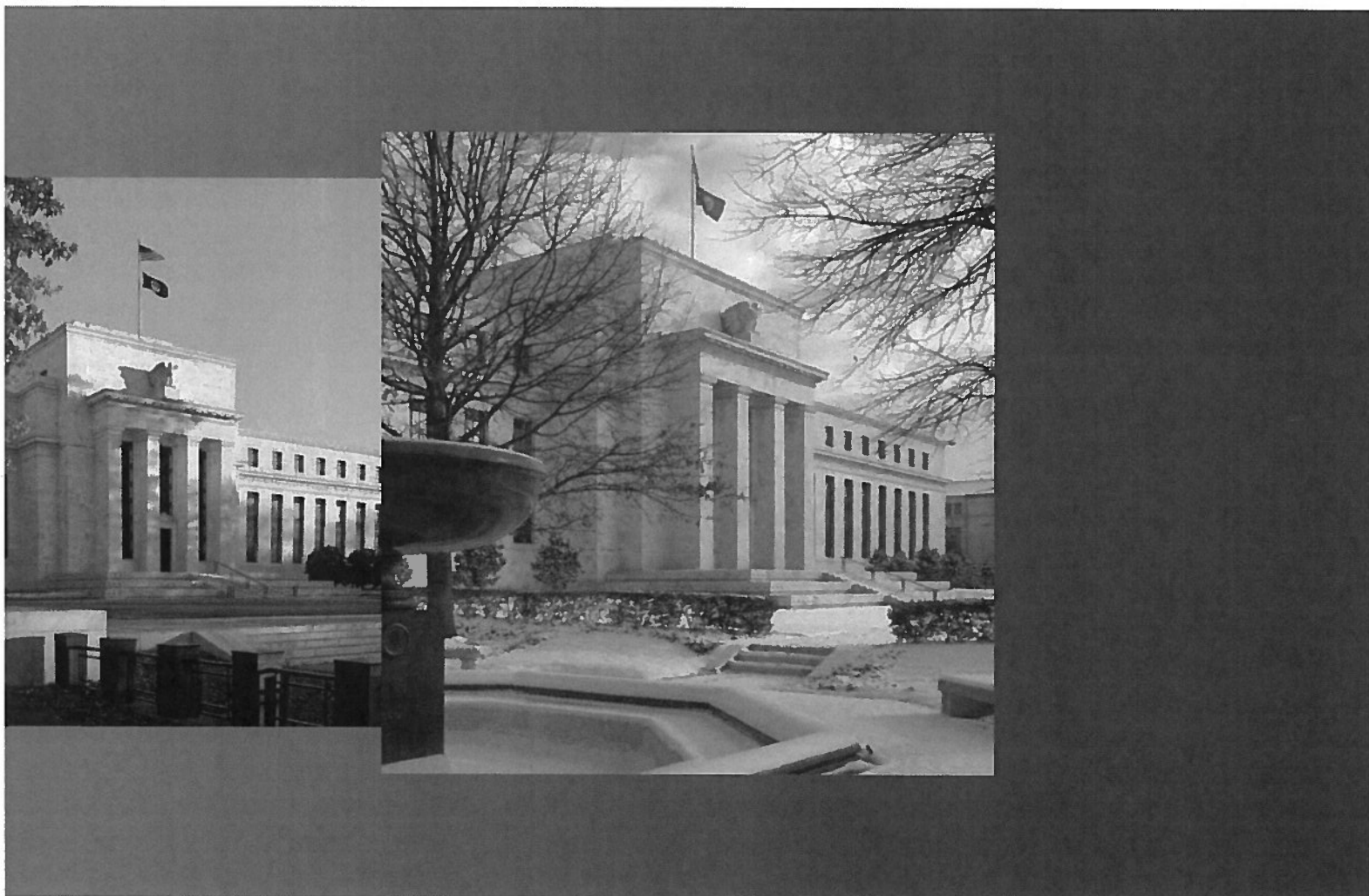
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For use at 10:00 a.m., EST  
February 24, 2015

# MONETARY POLICY REPORT

February 24, 2015



**Board of Governors of the Federal Reserve System**

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# LETTER OF TRANSMITTAL

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BOARD OF GOVERNORS OF THE  
FEDERAL RESERVE SYSTEM

Washington, D.C., February 24, 2015

THE PRESIDENT OF THE SENATE  
THE SPEAKER OF THE HOUSE OF REPRESENTATIVES

The Board of Governors is pleased to submit its *Monetary Policy Report* pursuant to section 2B of the Federal Reserve Act.

Sincerely,

A handwritten signature in cursive script that reads "Janet L. Yellen".

Janet L. Yellen, Chair

# STATEMENT ON LONGER-RUN GOALS AND MONETARY POLICY STRATEGY

*Adopted effective January 24, 2012; as amended effective January 27, 2015*

The Federal Open Market Committee (FOMC) is firmly committed to fulfilling its statutory mandate from the Congress of promoting maximum employment, stable prices, and moderate long-term interest rates. The Committee seeks to explain its monetary policy decisions to the public as clearly as possible. Such clarity facilitates well-informed decisionmaking by households and businesses, reduces economic and financial uncertainty, increases the effectiveness of monetary policy, and enhances transparency and accountability, which are essential in a democratic society.

Inflation, employment, and long-term interest rates fluctuate over time in response to economic and financial disturbances. Moreover, monetary policy actions tend to influence economic activity and prices with a lag. Therefore, the Committee's policy decisions reflect its longer-run goals, its medium-term outlook, and its assessments of the balance of risks, including risks to the financial system that could impede the attainment of the Committee's goals.

The inflation rate over the longer run is primarily determined by monetary policy, and hence the Committee has the ability to specify a longer-run goal for inflation. The Committee reaffirms its judgment that inflation at the rate of 2 percent, as measured by the annual change in the price index for personal consumption expenditures, is most consistent over the longer run with the Federal Reserve's statutory mandate. Communicating this inflation goal clearly to the public helps keep longer-term inflation expectations firmly anchored, thereby fostering price stability and moderate long-term interest rates and enhancing the Committee's ability to promote maximum employment in the face of significant economic disturbances. The maximum level of employment is largely determined by nonmonetary factors that affect the structure and dynamics of the labor market. These factors may change over time and may not be directly measurable. Consequently, it would not be appropriate to specify a fixed goal for employment; rather, the Committee's policy decisions must be informed by assessments of the maximum level of employment, recognizing that such assessments are necessarily uncertain and subject to revision. The Committee considers a wide range of indicators in making these assessments. Information about Committee participants' estimates of the longer-run normal rates of output growth and unemployment is published four times per year in the FOMC's Summary of Economic Projections. For example, in the most recent projections, FOMC participants' estimates of the longer-run normal rate of unemployment had a central tendency of 5.2 percent to 5.5 percent.

In setting monetary policy, the Committee seeks to mitigate deviations of inflation from its longer-run goal and deviations of employment from the Committee's assessments of its maximum level. These objectives are generally complementary. However, under circumstances in which the Committee judges that the objectives are not complementary, it follows a balanced approach in promoting them, taking into account the magnitude of the deviations and the potentially different time horizons over which employment and inflation are projected to return to levels judged consistent with its mandate.

The Committee intends to reaffirm these principles and to make adjustments as appropriate at its annual organizational meeting each January.

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NOTE: Unless otherwise noted, the time series in the figures extend through, for daily data, February 19, 2015; for monthly data, January 2015; and, for quarterly data, 2014:Q4. In bar charts, except as noted, the change for a given period is measured to its final quarter from the final quarter of the preceding period.





## SUMMARY

The labor market improved further during the second half of last year and into early 2015, and labor market conditions moved closer to those the Federal Open Market Committee (FOMC) judges consistent with its maximum employment mandate. Since the middle of last year, monthly payrolls have expanded by about 280,000, on average, and the unemployment rate has declined nearly  $\frac{1}{2}$  percentage point on net. Nevertheless, a range of labor market indicators suggest that there is still room for improvement. In particular, at 5.7 percent, the unemployment rate is still above most FOMC participants' estimates of its longer-run normal level, the labor force participation rate remains below most assessments of its trend, an unusually large number of people continue to work part time when they would prefer full-time employment, and wage growth has continued to be slow.

A steep drop in crude oil prices since the middle of last year has put downward pressure on overall inflation. As of December 2014, the price index for personal consumption expenditures was only  $\frac{3}{4}$  percent higher than a year earlier, a rate of increase that is well below the FOMC's longer-run goal of 2 percent. Even apart from the energy sector, price increases have been subdued. Indeed, the prices of items other than food and energy products rose at an annual rate of only about 1 percent over the last six months of 2014, noticeably less than in the first half of the year. The slow pace of price increases during the second half was likely associated, in part, with falling import prices and perhaps also with some pass-through of lower oil prices. Survey-based measures of longer-term inflation expectations have remained stable; however market-based measures of inflation compensation have declined since last summer.

Economic activity expanded at a strong pace in the second half of last year. Notably reflecting solid gains in consumer spending, real gross

domestic product (GDP) is estimated to have increased at an annual rate of  $3\frac{3}{4}$  percent after a reported increase of just  $1\frac{1}{4}$  percent in the first half of the year. The growth in GDP was supported by accommodative monetary policy, a reduction in the degree of restraint imparted by fiscal policy, and the increase in households' purchasing power arising from the drop in oil prices. The gains in GDP have occurred despite continued sluggish growth abroad and a sizable appreciation of the U.S. dollar, both of which have weighed on net exports.

Financial conditions in the United States have generally remained supportive of economic growth. Longer-term interest rates in the United States and other advanced economies have continued to move down, on net, since the middle of 2014 amid disappointing economic growth and low inflation abroad as well as the associated anticipated and actual monetary policy actions by foreign central banks. Broad indexes of U.S. equity prices have risen moderately, on net, since the end of June. Credit flows to nonfinancial businesses largely remained solid in the second half of last year. Overall borrowing conditions for households eased further, but mortgage lending standards are still tight for many potential borrowers.

The vulnerability of the U.S. financial system to financial instability has remained moderate, primarily reflecting low-to-moderate levels of leverage and maturity transformation. Asset valuation pressures have eased a little, on balance, but continue to be notable in some sectors. The capital and liquidity positions of the banking sector have improved further. Over the second half of 2014, the Federal Reserve and other agencies finalized or proposed several more rules related to the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010, which were designed to further strengthen the resilience of the financial system.

At the time of the FOMC meeting in late January of this year, the Committee saw the outlook as broadly similar to that at the time of its December meeting, when the most recent Summary of Economic Projections (SEP) was compiled. (The December SEP is included as Part 3 of this report.) The FOMC expects that, with appropriate monetary policy accommodation, economic activity will expand at a moderate pace, and that labor market indicators will continue to move toward levels the Committee judges consistent with its dual mandate of maximum employment and price stability. In addition, the Committee continues to see the risks to the outlook for economic activity and the labor market as nearly balanced. Inflation is anticipated to decline further in the near term, mainly reflecting the pass-through of lower oil prices to consumer energy prices. However, the Committee expects inflation to rise gradually toward its 2 percent longer-run objective over the medium term as the labor market improves further and the transitory effects of lower energy prices and other factors dissipate.

At the end of October, and after having made further measured reductions in the pace of its asset purchases at its July and September meetings, the FOMC concluded the asset purchase program that began in September 2012. The decision to end the purchase program reflected the substantial improvement in the outlook for the labor market since the program's inception—the stated aim of the asset purchases—and a judgment that the underlying strength of the broader economy was sufficient to support ongoing progress toward the Committee's policy objectives.

Nonetheless, the Committee continued to judge that a high degree of policy accommodation remained appropriate. As a result, the FOMC has maintained the exceptionally low target range of 0 to  $\frac{1}{4}$  percent for the federal funds rate and kept

the Federal Reserve's holdings of longer-term securities at sizable levels. The Committee has also continued to provide forward guidance bearing on the anticipated path of the federal funds rate. In particular, the FOMC has stressed that in deciding how long to maintain the current target range, it will consider a broad set of indicators to assess realized and expected progress toward its objectives. On the basis of its assessment, the Committee indicated in its two most recent postmeeting statements that it can be patient in beginning to normalize the stance of monetary policy.

To further emphasize the data-dependent nature of its policy stance, the FOMC has stated that if incoming information indicates faster progress toward its policy objectives than the Committee currently expects, increases in the target range for the federal funds rate will likely occur sooner than the Committee anticipates. The FOMC has also indicated that in the case of slower-than-expected progress, increases in the target range will likely occur later than currently anticipated. Moreover, the Committee continues to expect that, even after employment and inflation are near mandate-consistent levels, economic conditions may, for some time, warrant keeping the target federal funds rate below levels the Committee views as normal in the longer run.

As part of prudent planning, the Federal Reserve has continued to prepare for the eventual normalization of the stance and conduct of monetary policy. The FOMC announced updated principles and plans for the normalization process following its September meeting and has continued to test the operational readiness of its monetary policy tools. The Committee remains confident that it has the tools it needs to raise short-term interest rates when doing so becomes appropriate, despite the very large size of the Federal Reserve's balance sheet.

## PART 1

### RECENT ECONOMIC AND FINANCIAL DEVELOPMENTS

The labor market continued to improve in the second half of last year and early this year. Job gains have averaged close to 280,000 per month since June, and the unemployment rate fell from 6.1 percent in June to 5.7 percent in January. Even so, the labor market likely has not yet fully recovered, and wage growth has remained slow. Since June, a steep drop in crude oil prices has exerted downward pressure on overall inflation, and non-energy price increases have been subdued as well. The price index for personal consumption expenditures (PCE) increased only  $\frac{3}{4}$  percent during the 12 months ending in December, a rate that is well below the Federal Open Market Committee's (FOMC) longer-run objective of 2 percent; the index excluding food and energy prices was up  $1\frac{1}{4}$  percent over this period. Survey measures of longer-run inflation expectations have been stable, but measures of inflation compensation derived from financial market quotes have moved down. Meanwhile, real gross domestic product (GDP) increased at an estimated annual rate of  $3\frac{3}{4}$  percent in the second half of the year, up from a reported rate of just  $1\frac{1}{4}$  percent in the first half. The growth in GDP has been supported by accommodative monetary policy and generally favorable financial conditions, the boost to households' purchasing power from lower oil prices, and improving consumer and business confidence. However, housing market activity has been advancing only slowly, and sluggish growth abroad and the higher foreign exchange value of the dollar have weighed on net exports. Longer-term interest rates in the United States and other advanced economies declined, on net, amid disappointing growth and low inflation abroad and the associated actual and anticipated accommodative monetary policy actions by foreign central banks.

#### Domestic Developments

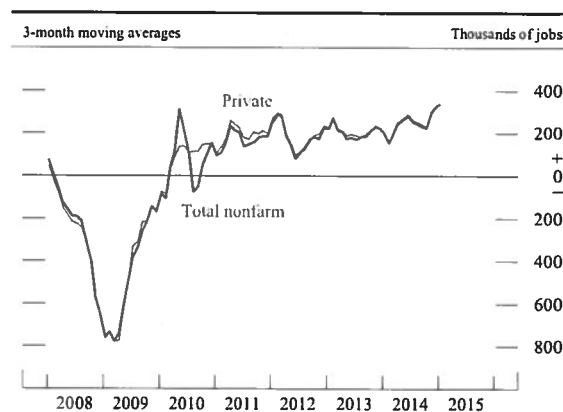
##### The labor market has strengthened further . . .

Employment rose appreciably and the unemployment rate fell in the second half of 2014 and early this year. Payroll employment has increased by an average of about 280,000 per month since June, almost 40,000 faster than in the first half of last year (figure 1). The gain in payroll employment for 2014 as a whole was the largest for any year since 1999. In addition, the unemployment rate continued to move down, declining from 6.1 percent in June to 5.7 percent in January of this year, a rate more than 4 percentage points below its peak in 2009. Furthermore, a substantial portion of the decline in unemployment over the past year came from a decrease in the number of individuals reporting unemployment spells longer than six months.

The labor force participation rate has been roughly flat since late 2013 after having

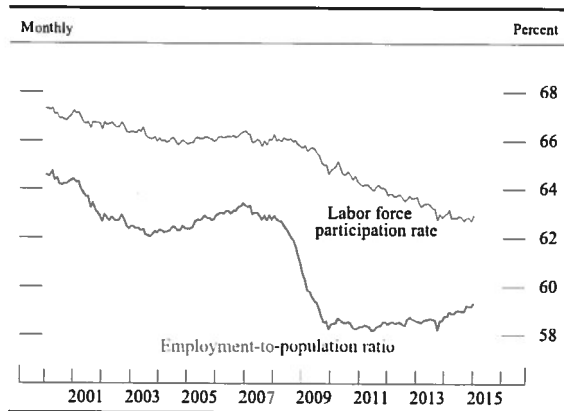
declined not only during the recession, but also during much of the recovery period when most other indicators of labor market health were improving (figure 2). While much of that decline likely reflected ongoing demographic trends—such as the aging of members of the baby-boom generation into their retirement years—some of the decline likely

1. Net change in payroll employment



SOURCE: Department of Labor, Bureau of Labor Statistics.

2. Labor force participation rate and employment-to-population ratio



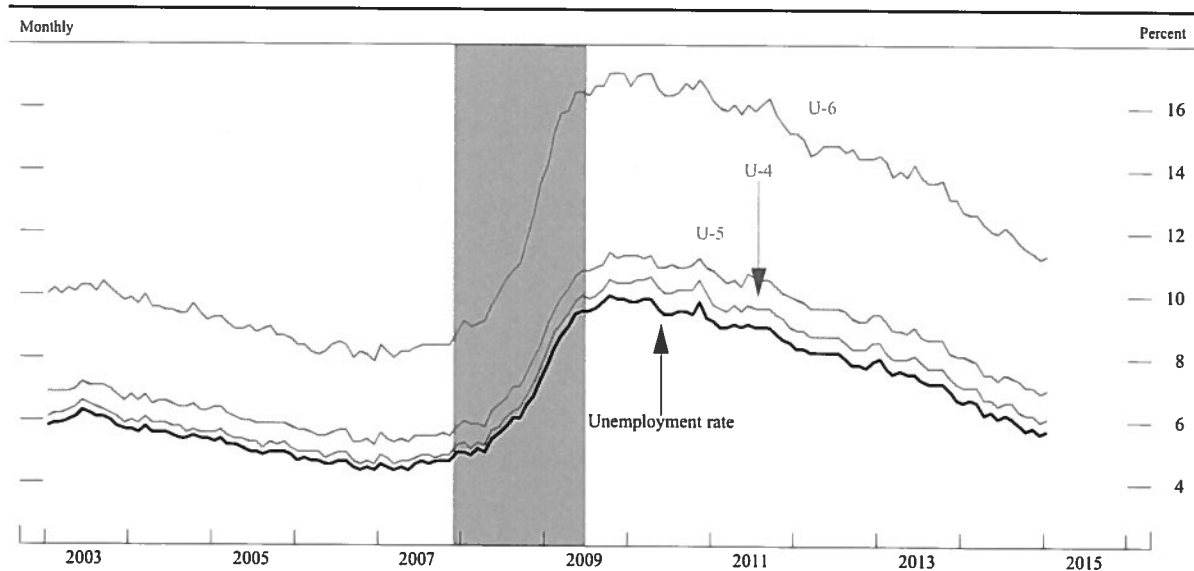
NOTE: Both series are a percent of the population aged 16 and over.  
SOURCE: Department of Labor, Bureau of Labor Statistics.

reflected workers' perceptions of poor job opportunities. Judged against the backdrop of a declining trend, the recent stability of the participation rate likely represents some cyclical improvement. Nevertheless, the participation rate remains lower than would be expected given the unemployment rate, and thus it continues to suggest more cyclical weakness than is indicated by the unemployment rate.

Another sign that the labor market remains weaker than indicated by the unemployment rate alone is the still-elevated share of workers who are employed part time but would like to work full time. This share of involuntary part-time employees has generally shown less improvement than the unemployment rate over the past few years; in part for this reason, the more comprehensive U-6 measure of labor underutilization remains quite elevated (figure 3).

Nevertheless, most broad measures of labor market health have improved. With employment rising and the participation

3. Measures of labor underutilization



NOTE: U-4 measures total unemployed plus discouraged workers, as a percent of the labor force plus discouraged workers. Discouraged workers are a subset of marginally attached workers who are not currently looking for work because they believe no jobs are available for them. U-5 measures total unemployed plus all marginally attached to the labor force, as a percent of the labor force plus persons marginally attached to the labor force. Marginally attached workers are not in the labor force, want and are available for work, and have looked for a job in the past 12 months. U-6 measures total unemployed plus all marginally attached workers plus total employed part time for economic reasons, as a percent of the labor force plus all marginally attached workers. The shaded bar indicates a period of business recession as defined by the National Bureau of Economic Research.

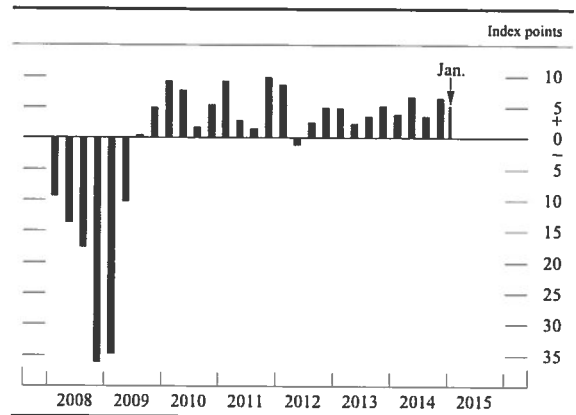
SOURCE: Department of Labor, Bureau of Labor Statistics.

rate holding steady, the employment-to-population ratio climbed noticeably higher in 2014 and early 2015 after having moved more or less sideways for much of the recovery. The quit rate, which is often perceived as a measure of worker confidence in labor market opportunities, has largely recovered to its pre-recession level. Moreover, an index constructed by Federal Reserve Board staff that aims to summarize movements in a wide array of labor market indicators also suggests that labor market conditions strengthened further in 2014, and that the gains have been quite strong in recent months (figure 4).<sup>1</sup>

... while gains in compensation have been modest ...

Even as the labor market has been improving, most measures of labor compensation have continued to show only modest gains. The employment cost index (ECI) for private industry workers, which measures both wages and the cost of employer-provided benefits, rose 2¼ percent over the 12 months ending in December, only slightly faster than the gains of about 2 percent that had prevailed for several years. Two other prominent measures of compensation—average hourly earnings and business-sector compensation per hour—increased slightly less than the ECI over the past year and have shown fewer signs of acceleration (figure 5). Over the past five years, the gains in all three of these measures of nominal compensation have fallen well short of their pre-recession averages and have only slightly outpaced inflation. That said, the drop in energy prices has pushed up real wages in recent months.

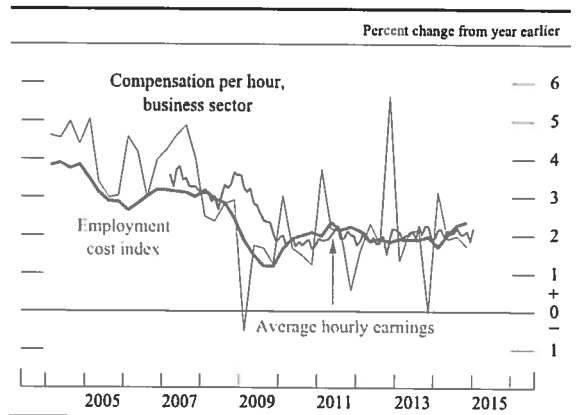
4. Change in labor market conditions index



NOTE: The index has a mean of zero and a standard deviation of 100; an increase indicates an improvement in labor market conditions. Quarterly figures are averages of monthly changes.

SOURCE: Federal Reserve Board staff estimates based on data from the Conference Board; Department of Labor, Bureau of Labor Statistics and Employment and Training Administration; National Federation of Independent Business.

5. Measures of change in hourly compensation

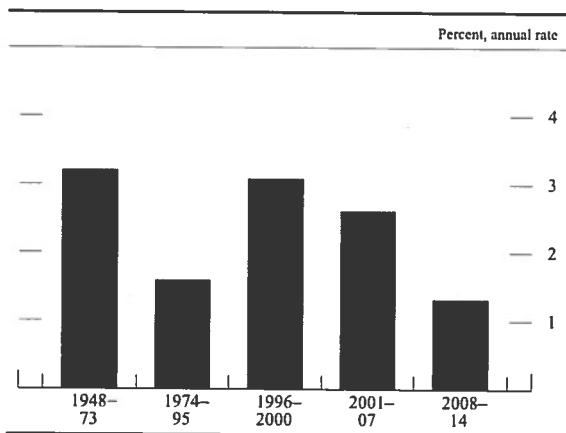


NOTE: The average hourly earnings data series begins in March 2007 and extends through January 2015. The compensation per hour and employment cost index data extend through 2014:Q4. For business-sector compensation, change is over four quarters; for the employment cost index, change is over the 12 months ending in the last month of each quarter; for average hourly earnings, change is from 12 months earlier.

SOURCE: Department of Labor, Bureau of Labor Statistics.

1. For details on the construction of the labor market conditions index, see Hess Chung, Bruce Fallick, Christopher Nekarda, and David Ratner (2014), "Assessing the Change in Labor Market Conditions," Finance and Economics Discussion Series 2014-109 (Washington: Board of Governors of the Federal Reserve System, December), [www.federalreserve.gov/econresdata/feds/2014/files/2014109pap.pdf](http://www.federalreserve.gov/econresdata/feds/2014/files/2014109pap.pdf).

6. Change in total business sector output per hour



NOTE: Changes are measured from Q4 of the year immediately preceding the period through Q4 of the final year of the period.

SOURCE: Department of Labor, Bureau of Labor Statistics.

### ... and productivity growth has been lackluster

Over time, increases in productivity are the central determinant of improvements in living standards. Labor productivity in the private business sector has increased at an average annual pace of 1¼ percent since the recession began in late 2007. This pace is close to the average that prevailed between the mid-1970s and the mid-1990s, but it is well below the pace of the earlier post-World War II period and the period from the mid-1990s to the eve of the financial crisis (figure 6). In recent years, productivity growth has been held down by, among other factors, the sharp drop in businesses' capital expenditures over the recession and the moderate recovery in expenditures since then. Productivity gains may be better supported in the future as investment continues to strengthen.

### A plunge in crude oil prices has held down consumer prices . . .

As discussed in the box "The Effect of the Recent Decline in Oil Prices on Economic Activity," crude oil prices have plummeted since June 2014. This sharp drop has caused overall consumer price inflation to slow, mainly due to falling gasoline prices: The national average of retail gasoline prices moved down from about \$3.75 per gallon in June to about \$2.20 per gallon in January. Crude oil prices have turned slightly higher in recent weeks, and futures markets suggest that prices are expected to edge up further in coming years; nevertheless, oil prices are still expected to remain well below the levels that had prevailed through last June.

Over the past six months, increases in food prices have moderated. Consumer food price increases had been somewhat elevated in early 2014 as a result of rising food commodity prices, but those commodity prices have since eased, and increases at the retail level have slowed accordingly.

**. . . but even outside of the energy and food categories, inflation has remained subdued**

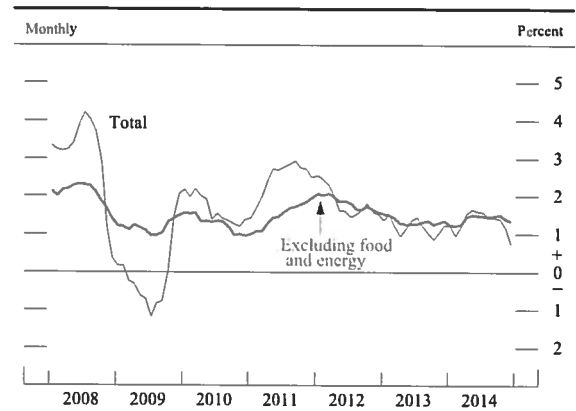
Inflation for items other than food and energy (so-called core inflation) remains modest. Core PCE prices rose at an annual rate of only about 1 percent over the last six months of 2014 after having risen at a 1¼ percent rate in the first half of the year; for 2014 as a whole, core PCE prices were up a little more than 1¼ percent (figure 7). The trimmed mean PCE price index, an alternative indicator of underlying inflation constructed by the Federal Reserve Bank of Dallas, also increased more slowly in the second half of last year. Falling import prices likely held down core inflation in the second half of the year; lower oil prices, and easing prices for commodities more generally, may have played a role as well. In addition, ongoing resource slack has reinforced the low-inflation environment, though with the improving economy, downward pressure from this factor is likely waning.

Looking at the overall basket of items that people consume, price increases remain muted and below the FOMC's longer-run objective of 2 percent. In December, the PCE price index was only ¾ percent above its level from a year earlier. With retail surveys showing a further sharp decline in gasoline prices in January, overall consumer prices likely moved lower early this year.

**Survey-based measures of longer-term inflation expectations have remained stable, while market-based measures of inflation compensation have declined**

The Federal Reserve tracks indicators of inflation expectations because such expectations likely factor into wage- and price-setting decisions and so influence actual inflation. Survey-based measures of longer-term inflation expectations, including surveys of both households and professional

7. Change in the chain-type price index for personal consumption expenditures



NOTE: The data extend through December 2014; changes are from one year earlier.

SOURCE: Department of Commerce, Bureau of Economic Analysis.

## The Effect of the Recent Decline in Oil Prices on Economic Activity

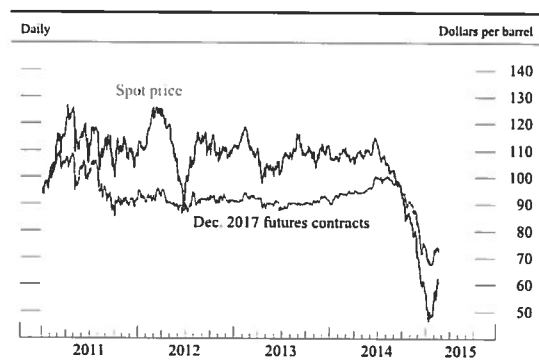
Since June, the price of crude oil has fallen sharply, on net, with the spot price of Brent (the blue line in figure A) dropping about 50 percent and the price of the December 2017 futures contract (the black line in figure A) declining about 25 percent. Although weaker-than-expected global oil demand has contributed to the fall in prices, much of the decline is likely due to favorable supply factors, including the rapid growth of U.S. oil production, the surprising strength of oil exports from Libya and Iraq, and OPEC's decision to maintain production levels despite declining prices. The drop in oil prices has a number of economic implications, including a sizable but temporary reduction in consumer price inflation. This discussion reviews some of the channels through which the recent fall in oil prices is anticipated to affect economic activity in the United States and globally.

One important channel through which a decline in oil prices affects the global economy is the transfer of wealth from oil producers to oil consumers. As shown in the table, the largest net oil-importing

countries—and thus the prime beneficiaries of lower oil prices—are the emerging Asian economies, Japan, the euro area, and, despite recent sharp increases in oil production, the United States.<sup>1</sup> Losses are concentrated in the oil-producing countries, including those of the Middle East, Russia, Venezuela, and, to a lesser extent, Canada and Mexico. (Lower oil prices have also destabilized financial markets in Russia and Venezuela.) Globally, the wealth transfer nets to zero, but the overall

1. Although many of the largest oil importers also are oil producers, and thus have some domestic losses as well as gains, net exports of oil by country provides a useful proxy for the global distribution of gains and losses following a price change.

A. Brent spot and futures prices



SOURCE: NYMEX.

Net oil and petroleum product exports

	Millions of barrels per day	Percent of GDP
Emerging Asia ex. China.....	-9.9	-5.9
Japan .....	-4.4	-3.7
Euro area .....	-9.2	-3.0
China .....	-5.8	-2.6
United States .....	-6.6	-1.6
Central and South America ex. Venezuela.....	-0.8	-0.8
Mexico.....	0.9	2.8
Canada .....	1.6	3.7
Russia .....	7.0	13.8
Middle East .....	19.1	29.8
Venezuela.....	1.7	31.0

NOTE: The data are for 2013. Share of GDP is an approximation based on net export volumes valued at the Brent price on June 17, 2014 (\$113.30). GDP is gross domestic product.

SOURCE: Department of Energy; International Monetary Fund.



effect on global economic activity is likely to be stimulative in the near term; oil consumers tend to spend a substantial portion of the windfall, while oil producers generally absorb at least some of the initial effect through reduced saving or higher borrowing.

In the United States, the wealth transfer just discussed is likely to be most apparent in supporting consumer spending, as lower gasoline prices boost the real disposable income of consumers. Indeed, the recent rise in consumer sentiment and improvements in survey measures of expected income growth suggest that households are reacting quite positively to lower gasoline prices.

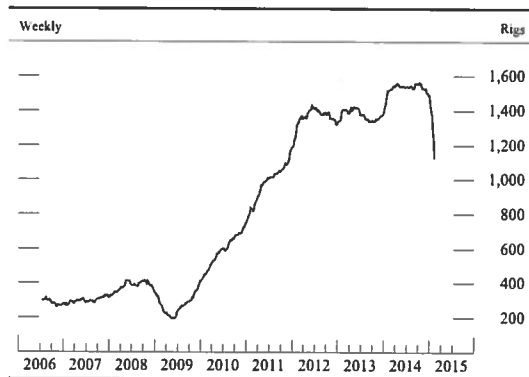
The stimulus from higher U.S. consumption is likely to be somewhat offset by reduced investment in the oil sector. Already there has been a sharp decline in the number of oil drilling rigs in operation (figure B), and a number of oil companies have cut their capital expenditure plans. Nonetheless, the direct effect on U.S. gross domestic product (GDP)

of such a decline will be small because investment in the oil sector—though rising in recent years—accounts for only about 1 percent of GDP.

Lower oil-sector investment is likely to weigh on U.S. oil production, which has grown at a torrid pace in recent years (figure C). So far, however, U.S. oil production has yet to decline. The continued strength of production despite falling investment reflects both a propensity to cut investment in the least productive projects first and a large stock of partially completed wells that are likely to still come on line.

While there is a general consensus that lower oil prices should boost U.S. and global economic activity, considerable uncertainty exists regarding the ultimate size of the effect. All in all, however, for the United States as a whole, it is likely that the additional disposable income resulting from lower gasoline prices will provide a significant boost to consumer spending that will far exceed the drag from lower investment in the oil sector.

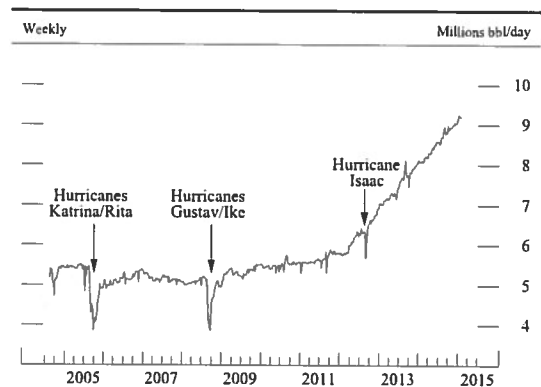
B. Domestic oil drilling rigs in operation



NOTE: The data, which are seasonally adjusted by Board staff, extend through February 13, 2015.

SOURCE: Baker Hughes Company.

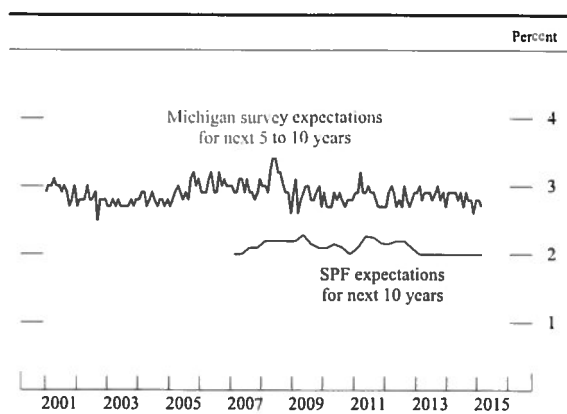
C. Domestic crude oil extraction



NOTE: The data, which are seasonally adjusted by Board staff, extend through February 13, 2015. Bbl is barrels of oil.

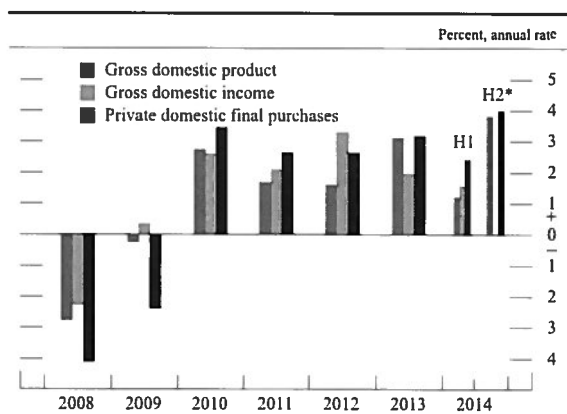
SOURCE: Department of Energy, U.S. Energy Information Administration.

8. Median inflation expectations



NOTE: The Michigan survey data are monthly and extend through February 2015. The SPF data for inflation expectations for personal consumption expenditures are quarterly and extend from 2007:Q1 through 2015:Q1.  
 SOURCE: University of Michigan Surveys of Consumers; Survey of Professional Forecasters (SPF).

9. Change in real gross domestic product, gross domestic income, and private domestic final purchases



\* Gross domestic income is not yet available for 2014:H2.  
 SOURCE: Department of Commerce, Bureau of Economic Analysis.

forecasters, have been quite stable over the past 15 years; in particular, they have changed little, on net, over the past few years (figure 8). In contrast, measures of longer-term inflation compensation derived from financial market instruments have fallen noticeably during the past several months. As is discussed in more detail in the box “Challenges in Interpreting Measures of Longer-Term Inflation Expectations,” deducing the sources of changes in inflation compensation is difficult because such movements may be caused by factors other than shifts in market participants’ inflation expectations.

**Economic activity expanded at a strong pace in the second half of 2014**

Real GDP is estimated to have increased at an annual rate of 3¾ percent in the second half of last year after a reported increase of just 1¼ percent in the first half, when output was likely restrained by severe weather and other transitory factors (figure 9). Private domestic final purchases—a measure of household and business spending that tends to exhibit less quarterly variation than GDP—also advanced at a substantial pace in the second half of last year.

The second-half gains in GDP reflected solid advances in consumer spending and in business investment spending on equipment and intangibles (E&I) as well as subdued gains for both residential investment and nonresidential structures. More generally, the growth in GDP has been supported by accommodative financial conditions, including declines in the cost of borrowing for many households and businesses; by a reduction in the restraint from fiscal policy relative to 2013; and by increases in spending spurred by continuing job gains and, more recently, by falling oil prices. The gains in GDP have occurred despite an appreciating U.S. dollar and concerns about global economic

growth, which remain an important source of uncertainty for the economic outlook.

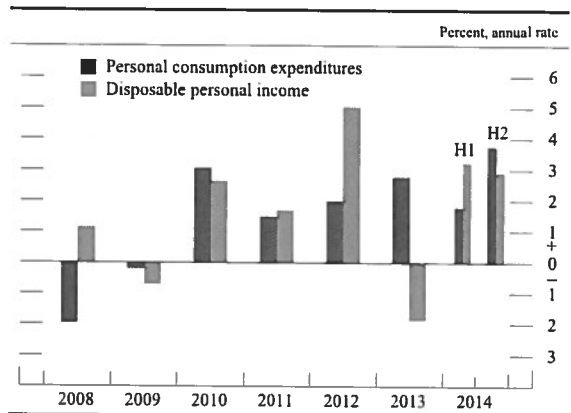
**Consumer spending was supported by continuing improvement in the labor market and falling oil prices, . . .**

Real PCE rose at an annual rate of 3¾ percent in the second half of 2014—a noticeable step-up from the sluggish rate of only about 2 percent in the first half (figure 10). The increases in spending have been supported by the improving labor market. In addition, the fall in gasoline and other energy prices has boosted purchasing power for consumers, especially those in lower- and middle-income brackets who spend a sizable share of their income on gasoline. Real disposable personal income—that is, income after taxes and adjusted for price changes—rose 3 percent at an annual rate in the second half of last year, roughly double the average rate recorded over the preceding five years.

**. . . further increases in household wealth and low interest rates, . . .**

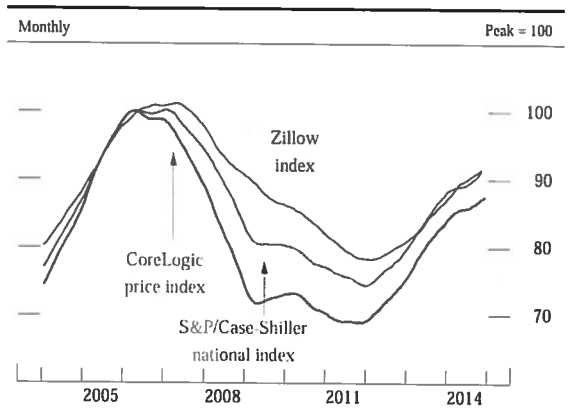
Consumer spending growth was also likely supported by further increases in household net worth, as the stock market continued to rise and house prices moved up in the second half of last year. The value of corporate equities rose about 10 percent in 2014, on top of the 30 percent gain seen in 2013. Although the gains in house prices slowed last year—for example, the CoreLogic national index increased only 5 percent after having risen more substantially in 2012 and 2013—these gains affected a larger share of the population than did the gains in equities, as more individuals own homes than own stocks (figure 11). Reflecting increases in home and equity prices, aggregate household net wealth has risen appreciably from its levels during the recession and its aftermath to more than

10. Change in real personal consumption expenditures and disposable personal income



SOURCE: Department of Commerce, Bureau of Economic Analysis.

11. Prices of existing single-family houses



NOTE: The data for the Zillow and S&P/Case-Shiller indexes extend through November 2014. The data for the CoreLogic index extend through December 2014. Each index has been normalized so that its peak is 100. The CoreLogic price index includes purchase transactions only and is adjusted by Federal Reserve Board staff. The S&P/Case-Shiller index reflects all arm's-length sales transactions nationwide.

SOURCE: The S&P/Case-Shiller U.S. National Home Price Index ("Index") is a product of S&P Dow Jones Indices LLC and/or its affiliates and has been licensed for use by the Board. Copyright © 2015 S&P Dow Jones Indices LLC, a subsidiary of the McGraw Hill Financial Inc., and/or its affiliates. All rights reserved. Redistribution, reproduction and/or photocopying in whole or in part are prohibited without written permission of S&P Dow Jones Indices LLC. For more information on any of S&P Dow Jones Indices LLC's indices please visit [www.spdji.com](http://www.spdji.com). S&P® is a registered trademark of Standard & Poor's Financial Services LLC and Dow Jones® is a registered trademark of Dow Jones Trademark Holdings LLC. Neither S&P Dow Jones Indices LLC, Dow Jones Trademark Holdings LLC, their affiliates nor their third party licensors make any representation or warranty, express or implied, as to the ability of any index to accurately represent the asset class or market sector that it purports to represent and neither S&P Dow Jones Indices LLC, Dow Jones Trademark Holdings LLC, their affiliates nor their third party licensors shall have any liability for any errors, omissions, or interruptions of any index or the data included therein.

## Challenges in Interpreting Measures of Longer-Term Inflation Expectations

In many economic models, inflation expectations are an important determinant of the behavior of actual inflation. For this reason, measures of inflation expectations are widely followed. Although none of the available measures is perfect, surveys of individuals, economists, and professional forecasters all shed some light on the inflation expectations of different groups. For the most part, these survey-based measures have been quite stable in recent years in the United States. Many analysts credit that stability with helping to keep the variation in actual inflation fairly limited despite pressures (such as the deep recession and sharp changes in energy prices) that might have had the potential to induce more substantial and long-lasting changes in inflation.

Measures of expected inflation can also be derived from financial instruments whose payouts are linked to inflation. For example, inflation compensation implied by Treasury Inflation-Protected Securities (TIPS), known as the TIPS breakeven inflation rate, is defined as the difference, at comparable maturities, between yields on nominal Treasury securities and yields on TIPS, which are indexed to headline consumer price index (CPI) inflation. Inflation swaps—contracts in which one party makes payments of certain fixed nominal amounts in exchange for cash flows that are indexed to cumulative CPI inflation over some horizon—provide alternative measures of inflation compensation. These measures of inflation compensation provide information about market participants' expectations of inflation, but that information is generally obscured by other sources of variation.

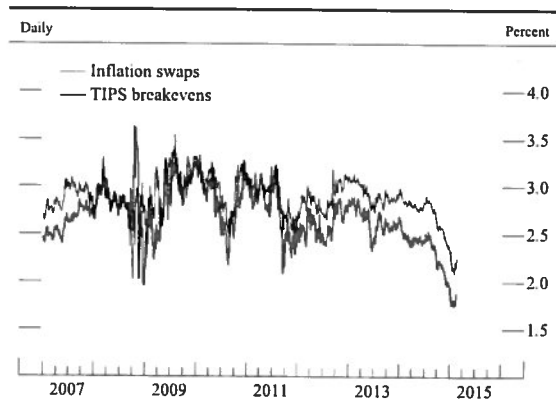
Both of those market-based measures of inflation compensation have declined noticeably since early August (figure A). Focusing on inflation compensation 5 to 10 years ahead is useful, particularly for monetary policy, because it gives a sense of where market participants expect inflation to settle in the long term after developments influencing inflation in the short term have run their course. The 5-to-10-year-forward inflation compensation measure computed from TIPS fell from an annual rate of around 2½ percent in early August to below 2 percent in January; over the same period, the swaps-based measure fell from around 2¾ percent to a little more than 2 percent. Market participants have offered several potential explanations for these declines, including the effects of the plunge in

oil prices and soft readings on overall and core inflation as well as concerns about the global growth outlook and disinflationary pressure abroad.<sup>1</sup>

The Federal Open Market Committee's (FOMC) 2 percent inflation objective is stated in terms of the price index for personal consumption expenditures (PCE), and PCE price inflation tends to run a few tenths of a percentage point lower, on average, than the CPI inflation used in pricing TIPS and inflation swaps. Thus, if these recent readings on inflation compensation could be interpreted as direct measures of expected CPI inflation, then they would probably correspond to expectations for PCE inflation that are lower than the Committee's objective. Recent FOMC statements have noted that the Committee will monitor both survey measures and these market-based inflation compensation measures closely.

1. In support of the latter explanation, market participants also noted the decline of inflation compensation abroad, in particular in the euro area. One possible reason for the effects of oil prices and realized inflation on longer-term inflation compensation is that, in response to changes in the intermediate-term inflation outlook, investors are reportedly more likely to adjust their positions in the more recently issued, and thus more liquid, longer-term TIPS rather than the older-vintage TIPS with shorter remaining maturities.

A. 5-to-10-year-forward inflation compensation



NOTE: TIPS is Treasury Inflation-Protected Securities.  
SOURCE: Federal Reserve Bank of New York; Barclays; Federal Reserve Board staff estimates.

Inflation compensation is distinct from inflation expectations, however, as both TIPS- and swaps-based measures of inflation compensation reflect not only expected inflation, but also an inflation risk premium—the compensation that holders of nominal securities demand for bearing inflation risk—as well as other premiums driven by liquidity differences and shifts in the relative supply and demand of nominal versus inflation-indexed securities. Federal Reserve System staff maintain several term structure models aimed at disentangling the various components of inflation compensation and providing estimates of inflation expectations and risk premiums.<sup>2</sup> Most staff models suggest that 5-to-10-year inflation expectations have remained relatively stable since last summer. Instead, the models tend to attribute at least part of the decline in inflation compensation to some reduction in inflation risk premiums and the effects of the other factors included in the models. However, these models cannot fully explain the recent decline in inflation compensation.

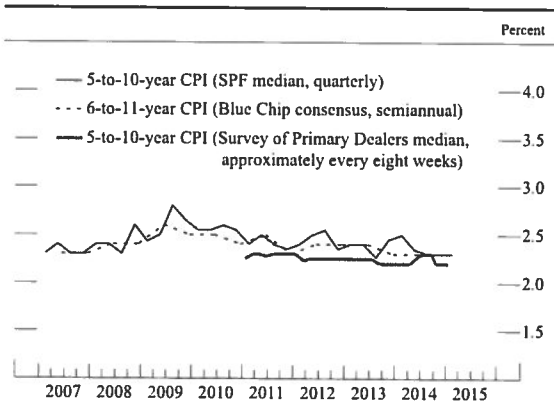
Distributions of future inflation derived from surveys and inflation options also display an interesting divergence. Distributions of inflation 5 to 10 years ahead that are derived from surveys of primary dealers

have remained stable since last summer—consistent with the stability of the other survey measures cited earlier. In contrast, information gleaned from 10-year inflation options (that is, caps and floors, which pay the holder when inflation is higher or lower than specified levels) suggests that investors may have recently become more concerned about lower inflation outcomes and less concerned about higher inflation outcomes. This shift could reflect an increase in the investors’ perceived likelihood of low inflation outcomes, but it could also reflect an increased willingness to pay higher premiums for insurance against such outcomes as well as other possible factors depressing long-horizon inflation compensation.

Thus, the results from the Federal Reserve’s staff models are consistent with readings from surveys of primary dealers, economists, professional forecasters, and consumers, all of which indicate that longer-run inflation expectations have remained generally stable (figure B). However, given the uncertainties in inferring inflation expectations from the market measures of inflation compensation, one cannot rule out a decline in inflation expectations among market participants.

2. For further details, see Michael Abrahams, Tobias Adrian, Richard Crump, and Emanuel Moench (2012), “Decomposing Real and Nominal Yield Curves,” Federal Reserve Bank of New York Staff Reports, no. 570 (New York: FRB New York, September, revised October 2013), [www.newyorkfed.org/research/staff\\_reports/sr570.html](http://www.newyorkfed.org/research/staff_reports/sr570.html); Jens H.E. Christensen, Jose A. Lopez, and Glenn D. Rudebusch (2010), “Inflation Expectations and Risk Premiums in Arbitrage-Free Model of Nominal and Real Bond Yields,” *Journal of Money, Credit and Banking*, vol. 42 (September, issue supplement s1), pp. 143–78; Stefania D’Amico, Don H. Kim, and Min Wei (2014), “Tips from TIPS: The Informational Content of Treasury Inflation-Protected Security Prices,” Finance and Economics Discussion Series 2014-24 (Washington: Board of Governors of the Federal Reserve System, January), [www.federalreserve.gov/pubs/feds/2014/201424/201424pap.pdf](http://www.federalreserve.gov/pubs/feds/2014/201424/201424pap.pdf); Andrea Ajello, Luca Benzoni, and Olena Chyruk (2012), “Core and ‘Crust’: Consumer Prices and the Term Structure of Interest Rates,” available at SSRN: <http://ssrn.com/abstract=1851906> or <http://dx.doi.org/10.2139/ssrn.1851906>; and Joseph G. Haubrich, George G. Pennacchi, and Peter Ritchken (2012), “Inflation Expectations, Real Rates, and Risk Premia: Evidence from Inflation Swaps,” *Review of Financial Studies*, vol. 25 (5), pp. 1588–629.

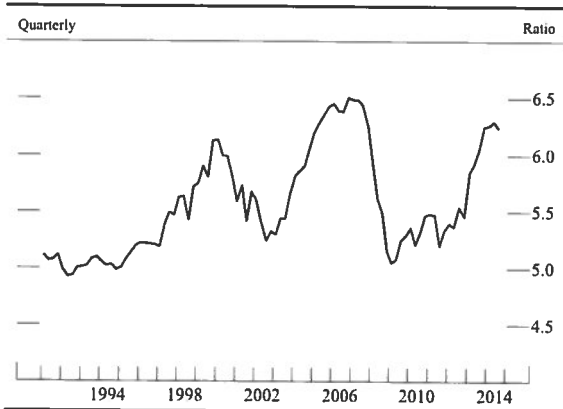
**B. Survey measures of longer-term inflation expectations**



NOTE: The Survey of Professional Forecasters (SPF) series starts on March 2007 and extends through March 2015. The Blue Chip consensus series starts on June 2007 and extends through December 2014. The Survey of Primary Dealers series starts on January 2011 and extends through January 2015. CPI is consumer price index.

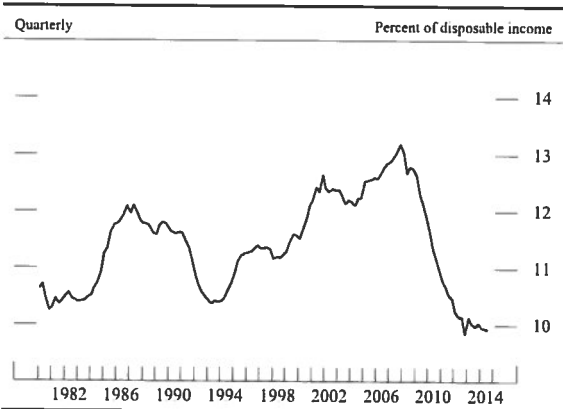
SOURCE: Federal Reserve Bank of Philadelphia, Survey of Professional Forecasters (SPF); Blue Chip Financial Forecasts; Federal Reserve Bank of New York, Survey of Primary Dealers.

12. Wealth-to-income ratio



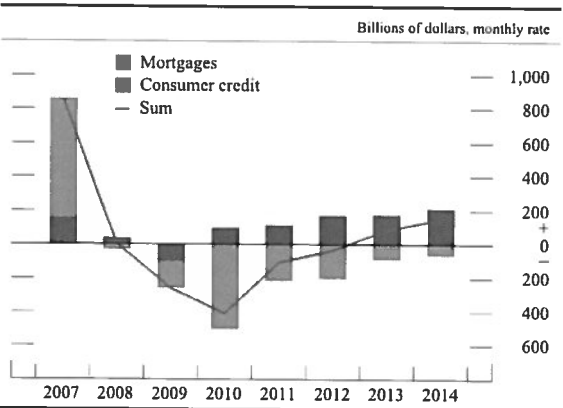
NOTE: The data extend through 2014:Q3. The series is the ratio of household net worth to disposable personal income.  
 SOURCE: For net worth, Federal Reserve Board, Statistical Release Z.1, "Financial Accounts of the United States"; for income, Department of Commerce, Bureau of Economic Analysis.

13. Household debt service



NOTE: The data extend through 2014:Q3. Debt service payments consist of estimated required payments on outstanding mortgage and consumer debt.  
 SOURCE: Federal Reserve Board, Statistical Release, "Household Debt Service and Financial Obligations Ratios."

14. Changes in household debt



NOTE: Changes are calculated from year-end to year-end, except 2014 changes, which are calculated from Q3 to Q3.  
 SOURCE: Federal Reserve Board, Statistical Release Z.1, "Financial Accounts of the United States."

six times the value of disposable personal income (figure 12).

Coupled with low interest rates, the rise in incomes has lowered debt payment burdens for many households. The household debt service ratio—that is, the ratio of required principal and interest payments on outstanding household debt to disposable personal income—has remained at a very low level by historical standards (figure 13).

... and increased credit availability for consumers

Consumer credit continued to expand through late 2014, as auto and student loans have remained available even to borrowers with lower credit scores (figure 14). In addition, credit cards have become somewhat more accessible to individuals on the lower end of the credit spectrum, and overall credit card debt increased moderately last year.

Consumer confidence has moved up

Consistent with the improvement in the labor market and the fall in energy prices, indicators of consumer sentiment moved up noticeably in the second half of last year. The University of Michigan Surveys of Consumers' index of consumer sentiment—which incorporates households' views about their own financial situations as well as broader economic conditions—has moved up strongly, on net, in recent months and is now close to its long-run average (figure 15). The Michigan survey's measure of households' expectations of real income changes in the year ahead has also continued to trend up over the past several months, perhaps reflecting the fall in gasoline prices. However, this measure remains substantially below its historical average and suggests a more guarded outlook than the headline sentiment index.

However, the pace of homebuilding has improved only slowly

After advancing reasonably well in 2012 and early 2013, the recovery in residential

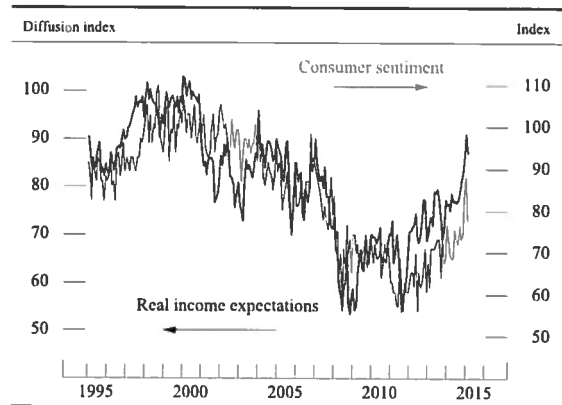
construction activity has slowed markedly. Single-family housing starts only edged up in 2014, and multifamily construction activity was also little changed (figure 16). And sales of both new and existing homes were flat, on net, last year (figure 17). In all, real residential investment rose only 2½ percent in 2014, and it remains well below its pre-recession peak. The weak recovery in construction likely relates to the rate of household formation, which, notwithstanding tentative signs of a recent pickup, has generally stayed very low despite the improvement in the labor market.

Lending policies for home purchases remained tight overall, although there are some indications that mortgage credit has started to become more widely accessible. Over the course of 2014, the fraction of home-purchase mortgages issued to borrowers with credit scores on the lower end of the spectrum edged up. Additionally, in the Senior Loan Officer Opinion Survey on Bank Lending Practices (SLOOS), several large banks reported having eased lending standards on prime home-purchase loans in the third and fourth quarters of last year.<sup>2</sup> In January, the Federal Housing Administration reduced its mortgage insurance premiums by about one-third of the level that had prevailed during the past four years—a step that may lower the cost of credit for households with small down payments and low credit scores. Even so, mortgages have remained difficult to obtain for many households.

Meanwhile, for borrowers who can qualify for a mortgage, the cost of credit is low. After rising appreciably around mid-2013, mortgage interest rates have since retraced much of those increases. The 30-year fixed mortgage rate declined roughly 60 basis points in 2014, and it has edged down further, on net, this year to a level not far from its all-time low

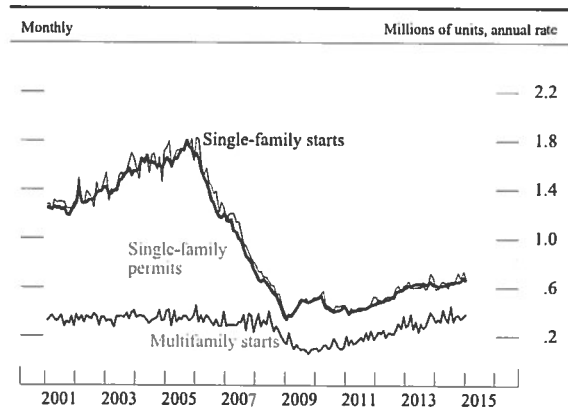
2. The SLOOS is available on the Board’s website at [www.federalreserve.gov/boarddocs/snloansurvey](http://www.federalreserve.gov/boarddocs/snloansurvey).

15. Indexes of consumer sentiment and income expectations



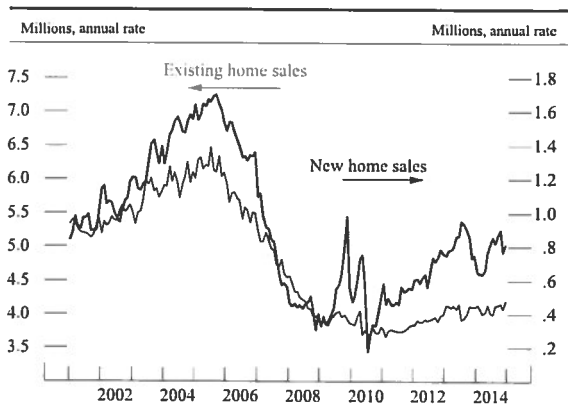
NOTE: The data are monthly and extend through February 2015. Consumer sentiment is indexed to 100 in 1966. Real income expectations are calculated as the net percent of survey respondents expecting family income to go up more than prices during the next year or two.  
SOURCE: University of Michigan Surveys of Consumers.

16. Private housing starts and permits



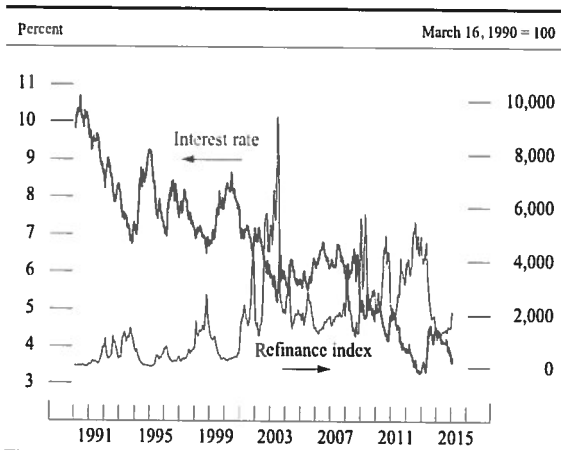
SOURCE: Department of Commerce, Bureau of the Census.

17. New and existing home sales



NOTE: The data extend through December 2014. “Existing home sales” includes single-family, condo, townhome, and co-op sales.  
SOURCE: For new single-family home sales, Census Bureau; for existing home sales, National Association of Realtors.

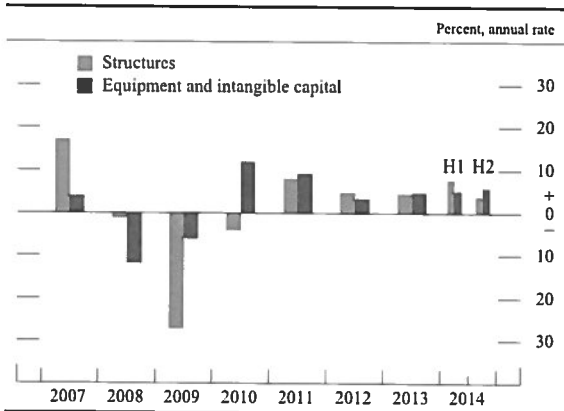
18. Mortgage interest rate and mortgage refinance index



NOTE: The interest rate data are for 30-year fixed-rate mortgages and are weekly through February 18, 2015. The refinance index data are a seasonally adjusted 4-week moving average through February 13, 2015.

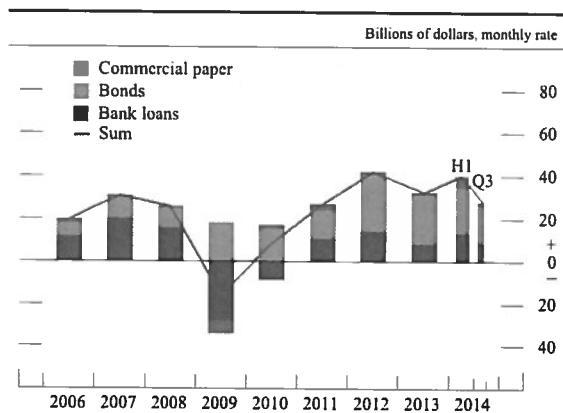
SOURCE: For interest rate data, Freddie Mac Primary Mortgage Market Survey, from Freddie Mac (Federal Home Loan Mortgage Corporation), [www.freddiemac.com/pmms](http://www.freddiemac.com/pmms); for refinance index data, the Mortgage Bankers Association.

19. Change in real business fixed investment



SOURCE: Department of Commerce, Bureau of Economic Analysis.

20. Selected components of net financing for nonfinancial businesses



NOTE: The data for the components except bonds are seasonally adjusted. SOURCE: Federal Reserve Board, Statistical Release Z.1, "Financial Accounts of the United States."

in 2012 (figure 18). Likely related to the most recent decline in mortgage rates, refinancing activity rose modestly in January.

Overall business investment has moved up, but investment in the energy sector is starting to be affected by the drop in oil prices

Business fixed investment rose at an annual rate of 5¼ percent in the second half of 2014, close to the rate of increase seen in the first half. Spending on E&I capital rose at an annual rate of about 6 percent, while spending on nonresidential structures moved up about 4 percent (figure 19). Business investment has been supported by strengthening final demand as well as by low interest rates and generally accommodative financial conditions. Regarding nonresidential structures, vacancy rates for existing properties have been declining, and financing conditions for new construction have eased further—both factors that bode well for future construction. More recently, however, the steep decline in the number of drilling rigs in operation suggests that a sharp falloff in the drilling and mining component of investment in nonresidential structures may be under way.

Corporate financing conditions were generally favorable

The financial condition of large nonfinancial firms generally remained solid in the second half of last year; profitability stayed high, and default rates on nonfinancial corporate bonds were generally very low. Nonfinancial firms have continued to raise funds through capital markets at a robust pace, given sturdy corporate credit quality, historically low interest rates on corporate bonds, and highly accommodative lending conditions for most firms (figures 20 and 21). Bond issuance by investment-grade nonfinancial firms, and syndicated lending to those firms, have both been particularly strong. However, speculative-grade issuance in those markets, which had remained elevated for most of 2014, diminished late in the year, because volatility



increased and spreads widened and perhaps also because of greater scrutiny by regulators of syndicated leveraged loans with weaker credit quality and lower repayment capacity.

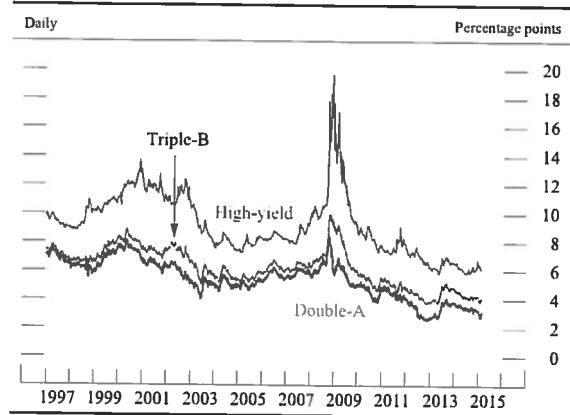
Credit also was readily available to most bank-dependent businesses. According to the October 2014 and January 2015 SLOOS reports, banks generally continued to ease price and nonprice terms on commercial and industrial (C&I) loans to firms of all sizes in the second half of 2014. That said, in the fourth quarter, several banks reported having tightened lending policies for oil and gas firms or, more broadly, in response to legislative, supervisory, or accounting changes. In addition, although overall C&I loans on banks' books registered substantial increases in the second half of 2014, loans to businesses in amounts of \$1 million or less—a proxy for lending to small businesses—increased only modestly. The weak growth in these small loans appears largely due to sluggish demand; however, bank lending standards to small businesses are still reportedly somewhat tighter than the midpoint of their range over the past decade despite considerable loosening over the past few years.

**Net exports held down second-half real GDP growth slightly**

Exports increased at a modest pace in the second half of 2014, held back by lackluster growth abroad as well as the appreciation of the dollar. Import growth was also relatively subdued, despite the impetus from the stronger dollar, and was well below the pace observed in the first half (figure 22). All told, real net trade was a slight drag on real GDP growth in the second half of 2014.

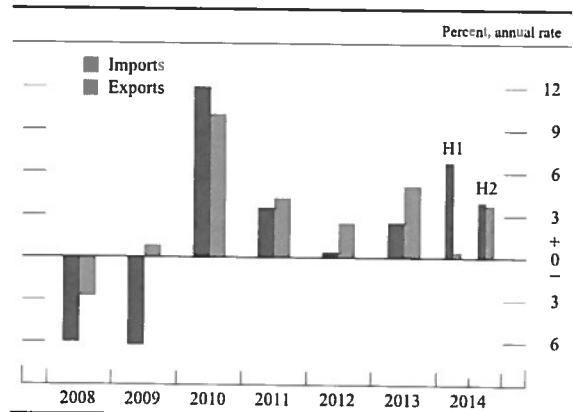
The current account deficit was little changed in the third quarter of 2014 and, at 2¼ percent of nominal GDP, was near its narrowest reading since the late 1990s (figure 23). The current account deficit in the first three quarters of 2014 was financed mainly by purchases of Treasury and corporate securities

21. Corporate bond yields, by securities rating



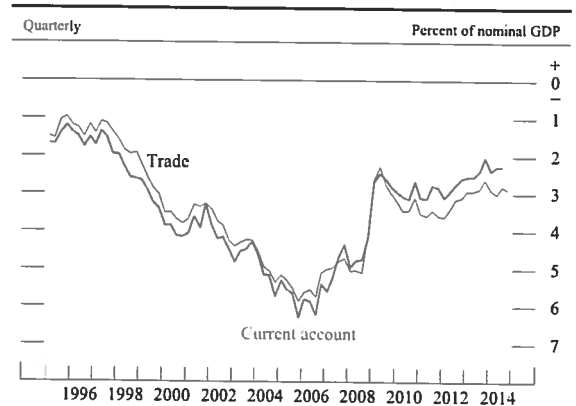
NOTE: The yields shown are yields on 10-year bonds.  
SOURCE: BofA Merrill Lynch Global Research, used with permission.

22. Change in real imports and exports of goods and services



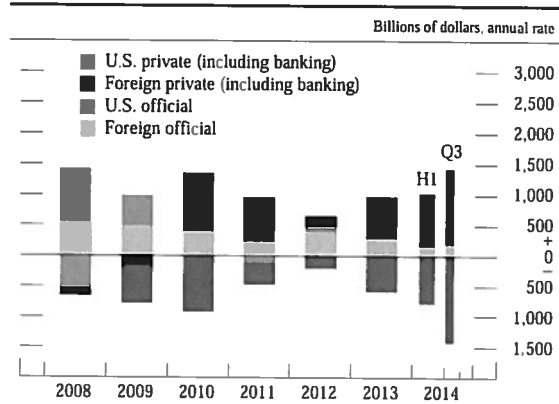
SOURCE: Department of Commerce, Bureau of Economic Analysis.

23. U.S. trade and current account balances



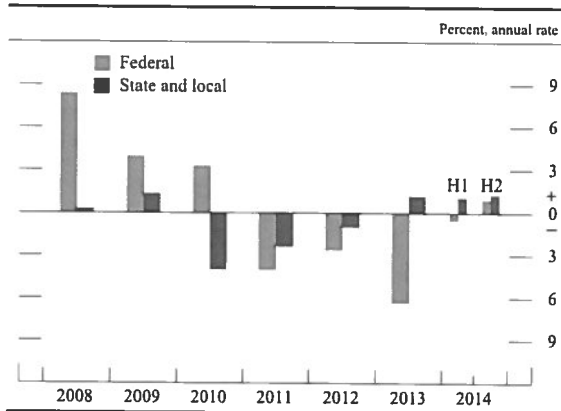
NOTE: The data for the current account extend through 2014:Q3. GDP is gross domestic product.  
SOURCE: Department of Commerce, Bureau of Economic Analysis.

24. U.S. net financial inflows



NOTE: Negative numbers indicate a balance of payments outflow, generated when U.S. residents, on net, purchase foreign assets or when foreign residents, on net, sell U.S. assets. A negative number for "U.S. private" or "U.S. official" indicates an increase in U.S. residents' holdings of foreign assets. U.S. official flows include the foreign currency acquired when foreign central banks draw on their swap lines with the Federal Reserve.  
SOURCE: Department of Commerce, Bureau of Economic Analysis.

25. Change in real government expenditures on consumption and investment



SOURCE: Department of Commerce, Bureau of Economic Analysis.

by foreign private investors (figure 24). In contrast, the pace of foreign official purchases in the first three quarters of the year was the slowest in more than a decade, reflecting a significant slowdown in reserve accumulation by emerging market economies (EMEs).

Federal fiscal policy was less of a drag on GDP . . .

Fiscal policy at the federal level had been a factor restraining GDP growth for several years, especially in 2013. In 2014, however, the contractionary effects of tax and spending changes eased appreciably as the restraining effects of the 2013 tax increases abated and there was a slowing in the declines in federal purchases due to sequestration and the Budget Control Act of 2011 (figure 25). Moreover, some of the overall drag on demand was offset in 2014 by an increase in transfers resulting from the Affordable Care Act.

The federal unified deficit narrowed further last year, reflecting both the previous years' spending cuts and an increase in tax receipts resulting from the ongoing economic expansion (figure 26). The budget deficit was 2¾ percent of GDP for fiscal year 2014, and the Congressional Budget Office projects that it will be about 2½ percent in 2015. As a result, overall federal debt held by the public stabilized as a share of GDP in 2014, albeit at a relatively high level (figure 27).

. . . and state and local government expenditures are also turning up

The expansion of economic activity has also led to continued slow improvements in the fiscal position of most state and local governments. Consistent with improving finances, states and localities expanded employment rolls in 2014 (figure 28). Furthermore, state and local expenditures on construction projects rose a touch last year following several years of declines.

## Financial Developments

### The expected path for the federal funds rate flattened

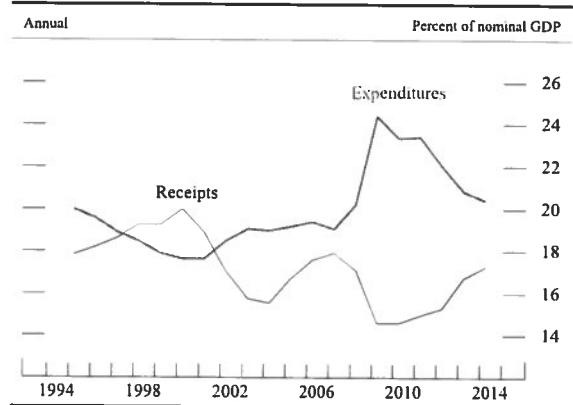
Market participants seemed to judge the incoming domestic economic data since the middle of last year, especially the employment reports, as supporting expectations for continued economic expansion in the United States; however, concerns about the foreign economic outlook weighed on investor sentiment. On balance, market-based measures of the expected (or mean) path of the federal funds rate through late 2017 have flattened, but the expected timing of the initial increase in the federal funds rate from its current target range was about unchanged. In addition, according to the results of the most recent Survey of Primary Dealers and the Survey of Market Participants, both conducted by the Federal Reserve Bank of New York just prior to the January FOMC meeting, respondents judged that the initial increase in the target federal funds rate was most likely to occur around mid-2015, little changed from the results of those surveys from last June.<sup>3</sup> Meanwhile, in part because the passage of time brought the anticipated date of the initial increase in the federal funds rate closer, measures of policy rate uncertainty based on interest rate derivatives edged higher, on net, from their mid-2014 levels.

### Longer-term Treasury yields and other sovereign benchmark yields declined

Yields on longer-term Treasury securities have continued to move down since the middle of last year on net (figure 29). In particular, the yields on 10- and 30-year nominal Treasury securities declined about 40 basis points and 60 basis points, respectively, from their levels at the end of June 2014. The decreases in

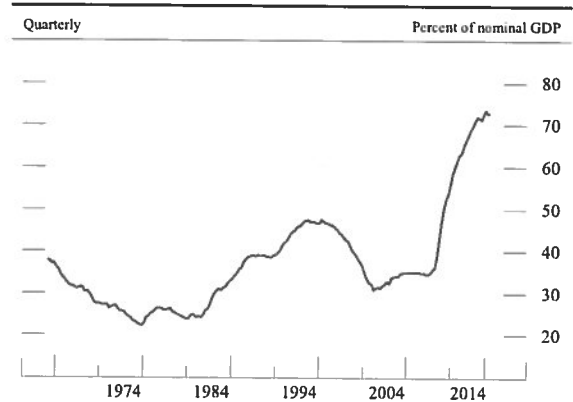
3. The results of the Survey of Primary Dealers and of the Survey of Market Participants are available on the Federal Reserve Bank of New York's website at [www.newyorkfed.org/markets/primarydealer\\_survey\\_questions.html](http://www.newyorkfed.org/markets/primarydealer_survey_questions.html) and [www.newyorkfed.org/markets/survey\\_market\\_participants.html](http://www.newyorkfed.org/markets/survey_market_participants.html), respectively.

26. Federal receipts and expenditures



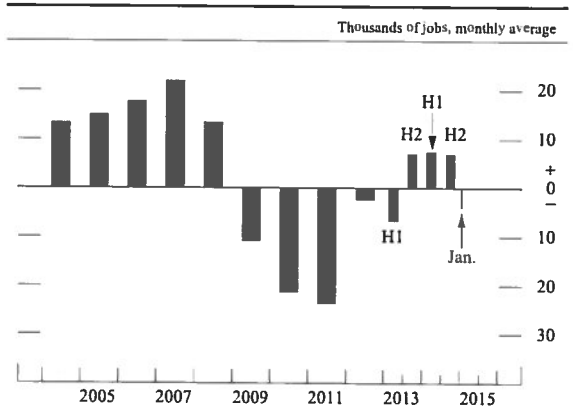
NOTE: The receipts and expenditures data are on a unified-budget basis and are for fiscal years (October through September); gross domestic product (GDP) data are for the four quarters ending in Q3.  
SOURCE: Office of Management and Budget.

27. Federal government debt held by the public



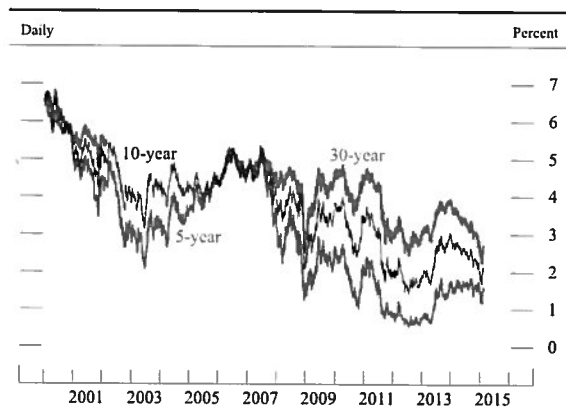
NOTE: The data extend through 2014:Q3. The data for gross domestic product (GDP) are at an annual rate. Debt held by the public is debt held at the end of the period.  
SOURCE: Department of Commerce, Bureau of Economic Analysis; Department of the Treasury, Bureau of the Fiscal Service.

28. State and local government employment change



SOURCE: Department of Labor, Bureau of Labor Statistics.

## 29. Yields on nominal Treasury securities



NOTE: The Treasury ceased publication of the 30-year constant maturity series on February 18, 2002, and resumed that series on February 9, 2006.  
SOURCE: Department of the Treasury.

longer-term yields were driven especially by reductions in longer-horizon forward rates. For example, the 5-year forward rate 5 years ahead dropped about 80 basis points over the same period. Long-term benchmark sovereign yields in advanced foreign economies (AFEs) have also moved down significantly in response to disappointing growth and very low and declining rates of inflation in a number of foreign countries as well as the associated actual and anticipated changes in monetary policy abroad.

The declines in longer-term Treasury yields and long-horizon forward rates seem to largely reflect reductions in term premiums—the extra return investors expect to obtain from holding longer-term securities as opposed to holding and rolling over a sequence of short-term securities for the same period. Market participants pointed to several factors that may help to explain the reduction in term premiums. First, very low and declining AFE yields and safe-haven flows associated with the deterioration in the foreign economic outlook likely have increased demand for Treasury securities. Second, the weaker foreign economic outlook coupled with the steep decline in oil prices may have led investors to put higher odds on scenarios in which U.S. inflation remains quite low for an extended period. Investors may see nominal long-term Treasury securities as an especially good hedge against such risks. Finally, market participants may have increased the probability they attach to outcomes in which U.S. economic growth is persistently subdued. Indeed, the 5-year forward real yield 5 years ahead, obtained from yields on Treasury Inflation-Protected Securities, has declined further, on net, since the middle of last year and stands well below levels commonly cited as estimates of the longer-run real short rate.

Consistent with moves in the yields on longer-term Treasury securities, yields on 30-year agency mortgage-backed securities (MBS)—an important determinant of mortgage interest

rates—decreased about 30 basis points, on balance, over the second half of 2014 and early 2015 (figure 30).

**Liquidity conditions in Treasury and agency MBS markets were generally stable . . .**

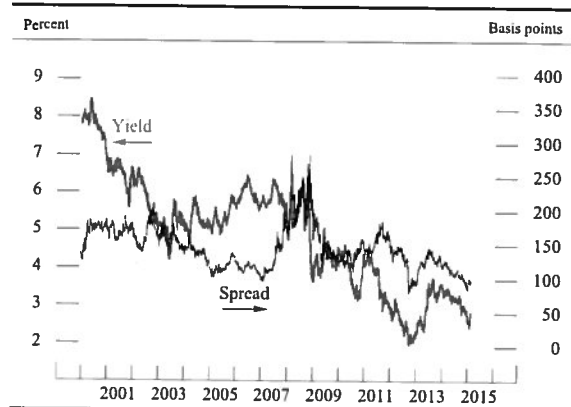
On balance, indicators of Treasury market functioning remained stable over the second half of 2014 even as the Federal Reserve trimmed the pace of its asset purchases and ultimately brought the purchase program to a close at the end of October. The Treasury market experienced a sharp drop in yields and significantly elevated volatility on October 15, as technical factors reportedly amplified price movements following the release of the somewhat weaker-than-expected September U.S. retail sales data. However, market conditions recovered quickly and liquidity measures, such as bid-asked spreads, have been generally stable since then. Moreover, Treasury auctions generally continued to be well received by investors.

As in the Treasury market, liquidity conditions in the agency MBS market were generally stable, with the exception of mid-October. Dollar-roll-implied financing rates for production coupon MBS—an indicator of the scarcity of agency MBS for settlement—suggested limited settlement pressures in these markets over the second half of 2014 and early 2015 (figure 31).

**. . . and short-term funding markets also continued to function well as rates moved slightly higher overall**

Conditions in short-term dollar funding markets also remained stable during the second half of 2014 and early 2015. Both unsecured and secured money market rates moved modestly higher late in 2014 but remained close to their averages since the federal funds rate reached its effective lower bound. Unsecured offshore dollar funding markets generally did not exhibit signs of

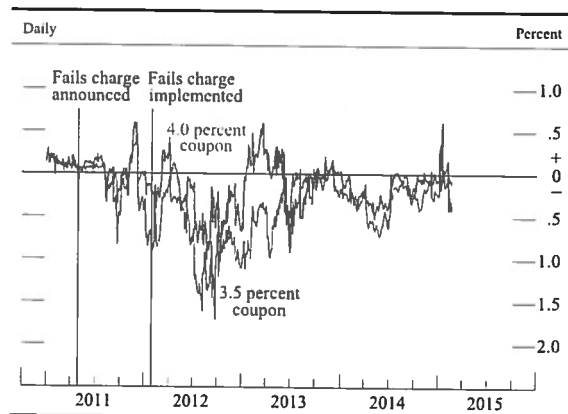
30. Yield and spread on agency mortgage-backed securities



NOTE: The data are daily. Yield shown is for the Fannie Mae 30-year current coupon, the coupon rate at which new mortgage-backed securities would be priced at par, or face, value. Spread shown is to the average of the 5- and 10-year nominal Treasury yields.

SOURCE: Department of the Treasury; Barclays.

31. Dollar-roll-implied financing rates (front month), Fannie Mae 30-year current coupon

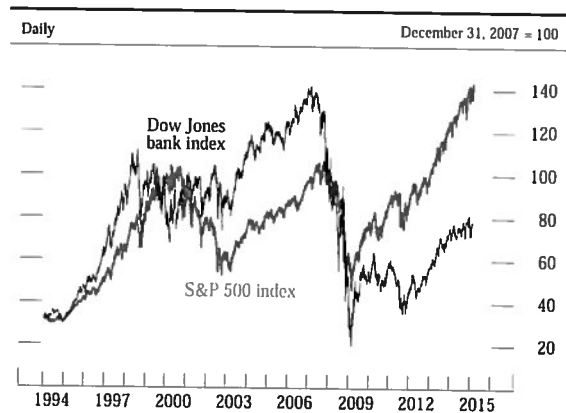


SOURCE: J.P. Morgan.

stress, and the repurchase agreement, or repo, market functioned smoothly with modest year-end pressures.

Money market participants continued to focus on the ongoing testing of the Federal Reserve's monetary policy tools. The offering rate in the overnight reverse repurchase agreement (ON RRP) exercise has continued to provide a soft floor for other rates on secured borrowing, and the term RRP testing operations that were conducted in December and matured in early January seemed to help alleviate year-end pressures in money markets. For a detailed discussion of the testing of monetary policy tools, see the box "Additional Testing of Monetary Policy Tools" in Part 2.

### 32. Equity prices



SOURCE: Dow Jones bank index and Standard & Poor's 500 index via Bloomberg.

### Broad equity price indexes rose despite higher volatility, while risk spreads on corporate debt widened

Over the second half of 2014 and early 2015, broad measures of U.S. equity prices increased further, on balance, but stock prices for the energy sector declined substantially, reflecting the sharp drops in oil prices (figure 32). Although increased concerns about the foreign economic outlook seemed to weigh on risk sentiment, the generally positive tone of U.S. economic data releases as well as declining longer-term interest rates appeared to provide support for equity prices. Overall equity valuations by some conventional measures are somewhat higher than their historical average levels, and valuation metrics in some sectors continue to appear stretched relative to historical norms. Implied volatility for the S&P 500 index, as calculated from options prices, increased moderately, on net, from low levels over the summer.

Corporate credit spreads, particularly those for speculative-grade bonds, widened from the fairly low levels of last summer, in part because of the underperformance of energy firms. Overall, corporate bond spreads across the credit spectrum have been near their historical median levels recently. For further

discussion of asset prices and other financial stability issues, see the box “Developments Related to Financial Stability.”

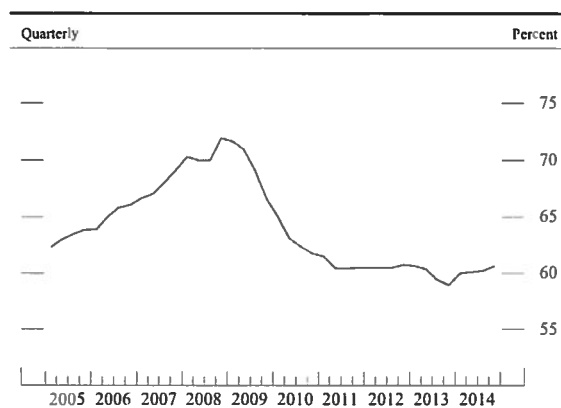
### Bank credit and the M2 measure of the money stock continued to expand

Aggregate credit provided by commercial banks increased at a solid pace in the second half of 2014 (figure 33). The expansion in bank credit was mainly driven by moderate loan growth coupled with continued robust expansion of banks’ holdings of U.S. Treasury securities, which was reportedly influenced by efforts of large banks to meet the new Basel III Liquidity Coverage Ratio requirements. The growth of loans on banks’ books was generally consistent with the SLOOS reports of increased loan demand and further easing of lending standards for many loan categories over the second half of 2014. Meanwhile, delinquency and charge-off rates fell across most major loan types.

Measures of bank profitability were little changed in the second half of 2014, on net, and remained below their historical averages (figure 34). Equity prices of large domestic bank holding companies (BHCs) have increased moderately, on net, since the middle of last year (figure 32). Credit default swap (CDS) spreads for large BHCs were about unchanged.

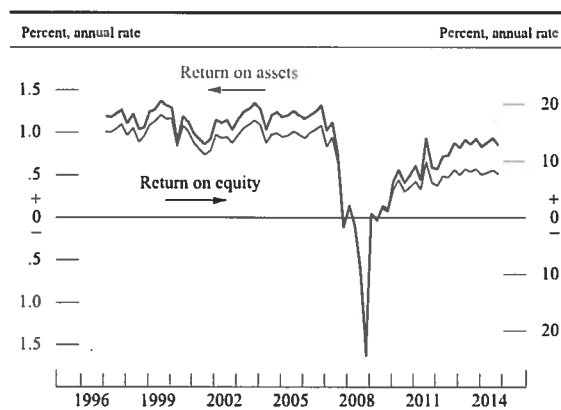
The M2 measure of the money stock has increased at an average annualized rate of about 5½ percent since last June, below the pace registered in the first half of 2014 and about in line with the pace of nominal GDP. The deceleration was driven by a moderation in the growth rate of liquid deposits in the banking sector relative to the first half of 2014. Although demand for currency weakened in the third quarter of 2014 relative to the first half of the year, currency growth has been strong since November.

33. Ratio of total commercial bank credit to nominal gross domestic product



SOURCE: Federal Reserve Board, Statistical Release H.8, “Assets and Liabilities of Commercial Banks in the United States”; Department of Commerce, Bureau of Economic Analysis.

34. Profitability of bank holding companies



NOTE: The data, which are seasonally adjusted, are quarterly.  
SOURCE: Federal Reserve Board, FR Y-9C, Consolidated Financial Statements for Bank Holding Companies.

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## Developments Related to Financial Stability

The financial vulnerabilities in the U.S. financial system overall have remained moderate since the previous *Monetary Policy Report*. In the past few years, capital and liquidity positions in the banking sector have continued to improve, net wholesale short-term funding in the financial sector has decreased substantially, and aggregate leverage of the private nonfinancial sector has not picked up. However, valuation pressures are notable in some asset markets, although they have eased a little on balance. Leverage at lower-rated nonfinancial firms has become more pronounced. Recent developments in Greece have rekindled concerns about the country defaulting and exiting the euro system.

With regard to asset valuations, price-to-earnings and price-to-sales ratios are somewhat elevated, suggesting some valuation pressures. However, estimates of the equity premium remain relatively wide, as the long-run expected return on equity exceeds the low real Treasury yield by a notable margin, suggesting that investors still expect somewhat higher-than-average compensation relative to historical standards for bearing the additional risk associated with holding equities. Risk spreads for corporate bonds have widened over recent months, especially for speculative-grade firms, in part because of concerns about the credit quality of energy-related firms, though yields remain near historical lows, reflecting low term premiums. Residential real estate valuations appear within historical norms, with recent data pointing to some cooling of house price gains in regions that recently experienced rapid price appreciation. However, valuation pressures in the commercial real estate market may have increased in recent quarters as prices have risen relative to rents, and underwriting standards in securitizations have weakened somewhat, though debt growth remains moderate.

The private nonfinancial sector credit-to-GDP ratio has declined to roughly its level in the mid-2000s. At lower-rated and unrated nonfinancial businesses, however, leverage has continued to increase with the rapid growth in high-yield bond issuance and

leveraged loans in recent years. The underwriting quality of leveraged loans arranged or held by banking institutions in 2014:Q4 appears to have improved slightly, perhaps in response to the stepped-up enforcement of the leveraged lending guidance. However, new deals continue to show signs of weak underwriting terms and heightened leverage that are close to levels preceding the financial crisis.

As a result of steady improvements in capital and liquidity positions since the financial crisis, U.S. banking firms, in aggregate, appear to be better positioned to absorb potential shocks—such as those related to litigation, falling oil prices, and financial contagion originating abroad—and to meet strengthening credit demand. The sharp decline in oil prices, if sustained, may lead to credit strains for some banks with concentrated exposures to the energy sector, but at banks that are more diversified, potential losses are likely to be offset by the positive effects of lower oil prices on the broader economy. Thirty-one large bank holding companies (BHCs) are currently undergoing their annual stress tests, the results of which are scheduled to be released in March.

Leverage in the nonbank financial sector appears, on balance, to be at moderate levels. New securitizations, which contribute to financial sector leverage, have been boosted by issuance of commercial mortgage-backed securities (CMBS) and collateralized loan obligations (CLOs), which remained robust amid continued reports of relatively accommodative underwriting standards for the underlying assets. That said, the risk retention rules finalized in October, which require issuers to retain at least 5 percent of any securitizations issued, have the potential to affect market activity, especially in the private-label residential mortgage-backed securities, non-agency CMBS, and CLO sectors.

Reliance on wholesale short-term funding by nonbank financial institutions has declined significantly in recent years and is low by historical standards. However, prime money market funds with a fixed net asset value remain vulnerable to investor runs if there is a fall in the market value of their assets. Furthermore,

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the growth of bond mutual funds and exchange-traded funds (ETFs) in recent years means that these funds now hold a much higher fraction of the available stock of relatively less liquid assets—such as high-yield corporate debt, bank loans, and international debt—than they did before the financial crisis. As mutual funds and ETFs may appear to offer greater liquidity than the markets in which they transact, their growth heightens the potential for a forced sale in the underlying markets if some event were to trigger large volumes of redemptions.

Since the previous *Monetary Policy Report*, the Federal Reserve has taken further steps to improve the resiliency of the financial system. First, the Federal Reserve Board and other federal banking agencies finalized several rules to enhance the capital and liquidity positions of large banking organizations. In particular, a final rule on a liquidity coverage ratio was issued, requiring large and internationally active banking organizations to hold a certain minimum amount of high-quality liquid assets, such as central bank reserves and government and corporate debt that can be converted easily and quickly into cash. Another final rule was adopted to modify the definition of the supplementary leverage ratio in a manner consistent with the recent changes agreed to by the Basel Committee on Banking Supervision. The technical modifications adjust the amount of certain off-balance-sheet items included in the ratio, such as credit derivatives, repurchase agreement-style transactions, and lines of credit. The changes strengthen the ratio by more appropriately capturing a banking organization's on- and off-balance-sheet exposures and, based on estimates, would increase capital requirements, on balance, across banking firms.

In addition, the Federal Reserve issued several rules to conform to Dodd-Frank Act mandates. A final rule was issued to implement section 622 of the act, which generally prohibits a financial company (defined generally as an insured depository institution or depository institution holding company) from combining with another company if the resulting

company's liabilities would exceed 10 percent of the aggregate consolidated liabilities of all such financial companies. Another final rule, issued jointly by several federal agencies, requires the sponsors of asset-backed securities (ABS) to retain not less than 5 percent of the credit risk of the assets collateralizing the ABS issuance unless certain underwriting criteria on the securitized assets are met. The rule also generally prohibits the sponsor from transferring or hedging that credit risk. Moreover, several federal agencies jointly issued a proposed rule establishing minimum margin requirements for certain swap contracts that are not cleared through central counterparties.

In addition, the Federal Reserve proposed a rule to further strengthen the capital positions of the most systemically important U.S. bank holding companies (BHCs). The proposal establishes a methodology to identify whether a U.S. BHC is a global systemically important banking organization (GSIB) and so would be subject to a risk-based capital surcharge calibrated based on its systemic profile. A GSIB would be required to calculate its capital surcharge under two methods and would be subject to the higher of the two surcharges. The first method is consistent with the Basel framework, which results in capital surcharges ranging from 1.0 to 2.5 percent. The second method, which takes into account a measure of the firm's reliance on short-term wholesale funding, results in capital surcharges ranging from 1.0 to 4.5 percent. Failure to maintain the capital surcharge would subject the GSIB to restrictions on capital distributions and discretionary bonus payments.

Finally, the Federal Reserve invited public comment on enhanced prudential standards for the regulation and supervision of General Electric Capital Corporation (GECC), a nonbank financial company that the Financial Stability Oversight Council has designated for supervision by the Federal Reserve Board. In light of the substantial similarity of GECC's activities and risk profile to those of a similarly sized BHC, the Federal Reserve is proposing to apply enhanced prudential standards to GECC similar to those applied to large BHCs.

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**Municipal bond markets functioned smoothly, but some issuers remained strained**

Credit conditions in municipal bond markets have generally remained stable since the middle of last year. Over that period, the MCDX—an index of CDS spreads for a broad portfolio of municipal bonds—and ratios of yields on 20-year general obligation municipal bonds to those on longer-term Treasury securities increased slightly.

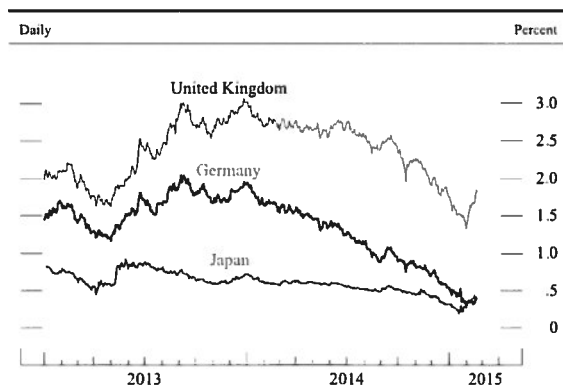
Nevertheless, significant financial strains were still evident for some issuers. Puerto Rico, with speculative-grade-rated general obligation bonds, continued to face challenges from subdued economic performance, severe indebtedness, and other fiscal pressures. Meanwhile, the City of Detroit emerged from bankruptcy late in 2014 after its debt restructuring plan was approved by a federal judge.

*International Developments*

**Bond yields in the advanced foreign economies continued to decline . . .**

As noted previously, long-term sovereign yields in the AFEs moved down further during the second half of 2014 and into early 2015 on continued low inflation readings abroad and heightened concerns over the strength of foreign economic growth as well as amid substantial monetary policy accommodation (figure 35). German yields fell to record lows, as the European Central Bank (ECB) implemented new liquidity facilities, purchased covered bonds and asset-backed securities, and announced it would begin buying euro-area sovereign bonds. Specifically, the ECB said that it would purchase €60 billion per month of euro-area public and private bonds through at least September 2016. Japanese yields also declined, reflecting the expansion by the Bank of Japan (BOJ) of its asset purchase program. In the United Kingdom, yields fell as data showed declining inflation and some moderation in economic growth, although they

35. 10-year nominal benchmark yields in advanced foreign economies



SOURCE: Bloomberg.

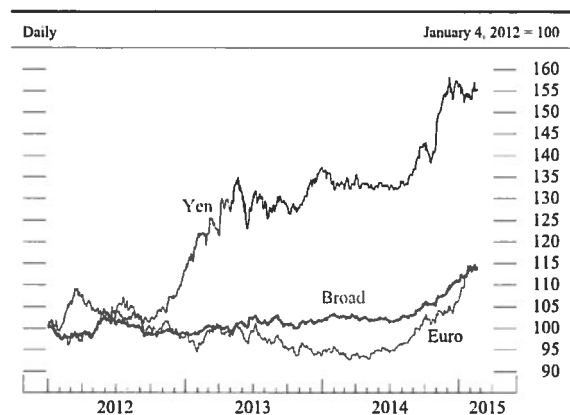
have retraced a little of that move in recent weeks, in part as market sentiment toward the U.K. outlook appears to have improved somewhat. In emerging markets, yields were mixed—falling, for the most part, in Asia and generally rising modestly in Latin America—as CDS spreads widened amid growing credit concerns, particularly in some oil-exporting countries.

**... while the dollar has strengthened markedly**

The broad nominal value of the dollar has increased markedly since the middle of 2014, with the U.S. dollar appreciating against almost all currencies (figure 36). The increase in the value of the dollar was largely driven by additional monetary easing abroad and rising concerns about foreign growth—forces similar to those that drove benchmark yields lower—in the face of expectations of solid U.S. growth and the anticipated start of monetary tightening in the United States later this year. Both the euro and the yen have depreciated about 20 percent against the dollar since mid-2014. Notwithstanding the sharp nominal appreciation of the dollar since mid-2014, the real value of the dollar, measured against a broad basket of currencies, is currently somewhat below its historical average since 1973 and well below the peak it reached in early 1985 (figure 37).

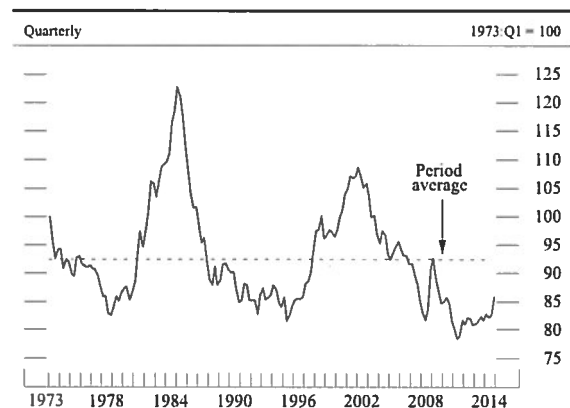
Foreign equity indexes were mixed over the period (figure 38). Japanese equities outperformed other AFE indexes, helped by the BOJ’s asset purchase expansion. Euro-area equities are up modestly from their mid-2014 levels, boosted recently by monetary easing. However, euro-area bank shares substantially underperformed broader indexes, partly reflecting low profitability, weak operating environments, and lingering vulnerabilities to economic and financial shocks. EME equities indexes were mixed, with most emerging Asian indexes rising and some of the major Latin American indexes moving down.

36. U.S. dollar exchange rate against broad index and selected major currencies



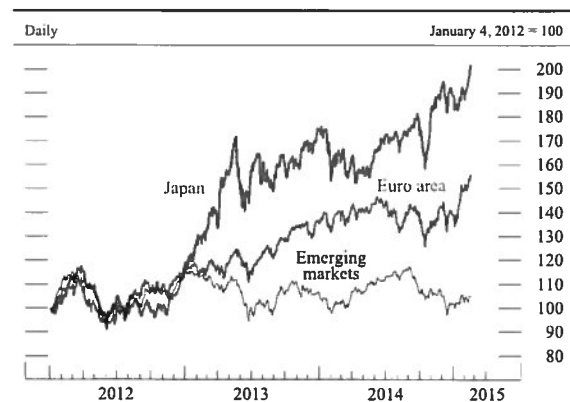
NOTE: The data are in foreign currency units per dollar.  
SOURCE: Federal Reserve Board, Statistical Release H.10, "Foreign Exchange Rates."

37. Broad real value of the dollar



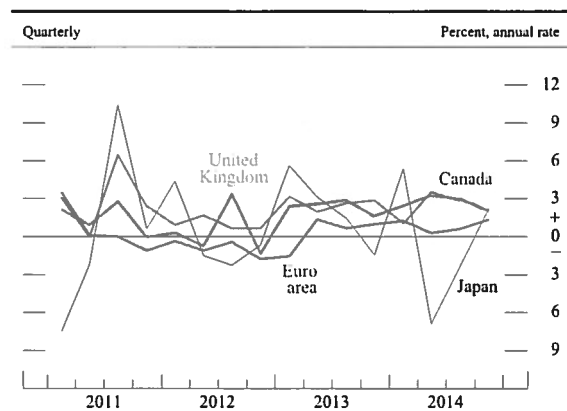
NOTE: The data are in foreign currency units per dollar.  
SOURCE: Federal Reserve Board, Statistical Release H.10, "Foreign Exchange Rates."

38. Equity indexes for selected foreign economies



SOURCE: For emerging markets, Morgan Stanley Emerging Markets MXEF Capital Index; for the euro area, Dow Jones Euro STOXX Index; for Japan, Tokyo Stock Price Index (TOPIX).

## 39. Real gross domestic product growth in selected advanced foreign economies



NOTE: The data for Canada extend through 2014:Q3. The data for the United Kingdom, the euro area, and Japan extend through 2014:Q4.

SOURCE: For Canada, Statistics Canada; for the United Kingdom, Office for National Statistics; for the euro area, Eurostat; for Japan, Cabinet Office, Government of Japan.

### Economic growth in the advanced foreign economies, while still generally weak, firmed toward the end of the year

Economic growth in the AFEs, which was weak in the first half of 2014, firmed toward the end of the second half of the year, supported in part by lower oil prices and more accommodative monetary policies (figure 39). The euro-area economy barely grew in the third quarter and unemployment remained near record highs, but the pace of economic activity moved up in the fourth quarter. Notwithstanding more supportive monetary policy and the recent pickup in euro-area growth, negotiations over additional financial assistance for Greece have the potential to trigger adverse market reactions and resurrect financial stresses that might impair growth in the broader euro-area economy. Japanese real GDP contracted again in the third quarter, following a tax hike-induced plunge in the second quarter, but it rebounded toward the end of the year as exports and household spending increased. In contrast, economic activity in the United Kingdom and Canada was robust in the third quarter but moderated in the fourth quarter.

The fall in oil prices and other commodity prices pushed down headline inflation across the major AFEs. Most notably, 12-month euro-area inflation continued to trend down, falling to negative 0.6 percent in January. Declines in inflation and in market-based measures of inflation expectations since mid-2014 prompted the ECB to increase its monetary stimulus. Similar considerations led the BOJ to step up its pace of asset purchases in October. The Bank of Canada lowered its target for the overnight rate in January in light of the depressing effect of lower oil prices on Canadian inflation and economic activity, as oil exports are nearly 20 percent of total goods exports. Several other foreign central banks lowered their policy rates, either reaching or pushing further into negative territory, including in Denmark, Sweden, and

Switzerland—the last of which did so in the context of removing its floor on the euro-Swiss franc exchange rate.

### **Growth in the emerging market economies improved but remained subdued**

Following weak growth earlier last year, overall economic activity in the EMEs improved a bit in the second half of 2014, but performance varied across economies. Growth in Asia was generally solid, supported by external demand, particularly from the United States, and improved terms of trade due to the sharp decline in commodity prices. In contrast, the decline in commodity prices, along with macroeconomic policy challenges, weighed on economic activity in several South American countries.

In China, exports expanded rapidly in the second half of last year, but fixed investment softened, as real estate investment slowed amid a weakening property market. Responding to increased concerns over the strength of growth, the authorities announced additional targeted stimulus measures in an effort to prevent the economy from slowing abruptly. In much of the rest of emerging Asia, exports, particularly to the United States, supported a step-up in growth from the first half of the year. The Mexican economy continued to grow at a moderate pace in the second half

of 2014, with solid exports to the United States but lingering softness in household demand. In Brazil, economic activity remained lackluster amid falling commodity prices, diminished business confidence, and tighter macroeconomic policy. Declining oil prices were especially disruptive for several economies with heavy dependence on oil exports, including Russia and Venezuela.

Inflation continued to be subdued in most EMEs. The fall in the price of oil contributed to a moderation of headline inflation in several EMEs, including China. However, this contribution was limited in many EMEs due to the prevalence of administered energy prices, which lower the pass-through of changes in oil prices to consumer prices. In several countries, including Indonesia and Malaysia, the fall in energy prices prompted governments to cut fuel subsidies, leading to a rise in domestic prices of fuel and in inflation late in 2014. With inflation low or declining, some central banks, including those of China, Korea, and Chile, loosened monetary policy to support growth. In other EMEs, including Brazil and Malaysia, inflationary pressures stemming from depreciating currencies or from reductions in fuel subsidies prompted central banks to raise policy rates. The central bank of Russia sharply tightened monetary policy to combat inflationary pressures and stabilize its financial markets, which came under considerable pressure in late 2014.



## PART 2

### MONETARY POLICY

*The Federal Open Market Committee (FOMC) concluded its asset purchase program at the end of October in light of the substantial improvement in the outlook for the labor market since the inception of the program. To support further progress toward maximum employment and price stability, the FOMC has kept the target federal funds rate at its effective lower bound and maintained the Federal Reserve's holdings of longer-term securities at sizable levels. To give greater clarity to the public about its policy outlook, the Committee has also continued to provide qualitative guidance regarding the future path of the federal funds rate. In particular, the Committee indicated at its two most recent meetings that it can be patient in beginning to normalize the stance of monetary policy and continued to emphasize the data-dependent nature of its policy stance. Following its September meeting, and as part of prudent planning, the Committee announced updated principles and plans for the eventual normalization of monetary policy.*

#### **The FOMC concluded its asset purchases at the end of October in light of substantial improvement in the outlook for the labor market**

At the end of October, the FOMC ended the asset purchase program that began in September 2012 after having made further measured reductions in the pace of its asset purchases at the prior meetings in July and September.<sup>4</sup> The decision to end the purchase program reflected the substantial improvement in the outlook for the labor market since the program's inception—which had been the goal of the asset purchases—and the Committee's judgment that the overall recovery was sufficiently strong to support ongoing progress toward the Committee's policy objectives. However, the Committee judged that a high degree of policy accommodation still remained appropriate and maintained its existing policy of reinvesting principal payments from its holdings of agency debt and agency mortgage-backed securities (MBS) in agency MBS and of rolling over maturing Treasury securities at auction. By keeping the Federal Reserve's holdings of longer-term securities at sizable levels, this policy is expected to help maintain accommodative financial conditions by putting

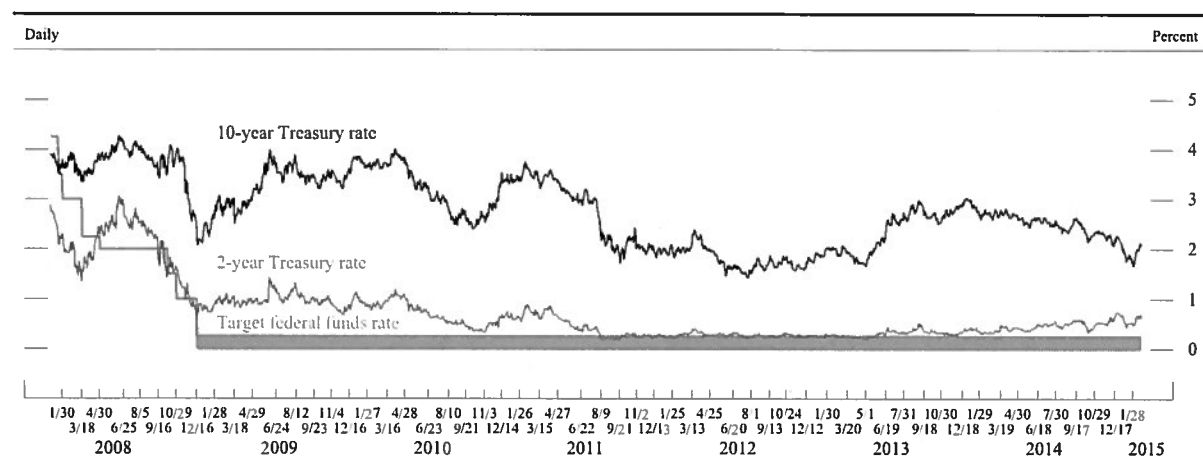
downward pressure on longer-term interest rates and supporting mortgage markets. In turn, those effects are expected to contribute to progress toward both the maximum employment and price stability objectives of the FOMC.

#### **To support further progress toward its objectives, the Committee has kept the target federal funds rate at its lower bound and updated its forward rate guidance**

The Committee has maintained the exceptionally low target range of 0 to ¼ percent for the federal funds rate to support further progress toward its objectives of maximum employment and price stability (figure 40). In addition, the FOMC has provided guidance about the likely future path of the federal funds rate in an effort to give greater clarity to the public about its policy outlook. In particular, the Committee has reiterated that, in determining how long to maintain this target range, it will assess realized and expected progress toward its objectives. This assessment will continue to take into account a wide range of information, including measures of labor market conditions, indicators of inflation pressures and inflation expectations, and readings on financial and international developments. Based on its assessment of these factors, before updating its guidance in December, the Committee had been indicating that it likely would be appropriate to maintain

4. See Board of Governors of the Federal Reserve System (2014), "Federal Reserve Issues FOMC Statement," press release, October 29, [www.federalreserve.gov/newsevents/press/monetary/20141029a.htm](http://www.federalreserve.gov/newsevents/press/monetary/20141029a.htm).

## 40. Selected interest rates



NOTE: The 2-year and 10-year Treasury rates are the constant-maturity yields based on the most actively traded securities. The dates on the horizontal axis are those of regularly scheduled Federal Open Market Committee meetings.

SOURCE: Department of the Treasury; Federal Reserve Board.

the current target range for the federal funds rate for a considerable time following the end of the asset purchase program, especially if projected inflation continued to run below the Committee's 2 percent longer-run goal and provided that longer-term inflation expectations remained well anchored.

In light of the conclusion of the asset purchase program at the end of October and the further progress that the economy had made toward the Committee's objectives, the FOMC updated its forward guidance at its December meeting. In particular, the Committee stated that it can be patient in beginning to normalize the stance of monetary policy, but it also emphasized that the Committee saw the revised language as consistent with the guidance in its previous statement.<sup>5</sup> The Committee restated the updated forward guidance following its January meeting based on its assessment of the economic information available at that time.<sup>6</sup>

5. See Board of Governors of the Federal Reserve System (2014), "Federal Reserve Issues FOMC Statement," press release, December 17, [www.federalreserve.gov/newsevents/press/monetary/20141217a.htm](http://www.federalreserve.gov/newsevents/press/monetary/20141217a.htm).

6. See Board of Governors of the Federal Reserve System (2015), "Federal Reserve Issues FOMC Statement," press release, January 28, [www.federalreserve.gov/newsevents/press/monetary/20150128a.htm](http://www.federalreserve.gov/newsevents/press/monetary/20150128a.htm).

In her December press conference, Chair Yellen emphasized that the update to the forward guidance did not signify a change in the Committee's policy intentions, but rather was a better reflection of the Committee's focus on the economic conditions that would make an increase in the federal funds rate appropriate.<sup>7</sup> Chair Yellen additionally indicated that, consistent with the new language, the Committee was unlikely to begin the normalization process for at least the following two meetings. There are a range of views within the Committee regarding the appropriate timing of the first increase in the federal funds rate, in part reflecting differences in participants' expectations for how the economy would evolve. By the time of liftoff, the Committee expects some further decline in the unemployment rate and additional improvement in labor market conditions. In addition, the Committee anticipates that, on the basis of incoming data, it will be reasonably confident that inflation will move back over the medium term to its 2 percent objective.

7. See Board of Governors of the Federal Reserve System (2014), "Transcript of Chair Yellen's FOMC Press Conference," December 17, [www.federalreserve.gov/mediacenter/files/FOMCpresconf20141217.pdf](http://www.federalreserve.gov/mediacenter/files/FOMCpresconf20141217.pdf).



The Committee has reiterated that, when it decides to begin to remove policy accommodation, it will take a balanced approach consistent with its longer-run goals of maximum employment and inflation of 2 percent. In addition, the Committee continues to anticipate that, even after employment and inflation are near mandate-consistent levels, economic conditions may, for some time, warrant keeping the target federal funds rate below levels the Committee views as normal in the longer run. As emphasized by Chair Yellen in her recent press conferences, FOMC participants provide a number of explanations for this view, with many citing the residual effects of the financial crisis. These effects are expected to ease gradually, but they are seen as likely to continue to constrain household spending for some time.

The FOMC has stressed the data-dependent nature of its policy stance and indicated that if incoming information signals faster progress than the Committee expects, increases in the target range for the federal funds rate will likely occur sooner than the Committee anticipates. The FOMC also stated that in the case of slower-than-expected progress,

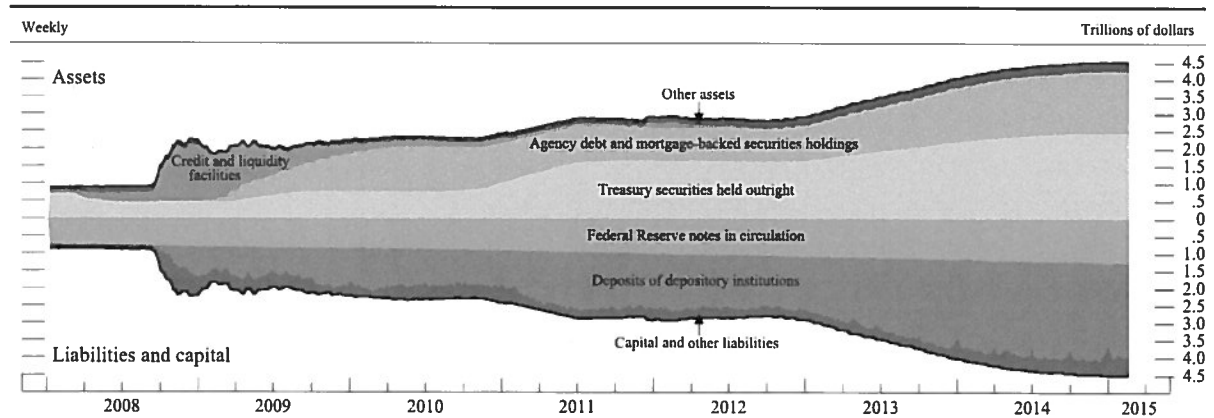
increases in the target range will likely occur later than anticipated.

**The size of the Federal Reserve’s balance sheet stabilized with the conclusion of the asset purchase program**

After the conclusion of the large-scale asset purchase program at the end of October, the Federal Reserve’s total assets stabilized at around \$4.5 trillion (figure 41). As a result of the asset purchases over the second half of 2014, before the completion of the program, holdings of U.S. Treasury securities in the System Open Market Account (SOMA) increased \$56 billion to \$2.5 trillion, and holdings of agency debt and agency MBS increased \$78 billion to \$1.8 trillion on net. On the liability side of the balance sheet, the increase in the Federal Reserve’s assets was largely matched by increases in currency in circulation and reverse repurchase agreements.

Given the Federal Reserve’s large securities holdings, interest income on the SOMA portfolio continued to support substantial remittances to the U.S. Treasury Department. Preliminary estimates suggest that the Federal

41. Federal Reserve assets and liabilities



NOTE: “Credit and liquidity facilities” consists of primary, secondary, and seasonal credit; term auction credit; central bank liquidity swaps; support for Maiden Lane, Bear Stearns, and AIG; and other credit facilities, including the Primary Dealer Credit Facility, the Asset-Backed Commercial Paper Money Market Mutual Fund Liquidity Facility, the Commercial Paper Funding Facility, and the Term Asset-Backed Securities Loan Facility. “Other assets” includes unamortized premiums and discounts on securities held outright. “Capital and other liabilities” includes reverse repurchase agreements, the U.S. Treasury General Account, and the U.S. Treasury Supplementary Financing Account. Data extend through February 18, 2015.

SOURCE: Federal Reserve Board, Statistical Release H.4.1, “Factors Affecting Reserve Balances.”

Reserve provided more than \$98 billion of such distributions to the Treasury in 2014 and about \$500 billion on a cumulative basis since 2008.<sup>8</sup>

### The FOMC continued to plan for the eventual normalization of monetary policy . . .

FOMC meeting participants have had ongoing discussions of issues associated with the eventual normalization of the stance and conduct of monetary policy as part of prudent planning.<sup>9</sup> The discussions involved various tools that could be used to control the level of short-term interest rates, even while the balance sheet of the Federal Reserve remains very large, as well as approaches to normalizing the size and composition of the Federal Reserve's balance sheet.

To inform the public about its approach to normalization and to convey the Committee's confidence in its plans, the FOMC issued a statement regarding its intentions for the eventual normalization of policy following its September meeting. (That statement is reproduced in the box "Policy Normalization Principles and Plans.") As was the case before the crisis, the Committee intends to adjust the

stance of monetary policy during normalization primarily through actions that influence the level of the federal funds rate and other short-term interest rates. Regarding the balance sheet, the Committee intends to reduce securities holdings in a gradual and predictable manner primarily by ceasing to reinvest repayments of principal on securities held in the SOMA. The Committee noted that economic and financial conditions could change, and that it was prepared to make adjustments to its normalization plans if warranted.

### . . . including by testing the policy tools to be used

The Federal Reserve has continued to test the operational readiness of its policy tools, conducting daily overnight reverse repurchase agreement (ON RRP) operations, a series of term RRP operations, and several tests of the Term Deposit Facility. To date, testing has progressed smoothly, and short-term market rates have generally traded above the ON RRP rate, which suggests that the facility will be a useful supplementary tool for the FOMC to use in addition to the interest rate it pays on excess reserves (the IOER rate) to control the federal funds rate during the normalization process. Overall, testing operations reinforced the Federal Reserve's confidence in its view that it has the tools necessary to tighten policy at the appropriate time. (For more discussion of the Federal Reserve's preparations for the eventual normalization of monetary policy, see the box "Additional Testing of Monetary Policy Tools.")

8. See Board of Governors of the Federal Reserve System (2015), "Reserve Bank Income and Expense Data and Transfers to the Treasury for 2014," press release, January 9, [www.federalreserve.gov/newsevents/press/other/20150109a.htm](http://www.federalreserve.gov/newsevents/press/other/20150109a.htm).

9. See Board of Governors of the Federal Reserve System (2014), "Minutes of the Federal Open Market Committee, July 29–30, 2014," press release, August 20, [www.federalreserve.gov/newsevents/press/monetary/20140820a.htm](http://www.federalreserve.gov/newsevents/press/monetary/20140820a.htm).

## Policy Normalization Principles and Plans

During its recent meetings, the Federal Open Market Committee (FOMC) discussed ways to normalize the stance of monetary policy and the Federal Reserve's securities holdings. The discussions were part of prudent planning and do not imply that normalization will necessarily begin soon. The Committee continues to judge that many of the normalization principles that it adopted in June 2011 remain applicable. However, in light of the changes in the System Open Market Account (SOMA) portfolio since 2011 and enhancements in the tools the Committee will have available to implement policy during normalization, the Committee has concluded that some aspects of the eventual normalization process will likely differ from those specified earlier. The Committee also has agreed that it is appropriate at this time to provide additional information regarding its normalization plans. All FOMC participants but one agreed on the following key elements of the approach they intend to implement when it becomes appropriate to begin normalizing the stance of monetary policy:

- The Committee will determine the timing and pace of policy normalization—meaning steps to raise the federal funds rate and other short-term interest rates to more normal levels and to reduce the Federal Reserve's securities holdings—so as to promote its statutory mandate of maximum employment and price stability.
  - When economic conditions and the economic outlook warrant a less accommodative monetary policy, the Committee will raise its target range for the federal funds rate.
  - During normalization, the Federal Reserve intends to move the federal funds rate into the target range set by the FOMC primarily by adjusting the interest rate it pays on excess reserve balances.
  - During normalization, the Federal Reserve intends to use an overnight reverse repurchase agreement facility and other

supplementary tools as needed to help control the federal funds rate. The Committee will use an overnight reverse repurchase agreement facility only to the extent necessary and will phase it out when it is no longer needed to help control the federal funds rate.

- The Committee intends to reduce the Federal Reserve's securities holdings in a gradual and predictable manner primarily by ceasing to reinvest repayments of principal on securities held in the SOMA.
  - The Committee expects to cease or commence phasing out reinvestments after it begins increasing the target range for the federal funds rate; the timing will depend on how economic and financial conditions and the economic outlook evolve.
  - The Committee currently does not anticipate selling agency mortgage-backed securities as part of the normalization process, although limited sales might be warranted in the longer run to reduce or eliminate residual holdings. The timing and pace of any sales would be communicated to the public in advance.
- The Committee intends that the Federal Reserve will, in the longer run, hold no more securities than necessary to implement monetary policy efficiently and effectively, and that it will hold primarily Treasury securities, thereby minimizing the effect of Federal Reserve holdings on the allocation of credit across sectors of the economy.
- The Committee is prepared to adjust the details of its approach to policy normalization in light of economic and financial developments.

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NOTE: See Board of Governors of the Federal Reserve System (2014), "Federal Reserve Issues FOMC Statement on Policy Normalization Principles and Plans," press release, September 17, [www.federalreserve.gov/newsevents/press/monetary/20140917c.htm](http://www.federalreserve.gov/newsevents/press/monetary/20140917c.htm).

## Additional Testing of Monetary Policy Tools

The size of the Federal Reserve's balance sheet stands at about \$4.5 trillion, and reserve balances in the banking system are close to \$2.5 trillion, an extraordinarily elevated level relative to the average level of reserve balances prior to the onset of the financial crisis—about \$25 billion. As a result, when the Federal Open Market Committee (FOMC) eventually chooses to begin removing policy accommodation, it will do so with a level of reserves in the banking system far in excess of that during any prior period of policy tightening. As noted in the previous *Monetary Policy Report*, the Federal Reserve's elevated balance sheet implies that the traditional mechanism for tightening policy will not be feasible.<sup>1</sup>

As discussed in its Policy Normalization Principles and Plans, the Federal Reserve intends to move the federal funds rate into the target range set by the FOMC primarily by adjusting the interest rate it pays on excess reserve balances (the IOER rate). During policy normalization, the Federal Reserve also intends to use an overnight reverse repurchase agreement (ON RRP) facility and other supplementary tools—including term reverse repurchase agreements (term RRP) and term deposits offered through the Term Deposit Facility (TDF)—as needed to help control the federal funds rate. As part of prudent planning, the Federal Reserve continued to test the operational readiness of these tools over the past several months, with testing evolving in terms of the offering formats, tenors and rates offered, maximum awards or allotment amounts, and eligible counterparties.<sup>2</sup>

With respect to RRP operations, the Federal Reserve has continued to conduct daily overnight operations

and began to conduct term operations. The testing of different formats for the ON RRP operations aimed to enhance the FOMC's understanding of how an ON RRP facility might be structured to best balance the objective of supporting monetary control with those of limiting the Federal Reserve's role in financial intermediation and mitigating potential financial stability risks the facility might pose during periods of stress.<sup>3</sup> In addition, the spread between the ON RRP rate and the IOER rate was varied to provide the FOMC with information about the effect of that spread on money markets and the demand for ON RRP.

With these considerations in mind, at its September meeting, the FOMC approved changes in the ON RRP exercise that included raising the counterparty-specific limit from \$10 billion to \$30 billion, limiting the overall size of each operation to \$300 billion, and introducing an auction process that would be used to determine the interest rate and allocate take-up if the sum of bids exceeded the overall limit. In addition, during the fourth quarter of 2014, the FOMC approved further changes in the exercise under which the offering rate at the ON RRP operations was varied between 3 and 10 basis points. Participation in and usage of ON RRP fluctuated from day to day, reflecting changes in the spread between market rates and the ON RRP rate as well as quarter-end and year-end dynamics (figure A). The limit on the overall size of the operation did not bind except at the end of the third quarter.<sup>4</sup> Increases in ON RRP offered rates appeared to put some upward pressure on unsecured money market rates, as anticipated, and the offered rate continued to provide a soft floor for secured rates. Changes in the ON RRP offered rate induced changes in the spread between the IOER rate of 25 basis points and the ON RRP offered rate for those days. Those changes did not appear to affect the volume of activity in the federal funds market.

The term RRP operations approved for the end of 2014 were aimed at providing the FOMC with information about the potential effectiveness of this supplementary policy tool in helping to control

1. For further discussion of how the alternative policy tools affect a range of short-term interest rates, see the box "Planning for Monetary Policy Implementation during Normalization" in Board of Governors of the Federal Reserve System (2014), *Monetary Policy Report* (Washington: Board of Governors, July), [www.federalreserve.gov/monetarypolicy/mpr\\_20140715\\_part2.htm](http://www.federalreserve.gov/monetarypolicy/mpr_20140715_part2.htm).

2. The types of counterparties that are currently eligible to participate in the Federal Reserve's ON RRP operations include depository institutions, money market funds, government-sponsored enterprises, and primary dealers, while only depository institutions may participate in TDF operations. At its December 2014 meeting, the FOMC reauthorized the ON RRP test operations through January 29, 2016. On January 16, 2015, the Federal Reserve Bank of New York announced the addition of 25 RRP counterparties, bringing the total number of counterparties to 164. These newly added counterparties are currently in the process of finalizing the operational details. Results of RRP operations can be found on the Federal Reserve Bank of New York's website at [www.newyorkfed.org/markets/omo/dmm/temp.cfm](http://www.newyorkfed.org/markets/omo/dmm/temp.cfm), and results of the TDF operations can be found on the Federal Reserve Board's website at [www.federalreserve.gov/monetarypolicy/tdf.htm](http://www.federalreserve.gov/monetarypolicy/tdf.htm).

3. For a discussion of issues related to the use of ON RRP as a supplementary tool during normalization, see Josh Frost, Lorie Logan, Antoine Martin, Patrick McCabe, Fabio Natalucci and Julie Remache (2015), "Overnight RRP Operations as a Monetary Policy Tool: Some Design Considerations," Finance and Economics Discussion Series 2015-010 (Washington: Board of Governors of the Federal Reserve System, February), [www.federalreserve.gov/econresdata/feds/2015/files/2015010pap.pdf](http://www.federalreserve.gov/econresdata/feds/2015/files/2015010pap.pdf).

4. As term RRP operations crossing year-end were conducted in addition to ON RRP operations, the limit on the overall size of the ON RRP operations did not bind at year-end.

the federal funds rate, particularly when there are significant and transitory shifts in money market activity, such as over quarter- and year-ends. To this end, the Federal Reserve conducted term RRP operations on December 8, 15, 22, and 29, with offering amounts of \$50 billion for each of the first two operations and \$100 billion for each of the latter two operations.<sup>5</sup> Although the first two term auctions were oversubscribed, the third and fourth term operations were undersubscribed. Overall, the ON RRP and term RRP operations appeared to ease downside rate pressures in money markets over year-end, and the unwinding of all four term operations on January 5, 2015, was orderly. The Federal Reserve will conduct a further test of term RRPs over quarter-ends with a series of term RRP operations spanning the March 2015 quarter-end. Also, to help advance its understanding of how term RRPs could help to control the federal funds rate, the Federal Reserve has begun a series of four term RRP test operations that do not span a quarter-end date. The first two of these operations were conducted on February 12 and on February 19. Both operations were oversubscribed, and the awarded interest rate on these two term RRPs was in line with the awarded rate on concurrent ON RRP operations.

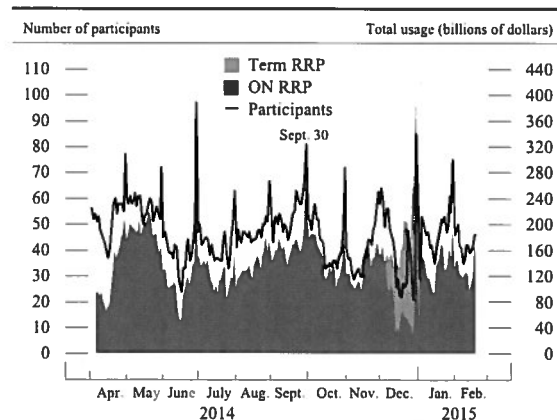
The Federal Reserve's testing of the TDF also continued to evolve in the second half of 2014 and

early 2015, with the aim of increasing participation by depository institutions as well as improving operational readiness. Since the previous *Monetary Policy Report*, the Federal Reserve conducted two series of TDF test operations. In the second half of 2014, a series of eight TDF test operations included an early withdrawal feature that allowed depository institutions to withdraw funds held in term deposits on payment of an early withdrawal penalty.<sup>6</sup> The maximum award amount per institution and the interest rate paid on term deposits offered through the facility were raised gradually over the course of the series in a manner broadly similar to the series of test operations conducted earlier in the year that did not include an early withdrawal feature. The level of activity increased considerably relative to the earlier test operations, with take-up reaching just over \$400 billion at the final operation and nearly 100 depository institutions participating (figure B). In the second series of test operations, held in February 2015, the Federal Reserve conducted a series of weekly TDF operations offering 21-day term deposits that settled on the same day the operation was executed, eliminating the 3-day lag between the execution of an operation and settlement in previous tests. On net, the series results provide additional evidence that significant take-up can occur at a few basis points over the IOER rate even for longer terms.

5. For details on the format of these operations, see the December 1, 2014, Statement Regarding Term Reverse Repurchase Agreements on the Federal Reserve Bank of New York's website at [www.newyorkfed.org/markets/opolicy/operating\\_policy\\_141201.html](http://www.newyorkfed.org/markets/opolicy/operating_policy_141201.html).

6. The early withdrawal option makes such deposits eligible to meet requirements under the Basel III Liquidity Coverage Ratio.

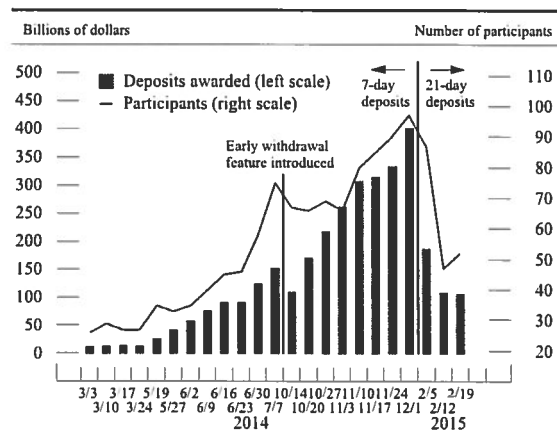
**A. Reverse repurchase agreement operations**



NOTE: ON RRP is overnight reverse repurchase agreement. On September 30, 2014, ON RRP bids were \$407 billion and allotments were \$300 billion.

SOURCE: Federal Reserve Bank of New York, temporary open market operations data.

**B. Term Deposit Facility operations**



SOURCE: Federal Reserve Board.



## PART 3

### SUMMARY OF ECONOMIC PROJECTIONS

The following material appeared as an addendum to the minutes of the December 16–17, 2014, meeting of the Federal Open Market Committee.

In conjunction with the Federal Open Market Committee (FOMC) meeting held on December 16–17, 2014, meeting participants submitted their projections of the most likely outcomes for real output growth, the unemployment rate, inflation, and the federal funds rate for each year from 2014 to 2017 and over the longer run.<sup>10</sup> Each participant's projection was based on information available at the time of the meeting plus his or her assessment of appropriate monetary policy and assumptions about the factors likely

to affect economic outcomes. The longer-run projections represent each participant's assessment of the value to which each variable would be expected to converge, over time, under appropriate monetary policy and in the absence of further shocks to the economy. "Appropriate monetary policy" is defined as the future path of policy that each participant deems most likely to foster outcomes for economic activity and inflation that best satisfy his or her individual interpretation of the Federal Reserve's objectives of maximum employment and stable prices.

10. As discussed in its Policy Normalization Principles and Plans, released on September 17, 2014, the Committee intends to target a range for the federal funds rate during normalization. Participants were asked to provide, in their contributions to the Summary of Economic Projections, either the midpoint of the target range for the federal funds rate for any period when a range was anticipated or the target level for the federal funds rate, as appropriate. In the lower panel of figure 2, these values have been rounded to the nearest 1/8 percentage point.

Overall, FOMC participants expected that, after a slowdown in the first half of 2014, economic growth under appropriate policy would be faster in the second half of 2014 and over 2015 and 2016 than their estimates of the U.S. economy's longer-run normal growth rate. On balance, participants then saw economic growth moving back toward their assessments of its longer-run pace in 2017 (table 1 and figure 1). Most participants projected that the

Table 1. Economic projections of Federal Reserve Board members and Federal Reserve Bank presidents, December 2014  
Percent

Variable	Central tendency <sup>1</sup>					Range <sup>2</sup>				
	2014	2015	2016	2017	Longer run	2014	2015	2016	2017	Longer run
Change in real GDP.....	2.3 to 2.4	2.6 to 3.0	2.5 to 3.0	2.3 to 2.5	2.0 to 2.3	2.3 to 2.5	2.1 to 3.2	2.1 to 3.0	2.0 to 2.7	1.8 to 2.7
September projection ....	2.0 to 2.2	2.6 to 3.0	2.6 to 2.9	2.3 to 2.5	2.0 to 2.3	1.8 to 2.3	2.1 to 3.2	2.1 to 3.0	2.0 to 2.6	1.8 to 2.6
Unemployment rate .....	5.8	5.2 to 5.3	5.0 to 5.2	4.9 to 5.3	5.2 to 5.5	5.7 to 5.8	5.0 to 5.5	4.9 to 5.4	4.7 to 5.7	5.0 to 5.8
September projection ....	5.9 to 6.0	5.4 to 5.6	5.1 to 5.4	4.9 to 5.3	5.2 to 5.5	5.7 to 6.1	5.2 to 5.7	4.9 to 5.6	4.7 to 5.8	5.0 to 6.0
PCE inflation .....	1.2 to 1.3	1.0 to 1.6	1.7 to 2.0	1.8 to 2.0	2.0	1.2 to 1.6	1.0 to 2.2	1.6 to 2.1	1.8 to 2.2	2.0
September projection ....	1.5 to 1.7	1.6 to 1.9	1.7 to 2.0	1.9 to 2.0	2.0	1.5 to 1.8	1.5 to 2.4	1.6 to 2.1	1.7 to 2.2	2.0
Core PCE inflation <sup>3</sup> .....	1.5 to 1.6	1.5 to 1.8	1.7 to 2.0	1.8 to 2.0		1.5 to 1.6	1.5 to 2.2	1.6 to 2.1	1.8 to 2.2	
September projection ....	1.5 to 1.6	1.6 to 1.9	1.8 to 2.0	1.9 to 2.0		1.5 to 1.8	1.6 to 2.4	1.7 to 2.2	1.8 to 2.2	

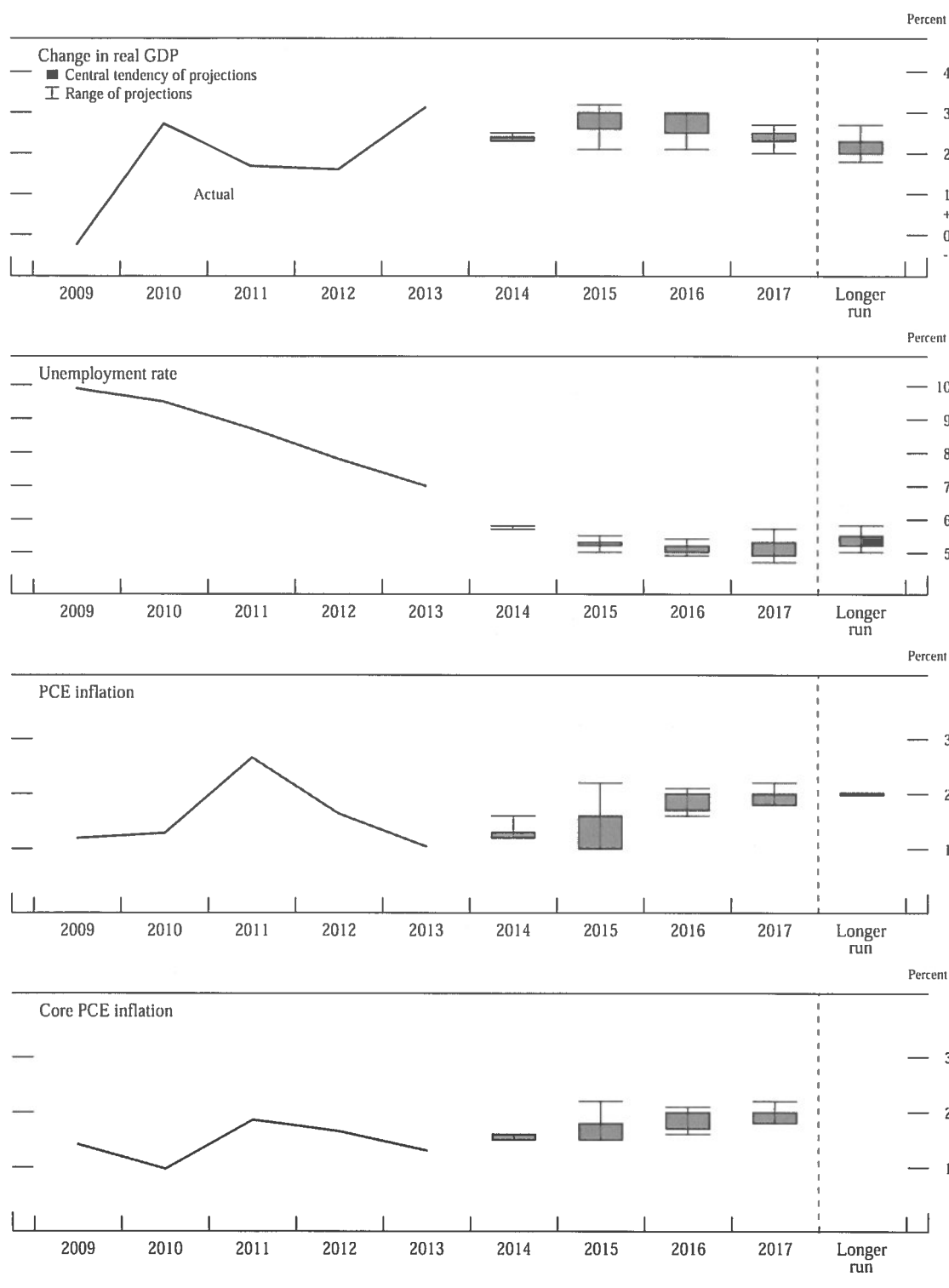
NOTE: Projections of change in real gross domestic product (GDP) and projections for both measures of inflation are percent changes from the fourth quarter of the previous year to the fourth quarter of the year indicated. PCE inflation and core PCE inflation are the percentage rates of change in, respectively, the price index for personal consumption expenditures (PCE) and the price index for PCE excluding food and energy. Projections for the unemployment rate are for the average civilian unemployment rate in the fourth quarter of the year indicated. Each participant's projections are based on his or her assessment of appropriate monetary policy. Longer-run projections represent each participant's assessment of the rate to which each variable would be expected to converge under appropriate monetary policy and in the absence of further shocks to the economy. The September projections were made in conjunction with the meeting of the Federal Open Market Committee on September 16–17, 2014.

1. The central tendency excludes the three highest and three lowest projections for each variable in each year.

2. The range for a variable in a given year includes all participants' projections, from lowest to highest, for that variable in that year.

3. Longer-run projections for core PCE inflation are not collected.

Figure 1. Central tendencies and ranges of economic projections, 2014–17 and over the longer run



Note: Definitions of variables are in the general note to table 1. The data for the actual values of the variables are annual.



unemployment rate will continue to decline in 2015 and 2016, and all participants projected that the unemployment rate will be at or below their individual judgments of its longer-run normal level by the end of 2016. All participants projected that inflation, as measured by the four-quarter change in the price index for personal consumption expenditures (PCE), would rise gradually, on balance, over the next few years. Most participants saw inflation approaching the Committee's 2 percent longer-run objective in 2016 and 2017. While a few participants projected that inflation would rise temporarily above 2 percent during the forecast period, many others expected inflation to remain low through 2017.

Participants judged that it would be appropriate to begin raising the target range for the federal funds rate over the projection period as labor market indicators and inflation move back toward values the Committee judges consistent with the attainment of its mandated objectives of maximum employment and stable prices. As shown in figure 2, all but a couple of participants anticipated that it would be appropriate to begin raising the target range for the federal funds rate in 2015, with most projecting that it will be appropriate to raise the target federal funds rate fairly gradually.

Most participants viewed the uncertainty associated with their outlooks for economic growth and the unemployment rate as broadly similar to the average level of the past 20 years. Most participants also judged the level of uncertainty about inflation to be broadly similar to the average level of the past 20 years, although a few participants viewed it as higher. In addition, most participants continued to see the risks to the outlook for economic growth and for the unemployment rate as broadly balanced. A majority saw the risks to inflation as broadly balanced; however, a number of participants saw the risks to inflation as weighted to the downside, while one judged these risks as tilted to the upside.

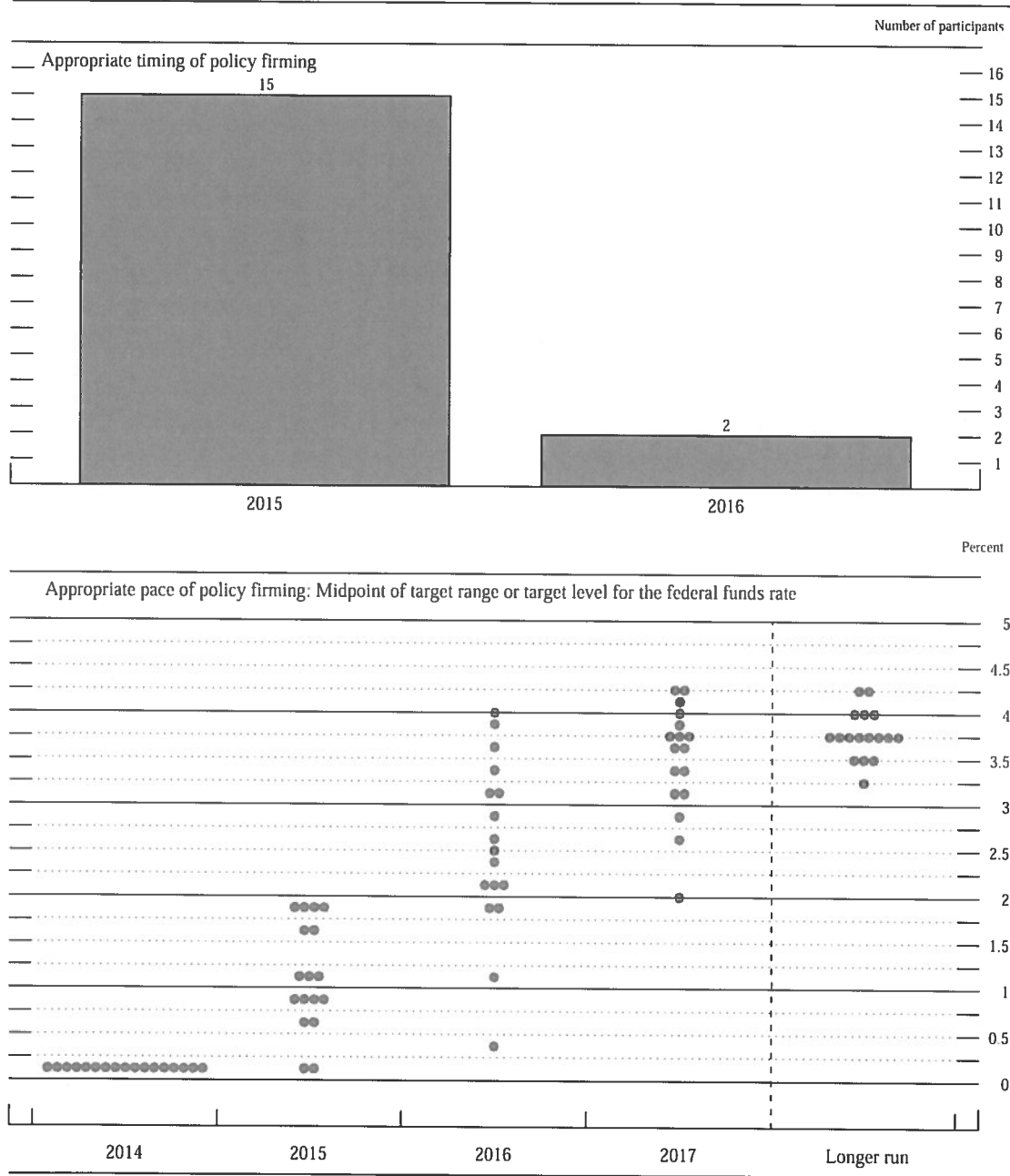
### *The Outlook for Economic Activity*

Participants projected that, conditional on their individual assumptions about appropriate monetary policy, growth in real gross domestic product (GDP) would pick up from its low level in the first half of 2014 and run above their estimates of its longer-run normal rate in the second half of 2014 and over 2015 and 2016. Participants pointed to a number of factors that they expected would contribute to stronger real output growth, including improving labor market conditions, lower energy prices, rising household net worth, diminishing restraint from fiscal policy, and highly accommodative monetary policy. On balance, participants saw real GDP growth moving back toward, but remaining at or somewhat above, its longer-run rate in 2017 as monetary policy adjusts appropriately.

In general, participants' revisions to their forecasts for real GDP growth relative to their projections for the September meeting were modest. However, all participants revised up their projections of real GDP growth somewhat for 2014, with a number of them noting that recent data releases regarding real economic activity had been stronger than anticipated. The central tendencies of participants' current projections for real GDP growth were 2.3 to 2.4 percent in 2014, 2.6 to 3.0 percent in 2015, 2.5 to 3.0 percent in 2016, and 2.3 to 2.5 percent in 2017. The central tendency of the projections of real GDP growth over the longer run was 2.0 to 2.3 percent, unchanged from September.

All participants projected that the unemployment rate will decline, on balance, through 2016, and all participants projected that, by the end of that year, the unemployment rate will be at or below their individual judgments of its longer-run normal level. The central tendencies of participants' forecasts for the unemployment rate in the fourth quarter of each year were 5.8 percent in 2014, 5.2 to 5.3 percent in 2015, 5.0 to 5.2 percent in 2016, and 4.9 to 5.3 percent

Figure 2. Overview of FOMC participants' assessments of appropriate monetary policy



NOTE: In the upper panel, the height of each bar denotes the number of FOMC participants who judge that, under appropriate monetary policy, the first increase in the target range for the federal funds rate from its current range of 0 to ¼ percent will occur in the specified calendar year. In September 2014, the numbers of FOMC participants who judged that the first increase in the target federal funds rate would occur in 2014, 2015, and 2016 were, respectively, 1, 14, and 2. In the lower panel, each shaded circle indicates the value (rounded to the nearest percentage point) of an individual participant's judgment of the midpoint of the appropriate target range for the federal funds rate or the appropriate target level for the federal funds rate at the end of the specified calendar year or over the longer run.

in 2017. Almost all participants' projected paths for the unemployment rate shifted down slightly through 2015 compared with their projections in September; many participants noted that recent data pointing to improving labor market conditions were an important factor underlying the downward revisions in their unemployment rate forecasts. The central tendency of participants' estimates of the longer-run normal rate of unemployment that would prevail under appropriate monetary policy and in the absence of further shocks to the economy was unchanged at 5.2 to 5.5 percent; the range of these estimates was 5.0 to 5.8 percent, down slightly from 5.0 to 6.0 percent in September.

Figures 3.A and 3.B show that participants held a range of views regarding the likely outcomes for real GDP growth and the unemployment rate through 2017. Some of the diversity of views reflected their individual assessments of the effects of lower oil prices on consumer spending and business investment, of the rate at which the forces that have been restraining the pace of the economic recovery would continue to abate, of the trajectory for growth in consumption as labor market slack diminishes, and of the appropriate path of monetary policy. Relative to September, the dispersion of participants' projections for real GDP growth was little changed from 2015 to 2017, while for the unemployment rate, the dispersion was a bit narrower.

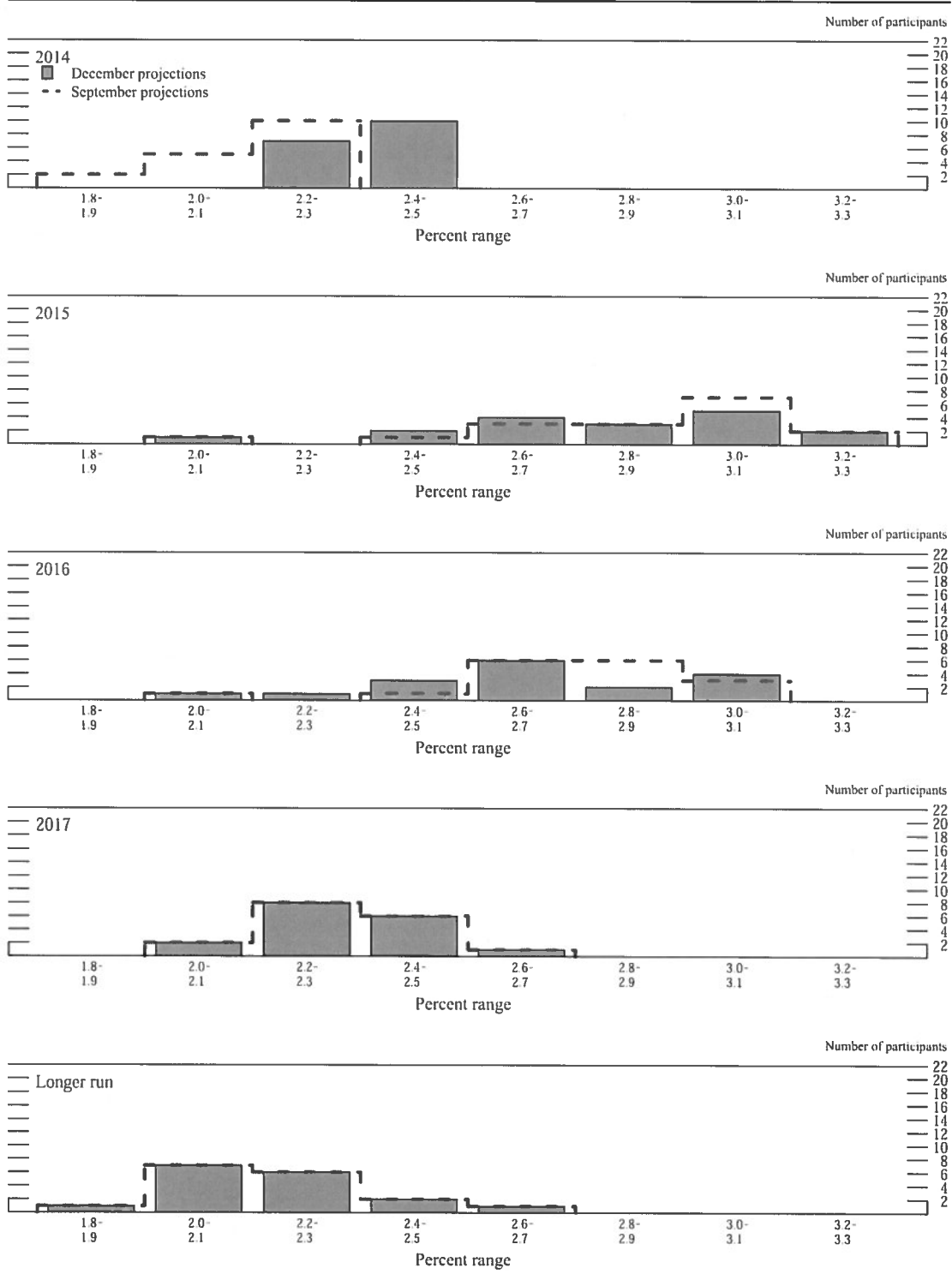
### *The Outlook for Inflation*

Compared with September, the central tendencies of participants' projections for PCE inflation under the assumption of appropriate monetary policy moved down for 2014 and 2015 but were largely unchanged for 2016 and 2017. In commenting on the changes to their projections, many participants indicated that the significant decline in energy prices and the appreciation of the dollar since the Committee's September

meeting likely will put temporary downward pressure on inflation. The central tendencies of participants' projections for core PCE inflation moved down somewhat for 2015 but were mostly unchanged in other years. Almost all participants projected that PCE inflation would rise gradually, on balance, over the period from 2015 to 2017, reaching a level at or near the Committee's 2 percent objective. A few participants expected PCE inflation to rise slightly above 2 percent at some point during the forecast period, while many others expected inflation to remain below 2 percent for the entire period. The central tendencies for PCE inflation were 1.2 to 1.3 percent in 2014, 1.0 to 1.6 percent in 2015, 1.7 to 2.0 percent in 2016, and 1.8 to 2.0 percent in 2017. The central tendencies of the forecasts for core inflation were higher than those for the headline measure in 2014 and 2015, reflecting the effects of lower oil prices. The central tendencies of the two measures were equal in 2016 and in 2017. Factors cited by participants as likely to contribute to a gradual rise of inflation toward the Committee's longer-run objective of 2 percent included stable longer-term inflation expectations, steadily diminishing resource slack, a pickup in wage growth, waning effects of declines in oil prices, and still-accommodative monetary policy.

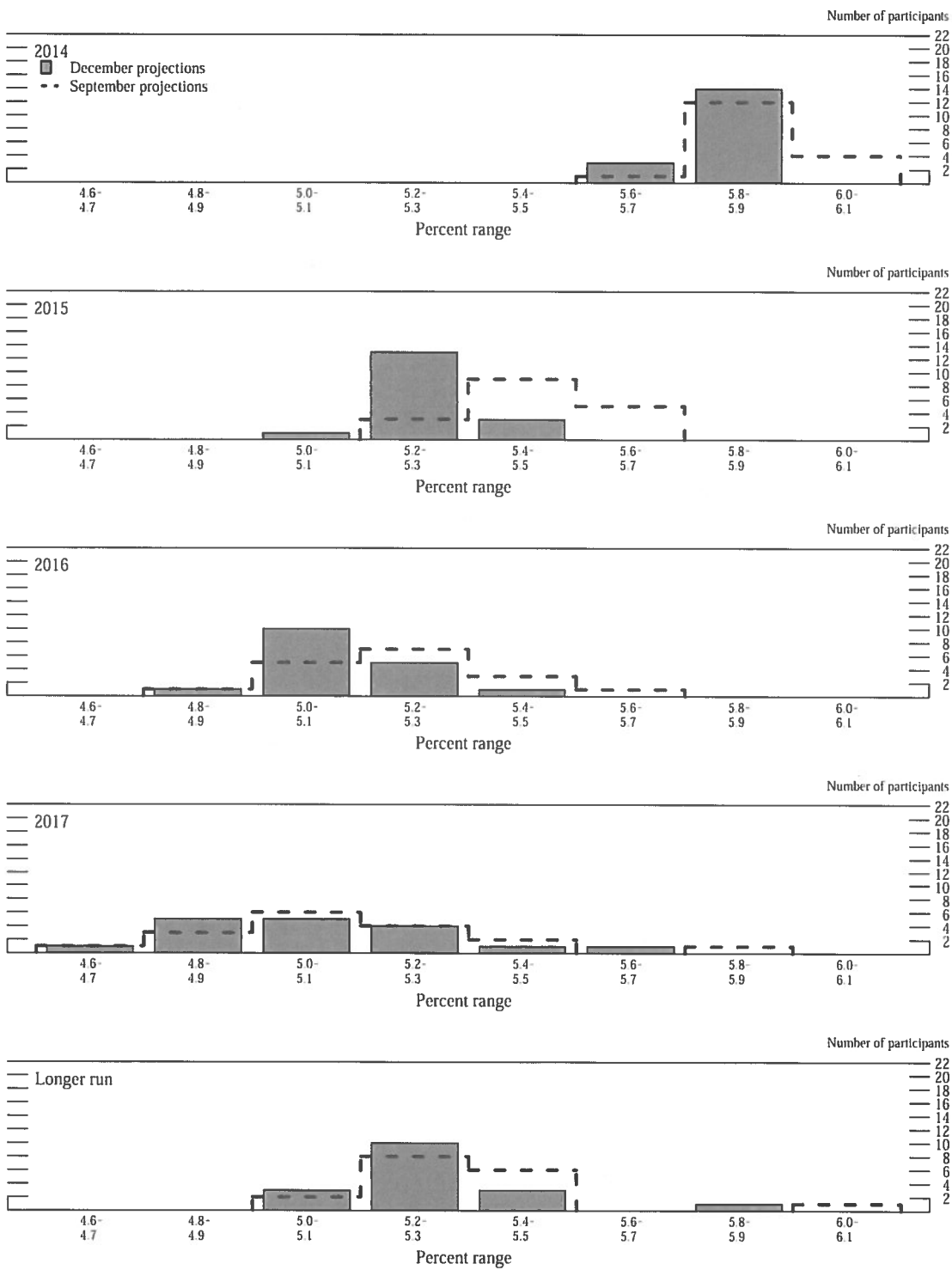
Figures 3.C and 3.D provide information on the diversity of participants' views about the outlook for inflation. In addition to moving lower, the range of participants' projections for PCE inflation in 2015 widened somewhat relative to September, likely reflecting in part differences in participants' assessments of the effects of the recent decline in energy prices on the outlook for inflation. The ranges for core inflation narrowed in 2014 and 2015. In other years of the projection, the ranges of the inflation projections were relatively little changed. The range for both measures in 2017 continued to show a very substantial concentration near the Committee's 2 percent longer-run objective by that time.

Figure 3.A. Distribution of participants' projections for the change in real GDP, 2014-17 and over the longer run



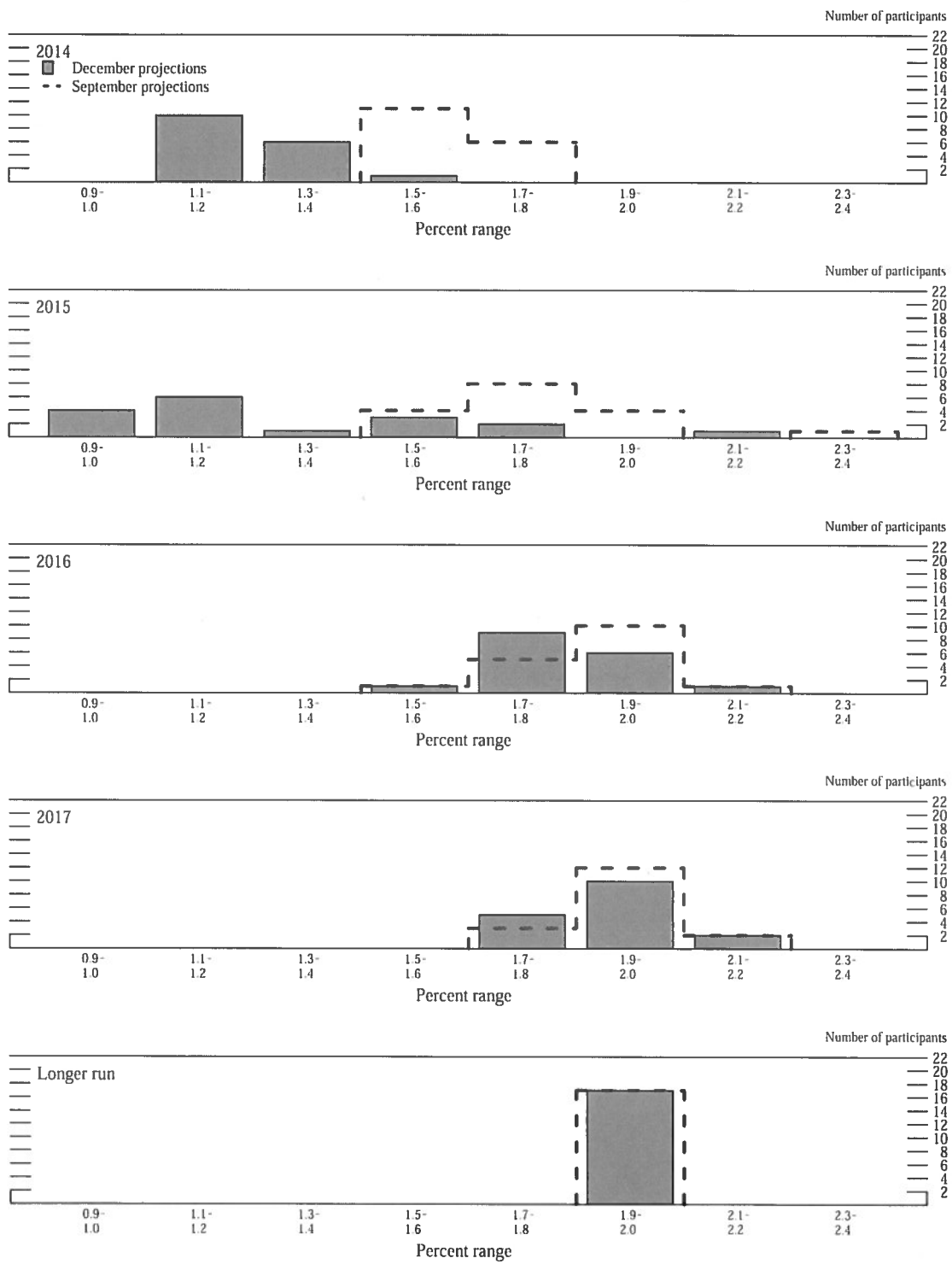
NOTE: Definitions of variables are in the general note to table 1.

Figure 3.B. Distribution of participants' projections for the unemployment rate, 2014–17 and over the longer run



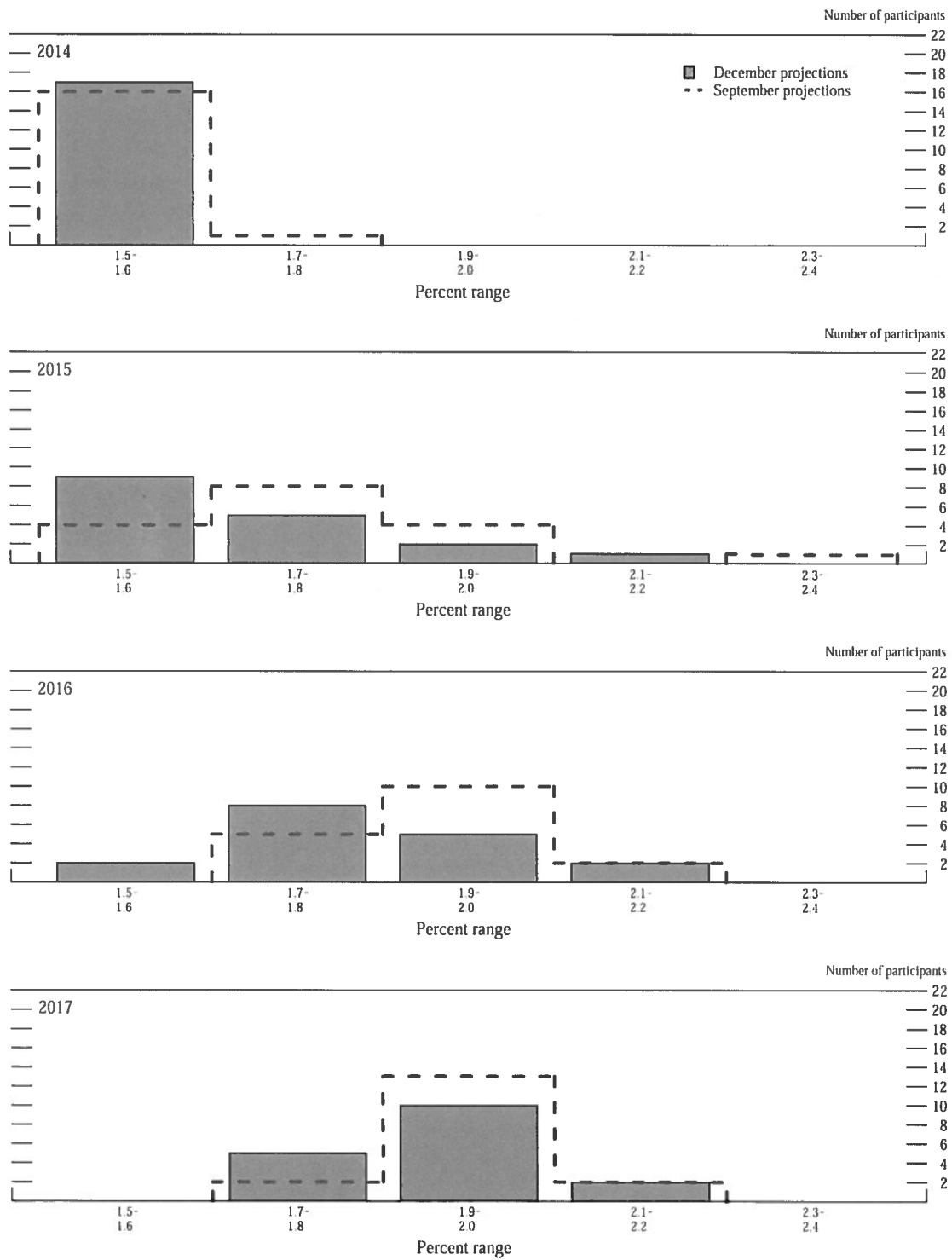
NOTE: Definitions of variables are in the general note to table 1.

Figure 3.C. Distribution of participants' projections for PCE inflation, 2014-17 and over the longer run



NOTE: Definitions of variables are in the general note to table 1.

Figure 3.D. Distribution of participants' projections for core PCE inflation, 2014–17



NOTE: Definitions of variables are in the general note to table 1.

### *Appropriate Monetary Policy*

Participants judged that it would be appropriate to begin raising the target range for the federal funds rate over the projection period as labor market indicators and inflation move back toward values the Committee judges consistent with the attainment of its mandated objectives of maximum employment and price stability. As shown in figure 2, all but two participants anticipated that it would be appropriate to begin raising the target range for the federal funds rate during 2015. However, most projected that the appropriate level of the federal funds rate would remain considerably below its longer-run normal level through 2016. Most participants expected the appropriate level of the federal funds rate would be near, or already would have reached, their individual view of its longer-run normal level by the end of 2017.

All participants projected that the unemployment rate would be at or below 5.5 percent at the end of the year in which they judged the initial increase in the target range for the federal funds rate would be warranted, and all but one anticipated that inflation would be at or below the Committee's 2 percent goal at the end of that year. Most participants projected that the unemployment rate would be at or somewhat above their estimates of its longer-run normal level at that time.

Figure 3.E provides the distribution of participants' judgments regarding the appropriate level of the target federal funds rate, conditional on their assessments of the economic outlook, at the end of each calendar year from 2014 to 2017 and over the longer run. All participants judged that economic conditions would warrant maintaining the current exceptionally low level of the federal funds rate into 2015. The median values of the federal funds rate at the end of 2015 and 2016 fell 25 basis points and 38 basis points relative to September, to 1.13 percent and 2.50 percent, respectively, while the mean values fell 15 basis points for both years, to 1.13 percent in 2015

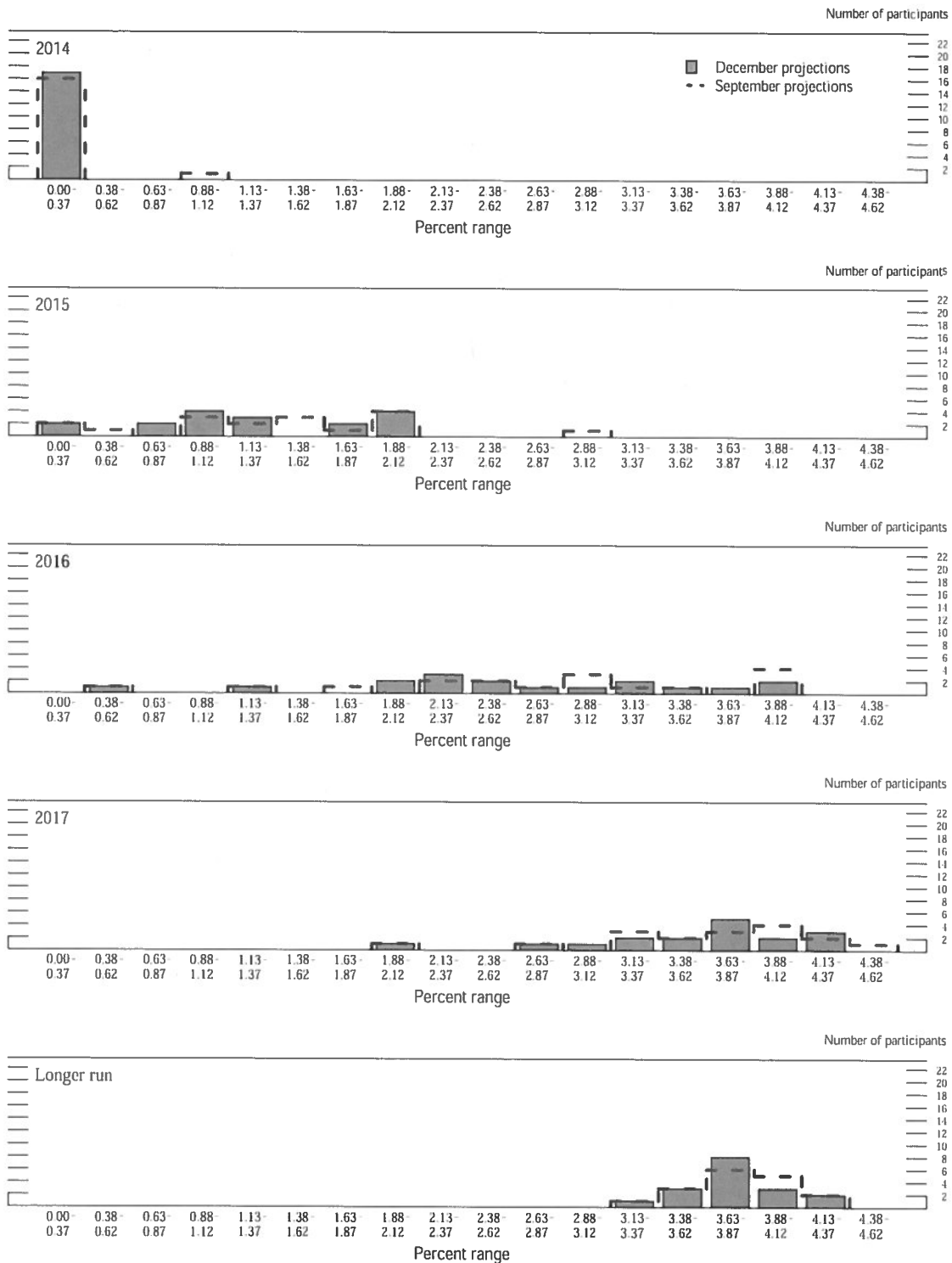
and 2.54 percent in 2016. The dispersion of the projections for the appropriate level of the federal funds rate was narrower in 2014 and 2015 and was little changed in 2016 and 2017. Most participants judged that it would be appropriate to set the federal funds rate at or near its longer-run normal level in 2017, although a number of them projected that the federal funds rate would still need to be set appreciably below its longer-run normal level at that time and one anticipated that it would be appropriate to target a level noticeably above its longer-run normal level. Participants provided a number of reasons why they thought it would be appropriate for the federal funds rate to remain below its longer-run normal level for some time after inflation and the unemployment rate were near mandate-consistent levels. These reasons included an assessment that the headwinds that have been holding back the recovery will continue to exert some restraint on economic activity at that time, that residual slack in the labor market will still be evident in other measures of labor utilization, and that the risks to the economic outlook are asymmetric as a result of the constraints on monetary policy associated with the effective lower bound on the federal funds rate.

As in September, estimates of the longer-run level of the federal funds rate ranged from 3.25 to 4.25 percent. All participants judged that inflation over the longer run would be equal to the Committee's inflation objective of 2 percent, implying that their individual judgments regarding the appropriate longer-run level of the real federal funds rate in the absence of further shocks to the economy ranged from 1.25 to 2.25 percent.

Participants' views of the appropriate path for monetary policy were informed by their judgments about the state of the economy, including the values of the unemployment rate and other labor market indicators that would be consistent with maximum employment, the extent to which the economy was currently falling short of maximum employment,



Figure 3.E. Distribution of participants' projections for the target federal funds rate, 2014–17 and over the longer run



NOTE: The target federal funds rate is measured as the level of the target rate at the end of the calendar year or in the longer run.

the prospects for inflation to return to the Committee's longer-term objective of 2 percent, the desire to minimize potential disruption in financial markets by avoiding unusually rapid increases in the federal funds rate, and the balance of risks around the outlook. Some participants also mentioned the prescriptions of various monetary policy rules as factors they considered in judging the appropriate path for the federal funds rate.

### *Uncertainty and Risks*

Nearly all participants continued to judge the levels of uncertainty attending their projections for real GDP growth and the unemployment rate as broadly similar to the norms during the previous 20 years (figure 4).<sup>11</sup> Most participants continued to see the risks to their outlooks for real GDP growth as broadly balanced. A few participants viewed the risks to real GDP growth as weighted to the downside; one viewed the risks as weighted to the upside. Those participants who viewed the risks as weighted to the downside cited, for example, concern about the limited ability of monetary policy at the effective lower bound to respond to further negative shocks to the economy or about the trajectory for economic growth abroad. As in September, nearly all participants judged the risks to the outlook for the unemployment rate to be broadly balanced.

11. Table 2 provides estimates of the forecast uncertainty for the change in real GDP, the unemployment rate, and total consumer price inflation over the period from 1994 through 2013. At the end of this summary, the box "Forecast Uncertainty" discusses the sources and interpretation of uncertainty in the economic forecasts and explains the approach used to assess the uncertainty and risks attending the participants' projections.

Table 2. Average historical projection error ranges  
Percentage points

Variable	2014	2015	2016	2017
Change in real GDP <sup>1</sup> .....	±0.9	±1.8	±2.1	±2.1
Unemployment rate <sup>1</sup> .....	±0.2	±0.8	±1.4	±1.8
Total consumer prices <sup>2</sup> .....	±0.2	±0.9	±1.0	±1.0

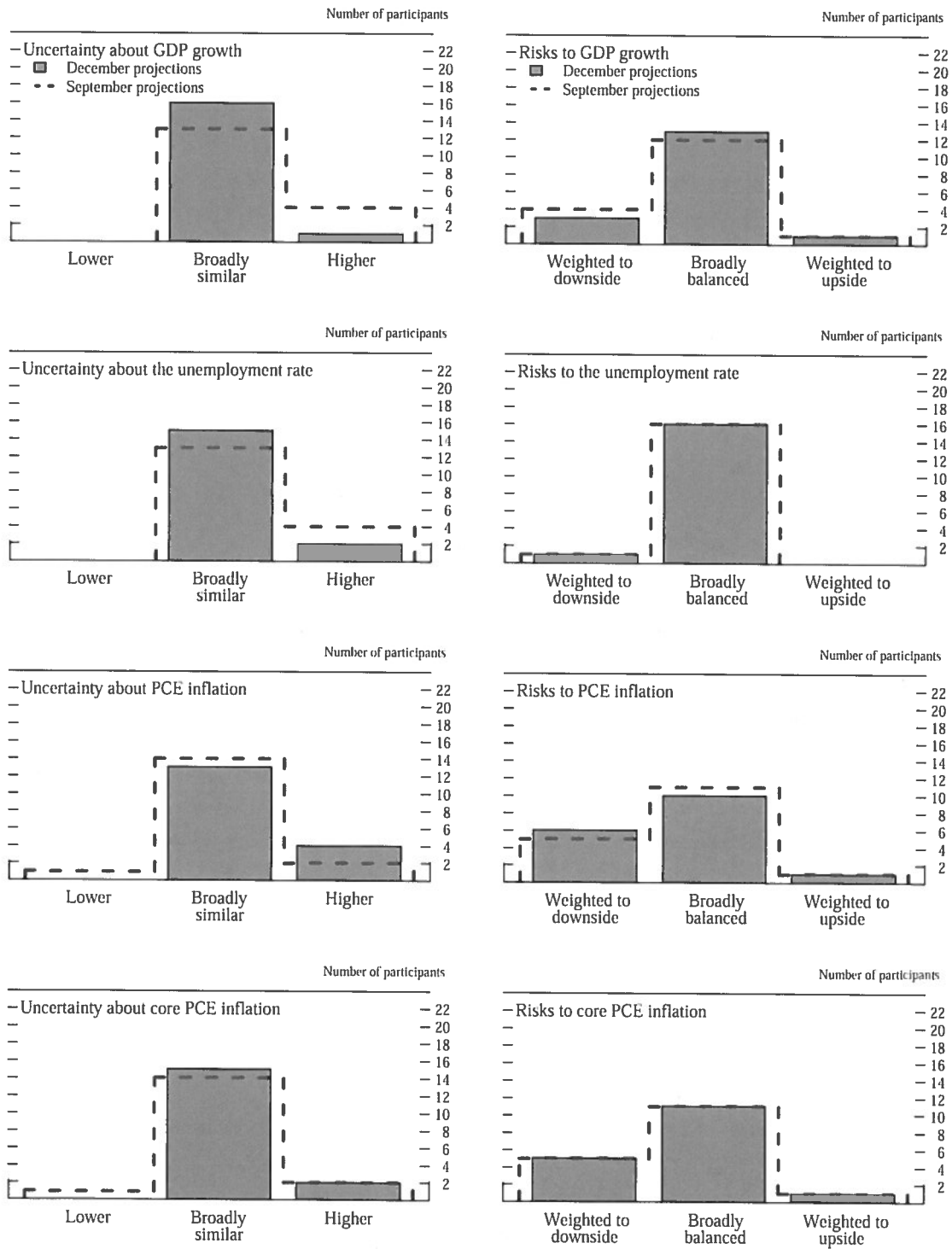
NOTE: Error ranges shown are measured as plus or minus the root mean squared error of projections for 1994 through 2013 that were released in the winter by various private and government forecasters. As described in the box "Forecast Uncertainty," under certain assumptions, there is about a 70 percent probability that actual outcomes for real GDP, unemployment, and consumer prices will be in ranges implied by the average size of projection errors made in the past. For more information, see David Reifschneider and Peter Tulip (2007), "Gauging the Uncertainty of the Economic Outlook from Historical Forecasting Errors," Finance and Economics Discussion Series 2007-60 (Washington: Board of Governors of the Federal Reserve System, November), available at [www.federalreserve.gov/pubs/feds/2007/200760/200760abs.html](http://www.federalreserve.gov/pubs/feds/2007/200760/200760abs.html); and Board of Governors of the Federal Reserve System, Division of Research and Statistics (2014), "Updated Historical Forecast Errors," memorandum, April 9, [www.federalreserve.gov/foia/files/20140409-historical-forecast-errors.pdf](http://www.federalreserve.gov/foia/files/20140409-historical-forecast-errors.pdf).

1. Definitions of variables are in the general note to table 1.

2. Measure is the overall consumer price index, the price measure that has been most widely used in government and private economic forecasts. Projection is percent change, fourth quarter of the previous year to the fourth quarter of the year indicated.

As in September, participants generally agreed that the levels of uncertainty associated with their inflation forecasts were broadly similar to historical norms, and most saw the risks to those projections as broadly balanced. A number of participants, however, viewed the risks to their inflation forecasts as tilted to the downside; the reasons discussed included the possibility that the recent low levels of inflation could prove more persistent than anticipated; the possibility that the upward pull on prices from inflation expectations might be weaker than assumed; or the judgment that, in current circumstances, it would be difficult for the Committee to respond effectively to low-inflation outcomes. Conversely, one participant saw upside risks to inflation, citing uncertainty about the timing and efficacy of the Committee's withdrawal of monetary policy accommodation.

Figure 4. Uncertainty and risks in economic projections



Note: For definitions of uncertainty and risks in economic projections, see the box "Forecast Uncertainty." Definitions of variables are in the general note to table 1.

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## Forecast Uncertainty

The economic projections provided by the members of the Board of Governors and the presidents of the Federal Reserve Banks inform discussions of monetary policy among policymakers and can aid public understanding of the basis for policy actions. Considerable uncertainty attends these projections, however. The economic and statistical models and relationships used to help produce economic forecasts are necessarily imperfect descriptions of the real world, and the future path of the economy can be affected by myriad unforeseen developments and events. Thus, in setting the stance of monetary policy, participants consider not only what appears to be the most likely economic outcome as embodied in their projections, but also the range of alternative possibilities, the likelihood of their occurring, and the potential costs to the economy should they occur.

Table 2 summarizes the average historical accuracy of a range of forecasts, including those reported in past *Monetary Policy Reports* and those prepared by the Federal Reserve Board's staff in advance of meetings of the Federal Open Market Committee. The projection error ranges shown in the table illustrate the considerable uncertainty associated with economic forecasts. For example, suppose a participant projects that real gross domestic product (GDP) and total consumer prices will rise steadily at annual rates of, respectively, 3 percent and 2 percent. If the uncertainty attending those projections is similar to that experienced in the past and the risks around the projections are broadly balanced, the numbers reported in table 2 would imply a probability of about 70 percent that actual GDP would expand within a range of 2.1 to 3.9 percent in the current year, 1.2 to 4.8 percent

in the second year, and 0.9 to 5.1 percent in the third and fourth years. The corresponding 70 percent confidence intervals for overall inflation would be 1.8 to 2.2 percent in the current year, 1.1 to 2.9 percent in the second year, and 1.0 to 3.0 percent in the third and fourth years.

Because current conditions may differ from those that prevailed, on average, over history, participants provide judgments as to whether the uncertainty attached to their projections of each variable is greater than, smaller than, or broadly similar to typical levels of forecast uncertainty in the past, as shown in table 2. Participants also provide judgments as to whether the risks to their projections are weighted to the upside, are weighted to the downside, or are broadly balanced. That is, participants judge whether each variable is more likely to be above or below their projections of the most likely outcome. These judgments about the uncertainty and the risks attending each participant's projections are distinct from the diversity of participants' views about the most likely outcomes. Forecast uncertainty is concerned with the risks associated with a particular projection rather than with divergences across a number of different projections.

As with real activity and inflation, the outlook for the future path of the federal funds rate is subject to considerable uncertainty. This uncertainty arises primarily because each participant's assessment of the appropriate stance of monetary policy depends importantly on the evolution of real activity and inflation over time. If economic conditions evolve in an unexpected manner, then assessments of the appropriate setting of the federal funds rate would change from that point forward.

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## ABBREVIATIONS

AFE	advanced foreign economy
BHC	bank holding company
BOJ	Bank of Japan
CDS	credit default swap
C&I	commercial and industrial
ECB	European Central Bank
ECI	employment cost index
E&I	equipment and intangibles
EME	emerging market economy
FOMC	Federal Open Market Committee; also, the Committee
GDP	gross domestic product
IOER	interest on excess reserves
MBS	mortgage-backed securities
ON RRP	overnight reverse repurchase agreement
OPEC	Organization of the Petroleum Exporting Countries
PCE	personal consumption expenditures
RRP	reverse repurchase agreement
SEP	Summary of Economic Projections
SLOOS	Senior Loan Officer Opinion Survey on Bank Lending Practices
SOMA	System Open Market Account
S&P	Standard & Poor's





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# Quantitative easing

From Wikipedia, the free encyclopedia

**Quantitative easing (QE)** is monetary policy used by a central bank to stimulate an economy when standard monetary policy has become ineffective.<sup>[1][2][3]</sup> A central bank implements quantitative easing by buying specified amounts of financial assets from commercial banks and other private institutions, thus raising the prices of those financial assets and lowering their yield, while simultaneously increasing the monetary base.<sup>[4][5]</sup> This differs from the more usual policy of buying or selling short-term government bonds in order to keep interbank interest rates at a specified target value.<sup>[6][7][8][9]</sup>

Expansionary monetary policy to stimulate the economy typically involves the central bank buying short-term government bonds in order to lower short-term market interest rates.<sup>[10][11][12][13]</sup> However, when short-term interest rates reach or approach zero, this method can no longer work.<sup>[14]</sup> In such circumstances monetary authorities may then use quantitative easing to further stimulate the economy by buying assets of longer maturity than short-term government bonds, thereby lowering longer-term interest rates further out on the yield curve.<sup>[15][16]</sup>

Quantitative easing can help ensure that inflation does not fall below a target.<sup>[9]</sup> Risks include the policy being more effective than intended in acting against deflation (leading to higher inflation in the longer term, due to increased money supply),<sup>[17]</sup> or not being effective enough if banks do not lend out the additional reserves.<sup>[18]</sup> According to the International Monetary Fund and various economists, quantitative easing undertaken since the global financial crisis of 2007–08 has mitigated some of the adverse effects of the crisis.<sup>[19][20][21]</sup>

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## Process

Quantitative easing is distinguished from standard central banking monetary policies, which are usually enacted by buying or selling government bonds on the open market to reach a desired target for the interbank interest rate. However, if a recession or depression continues even when a central bank has lowered interest rates to nearly zero, the central bank can no longer lower interest rates. The central bank may then implement a set of tactics known as quantitative easing. This policy is often considered a last resort to stimulate the economy.<sup>[22][23]</sup>

A central bank enacts quantitative easing by purchasing—without reference to the interest rate—a set *quantity* of bonds or other financial assets on financial markets from private financial institutions.<sup>[8][24]</sup> The goal of this policy is to facilitate an expansion of private bank lending; if private banks increase lending, it would increase the money supply. Additionally, if the central bank also purchases financial instruments that are riskier than government bonds, it can also lower the interest yield of those assets.

Quantitative easing, and monetary policy in general, can only be carried out if the central bank controls the currency used in the country. The central banks of countries in the Eurozone, for example, cannot unilaterally expand their money supply and thus cannot employ quantitative easing. They must instead rely on the European Central Bank (ECB) to enact monetary policy.<sup>[25]</sup>

## History

### Before 2007

Quantitative easing was first used by the Bank of Japan (BOJ) to fight domestic deflation in the early 2000s.<sup>[15][26][27][28]</sup> According to the Bank of Japan, the central bank adopted quantitative easing (量的金融緩和, *ryōteki kin'yū kanwa*) on 19 March 2001.<sup>[29][30]</sup>

The Bank of Japan had for many years, and as late as February 2001, claimed that "quantitative easing ... is not effective" and rejected its use for monetary policy.<sup>[31]</sup> The BOJ had maintained short-term interest rates at close to zero since 1999. Under quantitative easing, the BOJ flooded commercial banks with excess liquidity to promote private lending, leaving them with large stocks of excess reserves and therefore little risk of a liquidity shortage.<sup>[32]</sup> The BOJ accomplished this by buying more government bonds than would be required to set the interest rate to zero. It later also bought asset-backed securities and equities and extended the terms of its commercial paper–purchasing operation.<sup>[33]</sup>

The BOJ increased the commercial bank current account balance from ¥5 trillion to ¥35 trillion (approximately US\$300 billion) over a four-year period starting in March 2001. The BOJ also tripled the quantity of long-term Japan government bonds it could purchase on a monthly basis.

## After 2007

Since the advent of the global financial crisis of 2007–08, similar policies have been used by the United States, the United Kingdom, and the Eurozone. Quantitative easing was used by these countries because their risk-free short-term nominal interest rates were either at or close to zero. In the United States, this interest rate is the federal funds rate; in the United Kingdom, it is the official bank rate.

During the peak of the financial crisis in 2008, the US Federal Reserve expanded its balance sheet dramatically by adding new assets and new liabilities without "sterilizing" these by corresponding subtractions. In the same period, the United Kingdom also used quantitative easing as an additional arm of its monetary policy in order to alleviate its financial crisis.<sup>[34][35][36]</sup>

## US QE1, QE2, and QE3

The US Federal Reserve held between \$700 billion and \$800 billion of Treasury notes on its balance sheet before the recession. In late November 2008, the Federal Reserve started buying \$600 billion in mortgage-backed securities.<sup>[37]</sup> By March 2009, it held \$1.75 trillion of bank debt, mortgage-backed securities, and Treasury notes; this amount reached a peak of \$2.1 trillion in June 2010. Further purchases were halted as the economy started to improve, but resumed in August 2010 when the Fed decided the economy was not growing robustly. After the halt in June, holdings started falling naturally as debt matured and were projected to fall to \$1.7 trillion by 2012. The Fed's revised goal became to keep holdings at \$2.054 trillion. To maintain that level, the Fed bought \$30 billion in two- to ten-year Treasury notes every month.<sup>[38]</sup>

In November 2010, the Fed announced a second round of quantitative easing, buying \$600 billion of Treasury securities by the end of the second quarter of 2011.<sup>[39][40]</sup> The expression "QE2" became a ubiquitous nickname in 2010, used to refer to this second round of quantitative easing by US central banks.<sup>[41]</sup> Retrospectively, the round of quantitative easing preceding QE2 was called "QE1".<sup>[42][43]</sup>

A third round of quantitative easing, "QE3", was announced on September 13, 2012. In an 11–1 vote, the Federal Reserve decided to launch a new \$40 billion per month, open-ended bond purchasing program of agency mortgage-backed securities. Additionally, the Federal Open Market Committee (FOMC) announced that it would likely maintain the federal funds rate near zero "at least through 2015."<sup>[44][45]</sup> According to NASDAQ.com, this is effectively a stimulus program that allows the Federal Reserve to relieve \$40 billion per month of commercial housing market debt risk.<sup>[46]</sup> Because of its open-ended nature, QE3 has earned the popular nickname of "QE-Infinity."<sup>[47]</sup> On 12 December 2012, the FOMC announced an increase in the amount of open-ended purchases from \$40 billion to \$85 billion per month.<sup>[48]</sup>



Federal Reserve Holdings of Treasury Notes (blue) and Mortgage-Backed Securities (red)

On 19 June 2013, Ben Bernanke announced a "tapering" of some of the Fed's QE policies contingent upon continued positive economic data. Specifically, he said that the Fed could scale back its bond purchases from \$85 billion to \$65 billion a month during the upcoming September 2013 policy meeting.<sup>[49]</sup> He also suggested that the bond-buying program could wrap up by mid-2014.<sup>[50]</sup> While Bernanke did not announce an interest rate hike, he suggested that if inflation followed a 2% target rate and unemployment decreased to 6.5%, the Fed would likely start raising rates. The stock markets dropped by approximately 4.3% over the three trading days following Bernanke's announcement, with the Dow Jones dropping 659 points between the 19th and 24 June, closing at 14,660 at the end of the day on June 24.<sup>[51]</sup> On September 18, 2013, the Fed decided to hold off on scaling back its bond-buying program,<sup>[52]</sup> and later began tapering purchases the next year—February 2014.<sup>[53]</sup> Purchases were halted on October 29, 2014<sup>[54]</sup> after accumulating \$4.5 trillion in assets.<sup>[55]</sup>

## United Kingdom

During its QE program, the Bank of England bought gilts from financial institutions, along with a smaller amount of relatively high-quality debt issued by private companies.<sup>[56]</sup> The banks, insurance companies, and pension funds could then use the money they received for lending or even to buy back more bonds from the bank. Further, the central bank could lend the new money to private banks or buy assets from banks in exchange for currency. These measures have the effect of depressing interest yields on government bonds and similar investments, making it cheaper for business to raise capital.<sup>[57]</sup> Another side effect is that investors will switch to other investments, such as shares, boosting their price and thus encouraging consumption.<sup>[56]</sup> QE can reduce interbank overnight interest rates and thereby encourage banks to loan money to higher interest-paying and financially weaker bodies.

The Bank of England had purchased around £165 billion in assets as of September 2009 and around £175 billion in assets by the end of October 2009.<sup>[58]</sup> At its meeting in November 2009, the Monetary Policy Committee (MPC) voted to increase total asset purchases to £200 billion. Most of the assets purchased have been UK

government securities (gilts); the Bank has also purchased smaller quantities of high-quality private-sector assets.<sup>[59]</sup> In December 2010, MPC member Adam Posen called for a £50 billion expansion of the Bank's quantitative easing programme, while his colleague Andrew Sentance has called for an increase in interest rates due to inflation being above the target rate of 2%.<sup>[60]</sup> In October 2011, the Bank of England announced that it would undertake another round of QE, creating an additional £75 billion.<sup>[61]</sup> In February 2012 it announced an additional £50 billion.<sup>[62]</sup> In July 2012 it announced another £50 billion,<sup>[63]</sup> bringing the total amount to £375 billion. The Bank has said that it will not buy more than 70% of any issue of government debt.<sup>[64]</sup> This means that at least 30% of any issue of government debt will have to be purchased and held by institutions other than the Bank of England. In 2012 the Bank estimated that quantitative easing had benefited households differentially according to the assets they hold; richer households have more assets.<sup>[65]</sup>

## **Europe**

The European Central Bank said that it would focus on buying covered bonds, a form of corporate debt. It signalled that its initial purchases would be worth about €60 billion in May 2009.<sup>[66]</sup>

At the beginning of 2013, the Swiss National Bank had the largest balance sheet relative to the size of the economy it was responsible for, at close to 100% of Switzerland's national output. A total of 12% of its reserves were in foreign equities. By contrast, the US Federal Reserve's holdings equalled about 20% of US GDP, while the European Central Bank's assets were worth 30% of GDP.<sup>[67]</sup>

In a dramatic change of policy, on 22 January 2015 Mario Draghi, President of the European Central Bank, announced an 'expanded asset purchase programme': where €60 billion per month of euro-area bonds from central governments, agencies and European institutions would be bought. The stimulus was planned to last until September 2016 at the earliest with a total QE of at least €1.1 trillion. Mario Draghi announced the programme would continue: 'until we see a continued adjustment in the path of inflation', referring to the ECB's need to combat the growing threat of deflation across the eurozone in early 2015.<sup>[68][69]</sup>

## **Scandinavia**

Swedish National Bank launched quantitative easing in February 2015, announcing government bond purchase of nearly 1.2 billion USD.<sup>[70]</sup> The annualised inflation rate in January 2015 was minus 0.3 percent, and the bank implied that Sweden's economy could slide into deflation.<sup>[70]</sup>

## **Japan after 2007 and Abenomics**

In early October 2010, the Bank of Japan announced that it would examine the purchase of ¥5 trillion (US\$60 billion) in assets. This was an attempt to push down the value of the yen against the US dollar in order to stimulate the domestic economy by making Japanese exports cheaper; it did not work.<sup>[71]</sup>

On 4 August 2011 the BOJ announced a unilateral move to increase the commercial bank current account balance from ¥40 trillion (US\$504 billion) to a total of ¥50 trillion (US\$630 billion).<sup>[72][73]</sup> In October 2011, the Bank expanded its asset purchase program by ¥5 trillion (\$66bn) to a total of ¥55 trillion.<sup>[74]</sup>

On 4 April 2013, the Bank of Japan announced that it would expand its asset purchase program by 60 to 70 trillion Yen a year. <https://www.boj.or.jp/en/mopo/outline/qqe.htm/>

The Bank hoped to bring Japan from deflation to inflation, aiming for 2% inflation. The amount of purchases was so large that it was expected to double the money supply.<sup>[75]</sup> This policy has been named Abenomics, as a portmanteau of economic policies and Shinzō Abe, the current Prime Minister of Japan.

On 31 October 2014, the Boj announced the expansion of its bond buying program, to now buy 80 trillion Yen of bonds a year.<sup>[76]</sup>

## Effectiveness

According to the International Monetary Fund (IMF), the quantitative easing policies undertaken by the central banks of the major developed countries since the beginning of the late-2000s financial crisis have contributed to the reduction in systemic risks following the bankruptcy of Lehman Brothers. The IMF states that the policies also contributed to the improvements in market confidence and the bottoming-out of the recession in the G7 economies in the second half of 2009.<sup>[19]</sup>

Economist Martin Feldstein argues that QE2 led to a rise in the stock market in the second half of 2010, which in turn contributed to increasing consumption and the strong performance of the US economy in late 2010.<sup>[21]</sup> Former Federal Reserve Chairman Alan Greenspan calculated that as of July 2012, there was "very little impact on the economy."<sup>[77]</sup> Federal Reserve Governor Jeremy Stein has said that measures of quantitative easing such as large-scale asset purchases "have played a significant role in supporting economic activity".<sup>[20]</sup>

## Economic impact

Quantitative easing may cause higher inflation than desired if the amount of easing required is overestimated and too much money is created by the purchase of liquid assets.<sup>[17]</sup> On the other hand, QE can fail to spur demand if banks remain reluctant to lend money to businesses and households. Even then, QE can still ease the process of deleveraging as it lowers yields. However, there is a time lag between monetary growth and inflation; inflationary pressures associated with money growth from QE could build before the central bank acts to counter them.<sup>[78]</sup> Inflationary risks are mitigated if the system's economy outgrows the pace of the increase of the money supply from the easing. If production in an economy increases because of the increased money supply, the value of a unit of currency may also increase, even though there is more currency available. For example, if a nation's economy were to spur a significant increase in output at a rate at least as high as the amount of debt monetized, the inflationary pressures would be equalized. This can only happen if member banks actually lend the excess money out instead of hoarding the extra cash. During times of high economic output, the central bank always has the option of restoring reserves to higher levels through raising interest rates or other means, effectively reversing the easing steps taken.

Increasing the money supply tends to depreciate a country's exchange rates relative to other currencies, through the mechanism of the interest rate. Lower interest rates lead to a capital outflow from a country, thereby reducing foreign demand for a country's money, leading to a weaker currency. This feature of QE directly benefits exporters living in the country performing QE, as well as debtors, since the interest rate has fallen,

meaning there is less money to be repaid. However, it directly harms creditors as they earn less money from lower interest rates. Devaluation of a currency also directly harms importers, as the cost of imported goods is inflated by the devaluation of the currency.<sup>[79]</sup>

Neil Irwin wrote in *The New York Times* in October 2014 that the QE programs of the U.S. Federal Reserve likely contributed to:

- Lower interest rates for corporate bonds and mortgage rates, helping support housing prices;
- Higher stock market valuation, in terms of a higher price-earnings ratio for the S&P 500 index;
- Increased inflation rate and investor's expectations for future inflation;
- Higher rate of job creation; and
- Higher rate of GDP growth.<sup>[80]</sup>

## Risks

Economists such as John Taylor<sup>[81]</sup> believe that quantitative easing creates unpredictability. Since the increase in bank reserves may not immediately increase the money supply if held as excess reserves, the increased reserves create the danger that inflation may eventually result when the reserves are loaned out.<sup>[82]</sup>

## Impact on savings and pensions

In the European Union, World Pensions Council (WPC) financial economists have also argued that artificially low government bond interest rates induced by QE will have an adverse impact on the underfunding condition of pension funds, since "without returns that outstrip inflation, pension investors face the real value of their savings declining rather than ratcheting up over the next few years".<sup>[83][84]</sup>

## Housing market over-supply and QE3

The only member of the Federal Open Market Committee to vote against QE3, Richmond Federal Reserve Bank President Jeffrey M. Lacker, said,

The impetus ... is to aid the housing market. That's an area that's fallen short in this recovery. In most other U.S. postwar recoveries, we've seen a pretty sharp snap back in housing. Of course, the reason it hasn't come back in this recovery is that this recession was essentially caused by us building too many houses prior to the recession. We still have a huge overhang of houses that haven't been sold that are vacant. And it's going to take us a while before we want the houses we have, much less need to build more.<sup>[85]</sup>

## Capital flight

The new money could be used by the banks to invest in emerging markets, commodity-based economies, commodities themselves, and non-local opportunities rather than to lend to local businesses that are having difficulty getting loans.<sup>[86]</sup>

## Increased income and wealth inequality

According to CNBC's Robert Frank, a Bank of England report shows that its quantitative easing policies had benefited mainly the wealthy, and that 40% of those gains went to the richest 5% of British households.<sup>[87][88]</sup> Dhaval Joshi of BCA Research wrote that "QE cash ends up overwhelmingly in profits, thereby exacerbating already extreme income inequality and the consequent social tensions that arise from it".<sup>[88]</sup> Anthony Randazzo of the Reason Foundation wrote that QE "is fundamentally a regressive redistribution program that has been boosting wealth for those already engaged in the financial sector or those who already own homes, but passing little along to the rest of the economy. It is a primary driver of income inequality".<sup>[88]</sup>

In May 2013, Federal Reserve Bank of Dallas President Richard Fisher said that cheap money has made rich people richer, but has not done quite as much for working Americans.<sup>[89]</sup>

## Criticism by BRIC countries

BRIC countries have criticized the QE carried out by the central banks of developed nations. They share the argument that such actions amount to protectionism and competitive devaluation. As net exporters whose currencies are partially pegged to the dollar, they protest that QE causes inflation to rise in their countries and penalizes their industries.<sup>[90][91][92][93]</sup>

## Comparison with other instruments

### Qualitative easing

Professor Willem Buiter of the London School of Economics has proposed a terminology to distinguish *quantitative easing*, or an expansion of a central bank's balance sheet, from what he terms *qualitative easing*, or the process of a central bank adding riskier assets to its balance sheet:

Quantitative easing is an increase in the size of the balance sheet of the central bank through an increase [in its] monetary liabilities (base money), holding constant the composition of its assets. Asset composition can be defined as the proportional shares of the different financial instruments held by the central bank in the total value of its assets. An almost equivalent definition would be that quantitative easing is an increase in the size of the balance sheet of the central bank through an increase in its monetary liabilities that holds constant the (average) liquidity and riskiness of its asset portfolio.

Qualitative easing is a shift in the composition of the assets of the central bank towards less liquid and riskier assets, holding constant the size of the balance sheet (and the official policy rate and the rest of the list of usual suspects). The less liquid and more risky assets can be private securities as



well as sovereign or sovereign-guaranteed instruments. All forms of risk, including credit risk (default risk) are included.<sup>[94]</sup>

## Credit easing

In introducing the Federal Reserve's response to the 2008–9 financial crisis, Fed Chairman Ben Bernanke distinguished the new program, which he termed "credit easing", from Japanese-style quantitative easing. In his speech, he announced,

Our approach—which could be described as "credit easing"—resembles quantitative easing in one respect: It involves an expansion of the central bank's balance sheet. However, in a pure QE regime, the focus of policy is the quantity of bank reserves, which are liabilities of the central bank; the composition of loans and securities on the asset side of the central bank's balance sheet is incidental. Indeed, although the Bank of Japan's policy approach during the QE period was quite multifaceted, the overall stance of its policy was gauged primarily in terms of its target for bank reserves. In contrast, the Federal Reserve's credit easing approach focuses on the mix of loans and securities that it holds and on how this composition of assets affects credit conditions for households and businesses.<sup>[95]</sup>

Credit easing involves increasing the money supply by the purchase not of government bonds but of private-sector assets, such as corporate bonds and residential mortgage-backed securities.<sup>[96][97]</sup> In 2010, the Federal Reserve purchased \$1.25 trillion of mortgage-backed securities in order to support the sagging mortgage market. These purchases increased the monetary base in a way similar to a purchase of government securities.<sup>[98]</sup>

## Printing money

Quantitative easing has been nicknamed "printing money" by some members of the media,<sup>[99][100][101]</sup> central bankers,<sup>[102]</sup> and financial analysts.<sup>[103][104]</sup> The term *printing money* usually implies that newly created money is used to directly finance government deficits or pay off government debt (also known as *monetizing the government debt*). However, with QE, the newly created money is used to buy government bonds or other financial assets.<sup>[99]</sup> Central banks in most developed nations (e.g., the United Kingdom, the United States, Japan, and the EU) are prohibited from buying government debt directly from the government and must instead buy it from the secondary market.<sup>[98][105]</sup> This two-step process, where the government sells bonds to private entities that in turn sell them to the central bank, has been called "monetizing the debt" by many analysts.<sup>[98]</sup> The distinguishing characteristic between QE and monetizing debt is that with the former, the central bank creates money to stimulate the economy, not to finance government spending. Also, the central bank has the stated intention of reversing the QE when the economy has recovered (by selling the government bonds and other financial assets back into the market).<sup>[99]</sup> The only effective way to determine whether a central bank has monetized debt is to compare its performance relative to its stated objectives. Many central banks have adopted an inflation target. It is likely that a central bank is monetizing the debt if it continues to buy government debt when inflation is above target and if the government has problems with debt financing.<sup>[98]</sup>

Ben Bernanke remarked in 2002 that the US government had a technology called the printing press (or, today, its electronic equivalent), so that if rates reached zero and deflation threatened, the government could always act to ensure deflation was prevented. He said, however, that the government would not print money and distribute it "willy nilly" but would rather focus its efforts in certain areas (e.g., buying federal agency debt securities and mortgage-backed securities).<sup>[106][107]</sup> According to economist Robert McTeer, former president of the Federal Reserve Bank of Dallas, there is nothing wrong with printing money during a recession, and quantitative easing is different from traditional monetary policy "only in its magnitude and pre-announcement of amount and timing".<sup>[108][109]</sup> Stephen Hester, chief executive officer of the RBS Group, said in an interview, "What the Bank of England does in quantitative easing is it prints money to buy government debt, and so what has happened is the government has run a huge deficit over the past three years, but instead of having to find other people to lend it that money, the Bank of England has printed money to pay for the government deficit. If that QE hadn't happened then the government would have needed to find real people to buy its debt. So the Quantitative Easing has enabled governments, this government, to run a big budget deficit without killing the economy because the Bank of England has financed it. Now you can't do that for long because people get wise to it and it causes inflation and so on, but that's what it has done: money has been printed to fund the deficit."<sup>[110]</sup>

Richard W. Fisher, president of the Federal Reserve Bank of Dallas, warned in 2010 that QE carries "the risk of being perceived as embarking on the slippery slope of debt monetization. We know that once a central bank is perceived as targeting government debt yields at a time of persistent budget deficits, concern about debt monetization quickly arises." Later in the same speech, he stated that the Fed is monetizing the government debt: "The math of this new exercise is readily transparent: The Federal Reserve will buy \$110 billion a month in Treasuries, an amount that, annualized, represents the projected deficit of the federal government for next year. For the next eight months, the nation's central bank will be monetizing the federal debt."<sup>[111]</sup>

## **Altering debt maturity structure**

Based on research by economist Eric Swanson reassessing the effectiveness of the US Federal Open Market Committee action in 1961 known as Operation Twist, *The Economist* has posted that a similar restructuring of the supply of different types of debt would have an effect equal to that of QE.<sup>[112]</sup> Such action would allow finance ministries (e.g., the US Department of the Treasury) a role in the process now reserved for central banks.<sup>[112]</sup>

## **QE for the people**

In response to concerns that QE is failing to create sufficient demand, particularly in the Eurozone, a number of economists have called for "QE for the people". Instead of buying government bonds or other securities by creating bank reserves, as the Federal Reserve and Bank of England have done, some suggest that central banks could make payments directly to households.<sup>[113]</sup> Economists Mark Blyth & Eric Lonergan argue in *Foreign Affairs*, that this is the most effective solution for the Eurozone, particularly given the restrictions on fiscal policy.<sup>[114]</sup> They argue that based on the evidence from tax rebates in the United States, less than 5% of GDP transferred by the ECB to the household sector in the Eurozone would suffice to generate a recovery, a fraction of what it intends to do under standard QE. Oxford economist, John Muellbauer has suggested that this could be legally implemented using the electoral register.<sup>[115]</sup>

## See also

- Currency War of 2009–11
- Economic history of Japan
- Money creation
- Open market operation
- Zero interest-rate policy ZIRP

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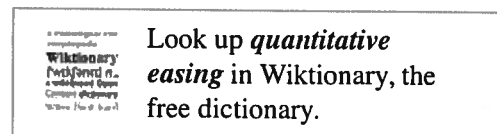
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## External links

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([http://www.clevelandfed.org/research/data/credit\\_easing/index.cfm](http://www.clevelandfed.org/research/data/credit_easing/index.cfm)) Interactive chart of the assets on Federal Reserve's balance sheet.

- Deflation: Making Sure "It" Doesn't Happen Here  
(<http://www.federalreserve.gov/BOARDDOCS/SPEECHES/2002/20021121/default.htm>), 2002 speech by Ben Bernanke on deflation and the utility of quantitative easing
- Bank of England – Quantitative Easing  
(<http://www.bankofengland.co.uk/monetarypolicy/assetpurchases.htm>)
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 **Bernanke Fed Monetary Policy Report Feb 2013.**  
 **04/22/15 01:14 AM**



# Board of Governors of the Federal Reserve System

## Testimony

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### **Chairman Ben S. Bernanke**

#### ***Semiannual Monetary Policy Report to the Congress***

**Before the Committee on Banking, Housing, and Urban Affairs, U.S. Senate, Washington, D.C.**

**February 26, 2013**

***Chairman Bernanke presented identical remarks before the Committee on Financial Services, U.S. House of Representatives on February 27, 2013***

Chairman Johnson, Ranking Member Crapo, and other members of the Committee, I am pleased to present the Federal Reserve's semiannual *Monetary Policy Report*. I will begin with a short summary of current economic conditions and then discuss aspects of monetary and fiscal policy.

#### **Current Economic Conditions**

Since I last reported to this Committee in mid-2012, economic activity in the United States has continued to expand at a moderate if somewhat uneven pace. In particular, real gross domestic product (GDP) is estimated to have risen at an annual rate of about 3 percent in the third quarter but to have been essentially flat in the fourth quarter.<sup>1</sup> The pause in real GDP growth last quarter does not appear to reflect a stalling-out of the recovery. Rather, economic activity was temporarily restrained by weather-related disruptions and by transitory declines in a few volatile categories of spending, even as demand by U.S. households and businesses continued to expand. Available information suggests that economic growth has picked up again this year.

Consistent with the moderate pace of economic growth, conditions in the labor market have been improving gradually. Since July, nonfarm payroll employment has increased by 175,000 jobs per month on average, and the unemployment rate declined 0.3 percentage point to 7.9 percent over the same period. Cumulatively, private-sector payrolls have now grown by about 6.1 million jobs since their low point in early 2010, and the unemployment rate has fallen a bit more than 2 percentage points since its cyclical peak in late 2009. Despite these gains, however, the job market remains generally weak, with the unemployment rate well above its longer-run normal level. About 4.7 million of the unemployed have been without a job for six months or more, and millions more would like full-time employment but are able to find only part-time work. High unemployment has substantial costs, including not only the hardship faced by the unemployed and their families, but also the harm done to the vitality and productive potential of our economy as a whole. Lengthy periods of unemployment and underemployment can erode workers' skills and attachment to the labor force or prevent young people from gaining skills and experience in the first place--developments that could significantly reduce their productivity and earnings in the longer term. The loss of output and earnings associated with high unemployment also reduces government revenues and increases spending, thereby leading to larger deficits and higher levels of debt.

The recent increase in gasoline prices, which reflects both higher crude oil prices and wider refining margins, is hitting family budgets. However, overall inflation remains low. Over the second half of 2012, the price index for personal consumption expenditures rose at an annual rate of 1-1/2 percent, similar to the rate of increase in the first half of the year. Measures of longer-term inflation expectations have remained in the narrow ranges seen over the past several years. Against this

backdrop, the Federal Open Market Committee (FOMC) anticipates that inflation over the medium term likely will run at or below its 2 percent objective.

### **Monetary Policy**

With unemployment well above normal levels and inflation subdued, progress toward the Federal Reserve's mandated objectives of maximum employment and price stability has required a highly accommodative monetary policy. Under normal circumstances, policy accommodation would be provided through reductions in the FOMC's target for the federal funds rate--the interest rate on overnight loans between banks. However, as this rate has been close to zero since December 2008, the Federal Reserve has had to use alternative policy tools.

These alternative tools have fallen into two categories. The first is "forward guidance" regarding the FOMC's anticipated path for the federal funds rate. Since longer-term interest rates reflect market expectations for shorter-term rates over time, our guidance influences longer-term rates and thus supports a stronger recovery. The formulation of this guidance has evolved over time. Between August 2011 and December 2012, the Committee used calendar dates to indicate how long it expected economic conditions to warrant exceptionally low levels for the federal funds rate. At its December 2012 meeting, the FOMC agreed to shift to providing more explicit guidance on how it expects the policy rate to respond to economic developments. Specifically, the December postmeeting statement indicated that the current exceptionally low range for the federal funds rate "will be appropriate at least as long as the unemployment rate remains above 6-1/2 percent, inflation between one and two years ahead is projected to be no more than a half percentage point above the Committee's 2 percent longer-run goal, and longer-term inflation expectations continue to be well anchored."<sup>2</sup> An advantage of the new formulation, relative to the previous date-based guidance, is that it allows market participants and the public to update their monetary policy expectations more accurately in response to new information about the economic outlook. The new guidance also serves to underscore the Committee's intention to maintain accommodation as long as needed to promote a stronger economic recovery with stable prices.<sup>3</sup>

The second type of nontraditional policy tool employed by the FOMC is large-scale purchases of longer-term securities, which, like our forward guidance, are intended to support economic growth by putting downward pressure on longer-term interest rates. The Federal Reserve has engaged in several rounds of such purchases since late 2008. Last September the FOMC announced that it would purchase agency mortgage-backed securities at a pace of \$40 billion per month, and in December the Committee stated that, in addition, beginning in January it would purchase longer-term Treasury securities at an initial pace of \$45 billion per month.<sup>4</sup> These additional purchases of longer-term Treasury securities replace the purchases we were conducting under our now-completed maturity extension program, which lengthened the maturity of our securities portfolio without increasing its size. The FOMC has indicated that it will continue purchases until it observes a substantial improvement in the outlook for the labor market in a context of price stability.

The Committee also stated that in determining the size, pace, and composition of its asset purchases, it will take appropriate account of their likely efficacy and costs. In other words, as with all of its policy decisions, the Committee continues to assess its program of asset purchases within a cost-benefit framework. In the current economic environment, the benefits of asset purchases, and of policy accommodation more generally, are clear: Monetary policy is providing important support to the recovery while keeping inflation close to the FOMC's 2 percent objective. Notably, keeping longer-term interest rates low has helped spark recovery in the housing market and led to increased sales and production of automobiles and other durable goods. By raising employment and household wealth--for example, through higher home prices--these developments have in turn supported consumer sentiment and spending.

Highly accommodative monetary policy also has several potential costs and risks, which the

Committee is monitoring closely. For example, if further expansion of the Federal Reserve's balance sheet were to undermine public confidence in our ability to exit smoothly from our accommodative policies at the appropriate time, inflation expectations could rise, putting the FOMC's price-stability objective at risk. However, the Committee remains confident that it has the tools necessary to tighten monetary policy when the time comes to do so. As I noted, inflation is currently subdued, and inflation expectations appear well anchored; neither the FOMC nor private forecasters are projecting the development of significant inflation pressures.

Another potential cost that the Committee takes very seriously is the possibility that very low interest rates, if maintained for a considerable time, could impair financial stability. For example, portfolio managers dissatisfied with low returns may "reach for yield" by taking on more credit risk, duration risk, or leverage. On the other hand, some risk-taking--such as when an entrepreneur takes out a loan to start a new business or an existing firm expands capacity--is a necessary element of a healthy economic recovery. Moreover, although accommodative monetary policies may increase certain types of risk-taking, in the present circumstances they also serve in some ways to reduce risk in the system, most importantly by strengthening the overall economy, but also by encouraging firms to rely more on longer-term funding, and by reducing debt service costs for households and businesses. In any case, the Federal Reserve is responding actively to financial stability concerns through substantially expanded monitoring of emerging risks in the financial system, an approach to the supervision of financial firms that takes a more systemic perspective, and the ongoing implementation of reforms to make the financial system more transparent and resilient. Although a long period of low rates could encourage excessive risk-taking, and continued close attention to such developments is certainly warranted, to this point we do not see the potential costs of the increased risk-taking in some financial markets as outweighing the benefits of promoting a stronger economic recovery and more-rapid job creation.<sup>5</sup>

Another aspect of the Federal Reserve's policies that has been discussed is their implications for the federal budget. The Federal Reserve earns substantial interest on the assets it holds in its portfolio, and, other than the amount needed to fund our cost of operations, all net income is remitted to the Treasury. With the expansion of the Federal Reserve's balance sheet, yearly remittances have roughly tripled in recent years, with payments to the Treasury totaling approximately \$290 billion between 2009 and 2012.<sup>6</sup> However, if the economy continues to strengthen, as we anticipate, and policy accommodation is accordingly reduced, these remittances would likely decline in coming years. Federal Reserve analysis shows that remittances to the Treasury could be quite low for a time in some scenarios, particularly if interest rates were to rise quickly.<sup>7</sup> However, even in such scenarios, it is highly likely that average annual remittances over the period affected by the Federal Reserve's purchases will remain higher than the pre-crisis norm, perhaps substantially so. Moreover, to the extent that monetary policy promotes growth and job creation, the resulting reduction in the federal deficit would dwarf any variation in the Federal Reserve's remittances to the Treasury.

### **Thoughts on Fiscal Policy**

Although monetary policy is working to promote a more robust recovery, it cannot carry the entire burden of ensuring a speedier return to economic health. The economy's performance both over the near term and in the longer run will depend importantly on the course of fiscal policy. The challenge for the Congress and the Administration is to put the federal budget on a sustainable long-run path that promotes economic growth and stability without unnecessarily impeding the current recovery.

Significant progress has been made recently toward reducing the federal budget deficit over the next few years. The projections released earlier this month by the Congressional Budget Office (CBO) indicate that, under current law, the federal deficit will narrow from 7 percent of GDP last year to 2-1/2 percent in fiscal year 2015.<sup>8</sup> As a result, the federal debt held by the public (including that held by the Federal Reserve) is projected to remain roughly 75 percent of GDP through much of the current decade.

However, a substantial portion of the recent progress in lowering the deficit has been concentrated in near-term budget changes, which, taken together, could create a significant headwind for the economic recovery. The CBO estimates that deficit-reduction policies in current law will slow the pace of real GDP growth by about 1-1/2 percentage points this year, relative to what it would have been otherwise. A significant portion of this effect is related to the automatic spending sequestration that is scheduled to begin on March 1, which, according to the CBO's estimates, will contribute about 0.6 percentage point to the fiscal drag on economic growth this year. Given the still-moderate underlying pace of economic growth, this additional near-term burden on the recovery is significant. Moreover, besides having adverse effects on jobs and incomes, a slower recovery would lead to less actual deficit reduction in the short run for any given set of fiscal actions.

At the same time, and despite progress in reducing near-term budget deficits, the difficult process of addressing longer-term fiscal imbalances has only begun. Indeed, the CBO projects that the federal deficit and debt as a percentage of GDP will begin rising again in the latter part of this decade, reflecting in large part the aging of the population and fast-rising health-care costs. To promote economic growth in the longer term, and to preserve economic and financial stability, fiscal policymakers will have to put the federal budget on a sustainable long-run path that first stabilizes the ratio of federal debt to GDP and, given the current elevated level of debt, eventually places that ratio on a downward trajectory. Between 1960 and the onset of the financial crisis, federal debt averaged less than 40 percent of GDP. This relatively low level of debt provided the nation much-needed flexibility to meet the economic challenges of the past few years. Replenishing this fiscal capacity will give future Congresses and Administrations greater scope to deal with unforeseen events.

To address both the near- and longer-term issues, the Congress and the Administration should consider replacing the sharp, frontloaded spending cuts required by the sequestration with policies that reduce the federal deficit more gradually in the near term but more substantially in the longer run. Such an approach could lessen the near-term fiscal headwinds facing the recovery while more effectively addressing the longer-term imbalances in the federal budget.

The sizes of deficits and debt matter, of course, but not all tax and spending programs are created equal with respect to their effects on the economy. To the greatest extent possible, in their efforts to achieve sound public finances, fiscal policymakers should not lose sight of the need for federal tax and spending policies that increase incentives to work and save, encourage investments in workforce skills, advance private capital formation, promote research and development, and provide necessary and productive public infrastructure. Although economic growth alone cannot eliminate federal budget imbalances, in either the short or longer term, a more rapidly expanding economic pie will ease the difficult choices we face.

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1. Data for the fourth quarter of 2012 from the national income and product accounts reflect the advance estimate released on January 30, 2013. [Return to text](#)
  2. See Board of Governors of the Federal Reserve System (2012), "[Federal Reserve Issues FOMC Statement](#)," press release, December 12. [Return to text](#)
  3. The numerical values for unemployment and inflation included in the guidance are thresholds, not triggers; that is, depending on economic circumstances at the time, the Committee may judge that it is not appropriate to begin raising its target for the federal funds rate as soon as one or both of the thresholds is reached. The 6-1/2 percent threshold for the unemployment rate should not be interpreted as the Committee's longer-term objective for unemployment; because monetary policy affects the economy with a lag, the first increase in the target for the funds rate will likely have to occur when the unemployment rate is still above its longer-run normal level. Likewise, the Committee has not altered its longer-run goal for inflation of 2 percent, and it neither seeks nor

expects a persistent increase in inflation above that target. [Return to text](#)

4. See Board of Governors of the Federal Reserve System (2012), "[Federal Reserve Issues FOMC Statement](#)," press release, September 13; and Board of Governors, "FOMC Statement," December 12, in note 2. [Return to text](#)

5. The Federal Reserve is also monitoring financial markets to ensure that asset purchases do not impair their functioning. [Return to text](#)

6. See Board of Governors of the Federal Reserve System (2013), "[Reserve Bank Income and Expense Data and Transfers to the Treasury for 2012](#)," press release, January 10. [Return to text](#)

7. See Carpenter, Seth B., Jane E. Ihrig, Elizabeth C. Klee, Daniel W. Quinn, and Alexander H. Boote (2013), "[The Federal Reserve's Balance Sheet and Earnings: A Primer and Projections \(PDF\)](#)," Finance and Economics Discussion Series 2013-01 (Washington: Federal Reserve Board, January). [Return to text](#)

8. See Congressional Budget Office (2013), [The Budget and Economic Outlook: Fiscal Years 2013 to 2023](#) (Washington: CBO, February). [Return to text](#)

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# Board of Governors of the Federal Reserve System

## Speech

**Chairman Ben S. Bernanke**

**At the Stamp Lecture, London School of Economics, London, England**

**January 13, 2009**

### **The Crisis and the Policy Response**

For almost a year and a half the global financial system has been under extraordinary stress--stress that has now decisively spilled over to the global economy more broadly. The proximate cause of the crisis was the turn of the housing cycle in the United States and the associated rise in delinquencies on subprime mortgages, which imposed substantial losses on many financial institutions and shook investor confidence in credit markets. However, although the subprime debacle triggered the crisis, the developments in the U.S. mortgage market were only one aspect of a much larger and more encompassing credit boom whose impact transcended the mortgage market to affect many other forms of credit. Aspects of this broader credit boom included widespread declines in underwriting standards, breakdowns in lending oversight by investors and rating agencies, increased reliance on complex and opaque credit instruments that proved fragile under stress, and unusually low compensation for risk-taking.

The abrupt end of the credit boom has had widespread financial and economic ramifications. Financial institutions have seen their capital depleted by losses and writedowns and their balance sheets clogged by complex credit products and other illiquid assets of uncertain value. Rising credit risks and intense risk aversion have pushed credit spreads to unprecedented levels, and markets for securitized assets, except for mortgage securities with government guarantees, have shut down. Heightened systemic risks, falling asset values, and tightening credit have in turn taken a heavy toll on business and consumer confidence and precipitated a sharp slowing in global economic activity. The damage, in terms of lost output, lost jobs, and lost wealth, is already substantial.

The global economy will recover, but the timing and strength of the recovery are highly uncertain. Government policy responses around the world will be critical determinants of the speed and vigor of the recovery. Today I will offer some thoughts on current and prospective policy responses to the crisis in the United States, with a particular emphasis on actions by the Federal Reserve. In doing so, I will outline the framework that has guided the Federal Reserve's responses to date. I will also explain why I believe that the Fed still has powerful tools at its disposal to fight the financial crisis and the economic downturn, even though the overnight federal funds rate cannot be reduced meaningfully further.

### **The Federal Reserve's Response to the Crisis**

The Federal Reserve has responded aggressively to the crisis since its emergence in the summer of 2007. Following a cut in the discount rate (the rate at which the Federal Reserve lends to depository institutions) in August of that year, the Federal Open Market Committee began to ease monetary policy in September 2007, reducing the target for the federal funds rate by 50 basis points.<sup>1</sup> As indications of economic weakness proliferated, the Committee continued to respond, bringing down its target for the federal funds rate by a cumulative 325 basis points by the spring of 2008. In historical comparison, this policy response stands out as exceptionally rapid and proactive. In taking these actions, we aimed both to cushion the direct effects of the financial turbulence on the

economy and to reduce the virulence of the so-called adverse feedback loop, in which economic weakness and financial stress become mutually reinforcing.

These policy actions helped to support employment and incomes during the first year of the crisis. Unfortunately, the intensification of the financial turbulence last fall led to further deterioration in the economic outlook. The Committee responded by cutting the target for the federal funds rate an additional 100 basis points last October, with half of that reduction coming as part of an unprecedented coordinated interest rate cut by six major central banks on October 8. In December the Committee reduced its target further, setting a range of 0 to 25 basis points for the target federal funds rate.

The Committee's aggressive monetary easing was not without risks. During the early phase of rate reductions, some observers expressed concern that these policy actions would stoke inflation. These concerns intensified as inflation reached high levels in mid-2008, mostly reflecting a surge in the prices of oil and other commodities. The Committee takes its responsibility to ensure price stability extremely seriously, and throughout this period it remained closely attuned to developments in inflation and inflation expectations. However, the Committee also maintained the view that the rapid rise in commodity prices in 2008 primarily reflected sharply increased demand for raw materials in emerging market economies, in combination with constraints on the supply of these materials, rather than general inflationary pressures. Committee members expected that, at some point, global economic growth would moderate, resulting in slower increases in the demand for commodities and a leveling out in their prices--as reflected, for example, in the pattern of futures market prices. As you know, commodity prices peaked during the summer and, rather than leveling out, have actually fallen dramatically with the weakening in global economic activity. As a consequence, overall inflation has already declined significantly and appears likely to moderate further.

The Fed's monetary easing has been reflected in significant declines in a number of lending rates, especially shorter-term rates, thus offsetting to some degree the effects of the financial turmoil on financial conditions. However, that offset has been incomplete, as widening credit spreads, more restrictive lending standards, and credit market dysfunction have worked against the monetary easing and led to tighter financial conditions overall. In particular, many traditional funding sources for financial institutions and markets have dried up, and banks and other lenders have found their ability to securitize mortgages, auto loans, credit card receivables, student loans, and other forms of credit greatly curtailed. Thus, in addition to easing monetary policy, the Federal Reserve has worked to support the functioning of credit markets and to reduce financial strains by providing liquidity to the private sector. In doing so, as I will discuss shortly, the Fed has deployed a number of additional policy tools, some of which were previously in our toolkit and some of which have been created as the need arose.

### **Beyond the Federal Funds Rate: The Fed's Policy Toolkit**

Although the federal funds rate is now close to zero, the Federal Reserve retains a number of policy tools that can be deployed against the crisis.

One important tool is policy communication. Even if the overnight rate is close to zero, the Committee should be able to influence longer-term interest rates by informing the public's expectations about the future course of monetary policy. To illustrate, in its statement after its December meeting, the Committee expressed the view that economic conditions are likely to warrant an unusually low federal funds rate for some time.<sup>2</sup> To the extent that such statements cause the public to lengthen the horizon over which they expect short-term rates to be held at very low levels, they will exert downward pressure on longer-term rates, stimulating aggregate demand. It is important, however, that statements of this sort be expressed in conditional fashion--that is, that they link policy expectations to the evolving economic outlook. If the public were to perceive a statement about future policy to be unconditional, then long-term rates might fail to respond in the

desired fashion should the economic outlook change materially.

Other than policies tied to current and expected future values of the overnight interest rate, the Federal Reserve has--and indeed, has been actively using--a range of policy tools to provide direct support to credit markets and thus to the broader economy. As I will elaborate, I find it useful to divide these tools into three groups. Although these sets of tools differ in important respects, they have one aspect in common: They all make use of the asset side of the Federal Reserve's balance sheet. That is, each involves the Fed's authorities to extend credit or purchase securities.

The first set of tools, which are closely tied to the central bank's traditional role as the lender of last resort, involve the provision of short-term liquidity to sound financial institutions. Over the course of the crisis, the Fed has taken a number of extraordinary actions to ensure that financial institutions have adequate access to short-term credit. These actions include creating new facilities for auctioning credit and making primary securities dealers, as well as banks, eligible to borrow at the Fed's discount window.<sup>3</sup> For example, since August 2007 we have lowered the spread between the discount rate and the federal funds rate target from 100 basis points to 25 basis points; increased the term of discount window loans from overnight to 90 days; created the Term Auction Facility, which auctions credit to depository institutions for terms up to three months; put into place the Term Securities Lending Facility, which allows primary dealers to borrow Treasury securities from the Fed against less-liquid collateral; and initiated the Primary Dealer Credit Facility as a source of liquidity for those firms, among other actions.

Because interbank markets are global in scope, the Federal Reserve has also approved bilateral currency swap agreements with 14 foreign central banks. The swap facilities have allowed these central banks to acquire dollars from the Federal Reserve to lend to banks in their jurisdictions, which has served to ease conditions in dollar funding markets globally. In most cases, the provision of this dollar liquidity abroad was conducted in tight coordination with the Federal Reserve's own funding auctions.

Importantly, the provision of credit to financial institutions exposes the Federal Reserve to only minimal credit risk; the loans that we make to banks and primary dealers through our various facilities are generally overcollateralized and made with recourse to the borrowing firm. The Federal Reserve has never suffered any losses in the course of its normal lending to banks and, now, to primary dealers. In the case of currency swaps, the foreign central banks are responsible for repayment, not the financial institutions that ultimately receive the funds; moreover, as further security, the Federal Reserve receives an equivalent amount of foreign currency in exchange for the dollars it provides to foreign central banks.

Liquidity provision by the central bank reduces systemic risk by assuring market participants that, should short-term investors begin to lose confidence, financial institutions will be able to meet the resulting demands for cash without resorting to potentially destabilizing fire sales of assets. Moreover, backstopping the liquidity needs of financial institutions reduces funding stresses and, all else equal, should increase the willingness of those institutions to lend and make markets.

On the other hand, the provision of ample liquidity to banks and primary dealers is no panacea. Today, concerns about capital, asset quality, and credit risk continue to limit the willingness of many intermediaries to extend credit, even when liquidity is ample. Moreover, providing liquidity to financial institutions does not address directly instability or declining credit availability in critical nonbank markets, such as the commercial paper market or the market for asset-backed securities, both of which normally play major roles in the extension of credit in the United States.

To address these issues, the Federal Reserve has developed a second set of policy tools, which involve the provision of liquidity directly to borrowers and investors in key credit markets. Notably, we have introduced facilities to purchase highly rated commercial paper at a term of three months

and to provide backup liquidity for money market mutual funds. In addition, the Federal Reserve and the Treasury have jointly announced a facility that will lend against AAA-rated asset-backed securities collateralized by student loans, auto loans, credit card loans, and loans guaranteed by the Small Business Administration. The Federal Reserve's credit risk exposure in the latter facility will be minimal, because the collateral will be subject to a "haircut" and the Treasury is providing \$20 billion of capital as supplementary loss protection. We expect this facility to be operational next month.

The rationales and objectives of our various facilities differ, according to the nature of the problem being addressed. In some cases, as in our programs to backstop money market mutual funds, the purpose of the facility is to serve, once again in classic central bank fashion, as liquidity provider of last resort. Following a prominent fund's "breaking of the buck"--that is, a decline in its net asset value below par--in September, investors began to withdraw funds in large amounts from money market mutual funds that invest in private instruments such as commercial paper and certificates of deposit. Fund managers responded by liquidating assets and investing at only the shortest of maturities. As the pace of withdrawals increased, both the stability of the money market mutual fund industry and the functioning of the commercial paper market were threatened. The Federal Reserve responded with several programs, including a facility to finance bank purchases of high-quality asset-backed commercial paper from money market mutual funds. This facility effectively channeled liquidity to the funds, helping them to meet redemption demands without having to sell assets indiscriminately. Together with a Treasury program that provided partial insurance to investors in money market mutual funds, these efforts helped stanch the cash outflows from those funds and stabilize the industry.

The Federal Reserve's facility to buy high-quality (A1-P1) commercial paper at a term of three months was likewise designed to provide a liquidity backstop, in this case for investors and borrowers in the commercial paper market. As I mentioned, the functioning of that market deteriorated significantly in September, with borrowers finding financing difficult to obtain, and then only at high rates and very short (usually overnight) maturities. By serving as a backup source of liquidity for borrowers, the Fed's commercial paper facility was aimed at reducing investor and borrower concerns about "rollover risk," the risk that a borrower could not raise new funds to repay maturing commercial paper. The reduction of rollover risk, in turn, should increase the willingness of private investors to lend, particularly for terms longer than overnight. These various actions appear to have improved the functioning of the commercial paper market, as rates and risk spreads have come down and the average maturities of issuance have increased.

In contrast, our forthcoming asset-backed securities program, a joint effort with the Treasury, is not purely for liquidity provision. This facility will provide three-year term loans to investors against AAA-rated securities backed by recently originated consumer and small-business loans. Unlike our other lending programs, this facility combines Federal Reserve liquidity with capital provided by the Treasury, which allows it to accept some credit risk. By providing a combination of capital and liquidity, this facility will effectively substitute public for private balance sheet capacity, in a period of sharp deleveraging and risk aversion in which such capacity appears very short. If the program works as planned, it should lead to lower rates and greater availability of consumer and small business credit. Over time, by increasing market liquidity and stimulating market activity, this facility should also help to revive private lending. Importantly, if the facility for asset-backed securities proves successful, its basic framework can be expanded to accommodate higher volumes or additional classes of securities as circumstances warrant.

The Federal Reserve's third set of policy tools for supporting the functioning of credit markets involves the purchase of longer-term securities for the Fed's portfolio. For example, we recently announced plans to purchase up to \$100 billion in government-sponsored enterprise (GSE) debt and up to \$500 billion in GSE mortgage-backed securities over the next few quarters. Notably, mortgage rates dropped significantly on the announcement of this program and have fallen further

since it went into operation. Lower mortgage rates should support the housing sector. The Committee is also evaluating the possibility of purchasing longer-term Treasury securities. In determining whether to proceed with such purchases, the Committee will focus on their potential to improve conditions in private credit markets, such as mortgage markets.

These three sets of policy tools--lending to financial institutions, providing liquidity directly to key credit markets, and buying longer-term securities--have the common feature that each represents a use of the asset side of the Fed's balance sheet, that is, they all involve lending or the purchase of securities. The virtue of these policies in the current context is that they allow the Federal Reserve to continue to push down interest rates and ease credit conditions in a range of markets, despite the fact that the federal funds rate is close to its zero lower bound.

### **Credit Easing versus Quantitative Easing**

The Federal Reserve's approach to supporting credit markets is conceptually distinct from quantitative easing (QE), the policy approach used by the Bank of Japan from 2001 to 2006. Our approach--which could be described as "credit easing"--resembles quantitative easing in one respect: It involves an expansion of the central bank's balance sheet. However, in a pure QE regime, the focus of policy is the quantity of bank reserves, which are liabilities of the central bank; the composition of loans and securities on the asset side of the central bank's balance sheet is incidental. Indeed, although the Bank of Japan's policy approach during the QE period was quite multifaceted, the overall stance of its policy was gauged primarily in terms of its target for bank reserves. In contrast, the Federal Reserve's credit easing approach focuses on the mix of loans and securities that it holds and on how this composition of assets affects credit conditions for households and businesses. This difference does not reflect any doctrinal disagreement with the Japanese approach, but rather the differences in financial and economic conditions between the two episodes. In particular, credit spreads are much wider and credit markets more dysfunctional in the United States today than was the case during the Japanese experiment with quantitative easing. To stimulate aggregate demand in the current environment, the Federal Reserve must focus its policies on reducing those spreads and improving the functioning of private credit markets more generally.

The stimulative effect of the Federal Reserve's credit easing policies depends sensitively on the particular mix of lending programs and securities purchases that it undertakes. When markets are illiquid and private arbitrage is impaired by balance sheet constraints and other factors, as at present, one dollar of longer-term securities purchases is unlikely to have the same impact on financial markets and the economy as a dollar of lending to banks, which has in turn a different effect than a dollar of lending to support the commercial paper market. Because various types of lending have heterogeneous effects, the stance of Fed policy in the current regime--in contrast to a QE regime--is not easily summarized by a single number, such as the quantity of excess reserves or the size of the monetary base. In addition, the usage of Federal Reserve credit is determined in large part by borrower needs and thus will tend to increase when market conditions worsen and decline when market conditions improve. Setting a target for the size of the Federal Reserve's balance sheet, as in a QE regime, could thus have the perverse effect of forcing the Fed to tighten the terms and availability of its lending at times when market conditions were worsening, and vice versa.

The lack of a simple summary measure or policy target poses an important communications challenge. To minimize market uncertainty and achieve the maximum effect of its policies, the Federal Reserve is committed to providing the public as much information as possible about the uses of its balance sheet, plans regarding future uses of its balance sheet, and the criteria on which the relevant decisions are based.<sup>4</sup>

### **Exit Strategy**

Some observers have expressed the concern that, by expanding its balance sheet, the Federal Reserve is effectively printing money, an action that will ultimately be inflationary. The Fed's lending activities have indeed resulted in a large increase in the excess reserves held by banks.

Bank reserves, together with currency, make up the narrowest definition of money, the monetary base; as you would expect, this measure of money has risen significantly as the Fed's balance sheet has expanded. However, banks are choosing to leave the great bulk of their excess reserves idle, in most cases on deposit with the Fed. Consequently, the rates of growth of broader monetary aggregates, such as M1 and M2, have been much lower than that of the monetary base. At this point, with global economic activity weak and commodity prices at low levels, we see little risk of inflation in the near term; indeed, we expect inflation to continue to moderate.

However, at some point, when credit markets and the economy have begun to recover, the Federal Reserve will have to unwind its various lending programs. To some extent, this unwinding will happen automatically, as improvements in credit markets should reduce the need to use Fed facilities. Indeed, where possible we have tried to set lending rates and margins at levels that are likely to be increasingly unattractive to borrowers as financial conditions normalize. In addition, some programs--those authorized under the Federal Reserve's so-called 13(3) authority, which requires a finding that conditions in financial markets are "unusual and exigent"--will by law have to be eliminated once credit market conditions substantially normalize. However, as the unwinding of the Fed's various programs effectively constitutes a tightening of policy, the principal factor determining the timing and pace of that process will be the Committee's assessment of the condition of credit markets and the prospects for the economy.

As lending programs are scaled back, the size of the Federal Reserve's balance sheet will decline, implying a reduction in excess reserves and the monetary base. A significant shrinking of the balance sheet can be accomplished relatively quickly, as a substantial portion of the assets that the Federal Reserve holds--including loans to financial institutions, currency swaps, and purchases of commercial paper--are short-term in nature and can simply be allowed to run off as the various programs and facilities are scaled back or shut down. As the size of the balance sheet and the quantity of excess reserves in the system decline, the Federal Reserve will be able to return to its traditional means of making monetary policy--namely, by setting a target for the federal funds rate.

Although a large portion of Federal Reserve assets are short-term in nature, we do hold or expect to hold significant quantities of longer-term assets, such as the mortgage-backed securities that we will buy over the next two quarters. Although longer-term securities can also be sold, of course, we would not anticipate disposing of more than a small portion of these assets in the near term, which will slow the rate at which our balance sheet can shrink. We are monitoring the maturity composition of our balance sheet closely and do not expect a significant problem in reducing our balance sheet to the extent necessary at the appropriate time.

Importantly, the management of the Federal Reserve's balance sheet and the conduct of monetary policy in the future will be made easier by the recent congressional action to give the Fed the authority to pay interest on bank reserves. In principle, the interest rate the Fed pays on bank reserves should set a floor on the overnight interest rate, as banks should be unwilling to lend reserves at a rate lower than they can receive from the Fed. In practice, the federal funds rate has fallen somewhat below the interest rate on reserves in recent months, reflecting the very high volume of excess reserves, the inexperience of banks with the new regime, and other factors. However, as excess reserves decline, financial conditions normalize, and banks adapt to the new regime, we expect the interest rate paid on reserves to become an effective instrument for controlling the federal funds rate.

Moreover, other tools are available or can be developed to improve control of the federal funds rate during the exit stage. For example, the Treasury could resume its recent practice of issuing supplementary financing bills and placing the funds with the Federal Reserve; the issuance of these bills effectively drains reserves from the banking system, improving monetary control. Longer-term assets can be financed through repurchase agreements and other methods, which also drain reserves from the system. In considering whether to create or expand its programs, the Federal Reserve will

carefully weigh the implications for the exit strategy. And we will take all necessary actions to ensure that the unwinding of our programs is accomplished smoothly and in a timely way, consistent with meeting our obligation to foster full employment and price stability.

### **Stabilizing the Financial System**

The Federal Reserve will do its part to promote economic recovery, but other policy measures will be needed as well. The incoming Administration and the Congress are currently discussing a substantial fiscal package that, if enacted, could provide a significant boost to economic activity. In my view, however, fiscal actions are unlikely to promote a lasting recovery unless they are accompanied by strong measures to further stabilize and strengthen the financial system. History demonstrates conclusively that a modern economy cannot grow if its financial system is not operating effectively.

In the United States, a number of important steps have already been taken to promote financial stability, including the Treasury's injection of about \$250 billion of capital into banking organizations, a substantial expansion of guarantees for bank liabilities by the Federal Deposit Insurance Corporation, and the Fed's various liquidity programs. Those measures, together with analogous actions in many other countries, likely prevented a global financial meltdown in the fall that, had it occurred, would have left the global economy in far worse condition than it is in today.

However, with the worsening of the economy's growth prospects, continued credit losses and asset markdowns may maintain for a time the pressure on the capital and balance sheet capacities of financial institutions. Consequently, more capital injections and guarantees may become necessary to ensure stability and the normalization of credit markets. A continuing barrier to private investment in financial institutions is the large quantity of troubled, hard-to-value assets that remain on institutions' balance sheets. The presence of these assets significantly increases uncertainty about the underlying value of these institutions and may inhibit both new private investment and new lending. Should the Treasury decide to supplement injections of capital by removing troubled assets from institutions' balance sheets, as was initially proposed for the U.S. financial rescue plan, several approaches might be considered. Public purchases of troubled assets are one possibility. Another is to provide asset guarantees, under which the government would agree to absorb, presumably in exchange for warrants or some other form of compensation, part of the prospective losses on specified portfolios of troubled assets held by banks. Yet another approach would be to set up and capitalize so-called bad banks, which would purchase assets from financial institutions in exchange for cash and equity in the bad bank. These methods are similar from an economic perspective, though they would have somewhat different operational and accounting implications. In addition, efforts to reduce preventable foreclosures, among other benefits, could strengthen the housing market and reduce mortgage losses, thereby increasing financial stability.

The public in many countries is understandably concerned by the commitment of substantial government resources to aid the financial industry when other industries receive little or no assistance. This disparate treatment, unappealing as it is, appears unavoidable. Our economic system is critically dependent on the free flow of credit, and the consequences for the broader economy of financial instability are thus powerful and quickly felt. Indeed, the destructive effects of financial instability on jobs and growth are already evident worldwide. Responsible policymakers must therefore do what they can to communicate to their constituencies why financial stabilization is essential for economic recovery and is therefore in the broader public interest.

Even as we strive to stabilize financial markets and institutions worldwide, however, we also owe the public near-term, concrete actions to limit the probability and severity of future crises. We need stronger supervisory and regulatory systems under which gaps and unnecessary duplication in coverage are eliminated, lines of supervisory authority and responsibility are clarified, and oversight powers are adequate to curb excessive leverage and risk-taking. In light of the multinational character of the largest financial firms and the globalization of financial markets more generally,



regulatory oversight should be coordinated internationally to the greatest extent possible. We must continue our ongoing work to strengthen the financial infrastructure—for example, by encouraging the migration of trading in credit default swaps and other derivatives to central counterparties and exchanges. The supervisory authorities should develop the capacity for increased surveillance of the financial system as a whole, rather than focusing excessively on the condition of individual firms in isolation; and we should revisit capital regulations, accounting rules, and other aspects of the regulatory regime to ensure that they do not induce excessive procyclicality in the financial system and the economy. As we proceed with regulatory reform, however, we must take care not to take actions that forfeit the economic benefits of financial innovation and market discipline.

Particularly pressing is the need to address the problem of financial institutions that are deemed "too big to fail." It is unacceptable that large firms that the government is now compelled to support to preserve financial stability were among the greatest risk-takers during the boom period. The existence of too-big-to-fail firms also violates the presumption of a level playing field among financial institutions. In the future, financial firms of any type whose failure would pose a systemic risk must accept especially close regulatory scrutiny of their risk-taking. Also urgently needed in the United States is a new set of procedures for resolving failing nonbank institutions deemed systemically critical, analogous to the rules and powers that currently exist for resolving banks under the so-called systemic risk exception.

### **Conclusion**

The world today faces both short-term and long-term challenges. In the near term, the highest priority is to promote a global economic recovery. The Federal Reserve retains powerful policy tools and will use them aggressively to help achieve this objective. Fiscal policy can stimulate economic activity, but a sustained recovery will also require a comprehensive plan to stabilize the financial system and restore normal flows of credit.

Despite the understandable focus on the near term, we do not have the luxury of postponing work on longer-term issues. High on the list, in light of recent events, are strengthening regulatory oversight and improving the capacity of both the private sector and regulators to detect and manage risk.

Finally, a clear lesson of the recent period is that the world is too interconnected for nations to go it alone in their economic, financial, and regulatory policies. International cooperation is thus essential if we are to address the crisis successfully and provide the basis for a healthy, sustained recovery.

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### **Footnotes**

1. A basis point is one-hundredth of a percentage point. [Return to text](#)
2. Board of Governors of the Federal Reserve (2008), "[FOMC Statement and Board Approval of Discount Rate Requests of the Federal Reserve Banks of New York, Cleveland, Richmond, Atlanta, Minneapolis, and San Francisco](#)," press release, December 16. [Return to text](#)
3. Primary dealers are broker-dealers that trade in U.S. government securities with the Federal Reserve Bank of New York. The New York Fed's Open Market Desk engages in trades on behalf of the Federal Reserve System to implement monetary policy. [Return to text](#)
4. Detailed information about the Federal Reserve's balance sheet is published weekly as part of the [H.4.1 release](#). For a summary of Fed lending programs, see [Forms of Federal Reserve Lending to Financial Institutions](#) (229 KB PDF). [Return to text](#)

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## FEDERAL RESERVE press release



*Release Date: September 13, 2012*

### **For immediate release**

Information received since the Federal Open Market Committee met in August suggests that economic activity has continued to expand at a moderate pace in recent months. Growth in employment has been slow, and the unemployment rate remains elevated. Household spending has continued to advance, but growth in business fixed investment appears to have slowed. The housing sector has shown some further signs of improvement, albeit from a depressed level. Inflation has been subdued, although the prices of some key commodities have increased recently. Longer-term inflation expectations have remained stable.

Consistent with its statutory mandate, the Committee seeks to foster maximum employment and price stability. The Committee is concerned that, without further policy accommodation, economic growth might not be strong enough to generate sustained improvement in labor market conditions. Furthermore, strains in global financial markets continue to pose significant downside risks to the economic outlook. The Committee also anticipates that inflation over the medium term likely would run at or below its 2 percent objective.

To support a stronger economic recovery and to help ensure that inflation, over time, is at the rate most consistent with its dual mandate, the Committee agreed today to increase policy accommodation by purchasing additional agency mortgage-backed securities at a pace of \$40 billion per month. The Committee also will continue through the end of the year its program to extend the average maturity of its holdings of securities as announced in June, and it is maintaining its existing policy of reinvesting principal payments from its holdings of agency debt and agency mortgage-backed securities in agency mortgage-backed securities. These actions, which together will increase the Committee's holdings of longer-term securities by about \$85 billion each month through the end of the year, should put downward pressure on longer-term interest rates, support mortgage markets, and help to make broader financial conditions more accommodative.

The Committee will closely monitor incoming information on economic and financial developments in coming months. If the outlook for the labor market does not improve substantially, the Committee will continue its purchases of agency mortgage-backed securities, undertake additional asset purchases, and employ its other policy tools as appropriate until such improvement is achieved in a context of price stability. In determining the size, pace, and composition of its asset purchases, the Committee will, as always, take appropriate account of the likely efficacy and costs of such purchases.

To support continued progress toward maximum employment and price stability, the Committee expects that a highly accommodative stance of monetary policy will remain appropriate for a considerable time after the economic recovery strengthens. In particular, the Committee also decided today to keep the target range for the federal funds rate at 0 to 1/4 percent and currently

anticipates that exceptionally low levels for the federal funds rate are likely to be warranted at least through mid-2015.

Voting for the FOMC monetary policy action were: Ben S. Bernanke, Chairman; William C. Dudley, Vice Chairman; Elizabeth A. Duke; Dennis P. Lockhart; Sandra Pianalto; Jerome H. Powell; Sarah Bloom Raskin; Jeremy C. Stein; Daniel K. Tarullo; John C. Williams; and Janet L. Yellen. Voting against the action was Jeffrey M. Lacker, who opposed additional asset purchases and preferred to omit the description of the time period over which exceptionally low levels for the federal funds rate are likely to be warranted.

[Statement Regarding Transactions in Agency Mortgage-Backed Securities and Treasury Securities](#)  
☐

## **Related Information**

[FOMC meeting calendars and information](#)

[Economic projections materials \(PDF\)](#)

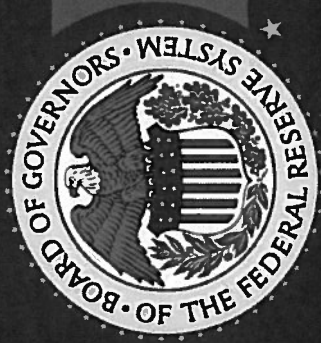
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# THE FEDERAL RESERVE AND THE FINANCIAL CRISIS



# **Lecture 4: The Aftermath of the Crisis**



# THE FEDERAL RESERVE AND THE FINANCIAL CRISIS

## THE AFTERMATH OF THE CRISIS

### The Fed's Efforts to

### Restore Financial Stability

- A financial panic in fall 2008 threatened the stability of the global financial system.
- In its lender-of-last-resort role, the Federal Reserve provided liquidity (short-term collateralized loans) to help stabilize key financial institutions and markets.





## The Fed's Efforts to

### Restore Financial Stability

- The Fed worked closely with the Treasury, other regulatory agencies (such as the FDIC and SEC).
- Coordination with foreign central banks included the creation of foreign currency swaps.
  - The Fed provided dollars to other central banks in exchange for foreign currencies.
  - The swaps enabled foreign central banks to meet the dollar funding needs of their own financial institutions.



# THE FEDERAL RESERVE AND THE FINANCIAL CRISIS

## THE AFTERMATH OF THE CRISIS

### **The Fed's Continuing Efforts to Strengthen the Banking System**

- The Fed led stress tests of the 19 largest U.S. banks in the spring of 2009, which helped restore investor confidence and allowed banks to raise about \$140 billion in private capital.
- Recent stress tests conducted by the Fed showed substantial further improvements in bank capital and banks' resilience to shocks.



# THE FEDERAL RESERVE AND THE FINANCIAL CRISIS

## THE AFTERMATH OF THE CRISIS

### Evaluation of the Special

### Lender-of-Last-Resort Programs

- Results: The programs
  - arrested runs on various types of financial institutions
  - restored financial market functioning, restarted flow of credit, and supported resumption of economic growth
- Programs were largely phased out by March 2010.



## Evaluation of the Special

### Lender-of-Last-Resort Programs

- Financial risks to the Federal Reserve were minimal:
  - Lending was mostly short-term and backed by collateral; thousands of loans were made, none defaulted.
  - Although the objective of these programs was stabilization, not profit, taxpayers came out ahead.



# THE FEDERAL RESERVE AND THE FINANCIAL CRISIS

## THE AFTERMATH OF THE CRISIS

### **Monetary Policy during the Crisis**

- The Fed used lender-of-last-resort policy to help stabilize the financial system. To stabilize the economy and promote economic recovery, the Fed turned to monetary policy.



# THE FEDERAL RESERVE AND THE FINANCIAL CRISIS

## THE AFTERMATH OF THE CRISIS

### Monetary Policy during the Crisis

- *Conventional* monetary policy involves management of a target short-term interest rate (the federal funds rate). Because longer-term rates tend to fall when the Fed lowers the short-term rate, and because lower longer-term rates tend to encourage purchases of long-lasting consumer goods, houses, and capital goods, cutting the federal funds rate helps stimulate the economy.



# THE FEDERAL RESERVE AND THE FINANCIAL CRISIS

## THE AFTERMATH OF THE CRISIS

### **Monetary Policy during the Crisis**

- Monetary policy is conducted by the Federal Open Market Committee (FOMC).
- The FOMC meets in Washington, D.C. eight times a year. During the crisis, it sometimes also held unscheduled videoconferences.



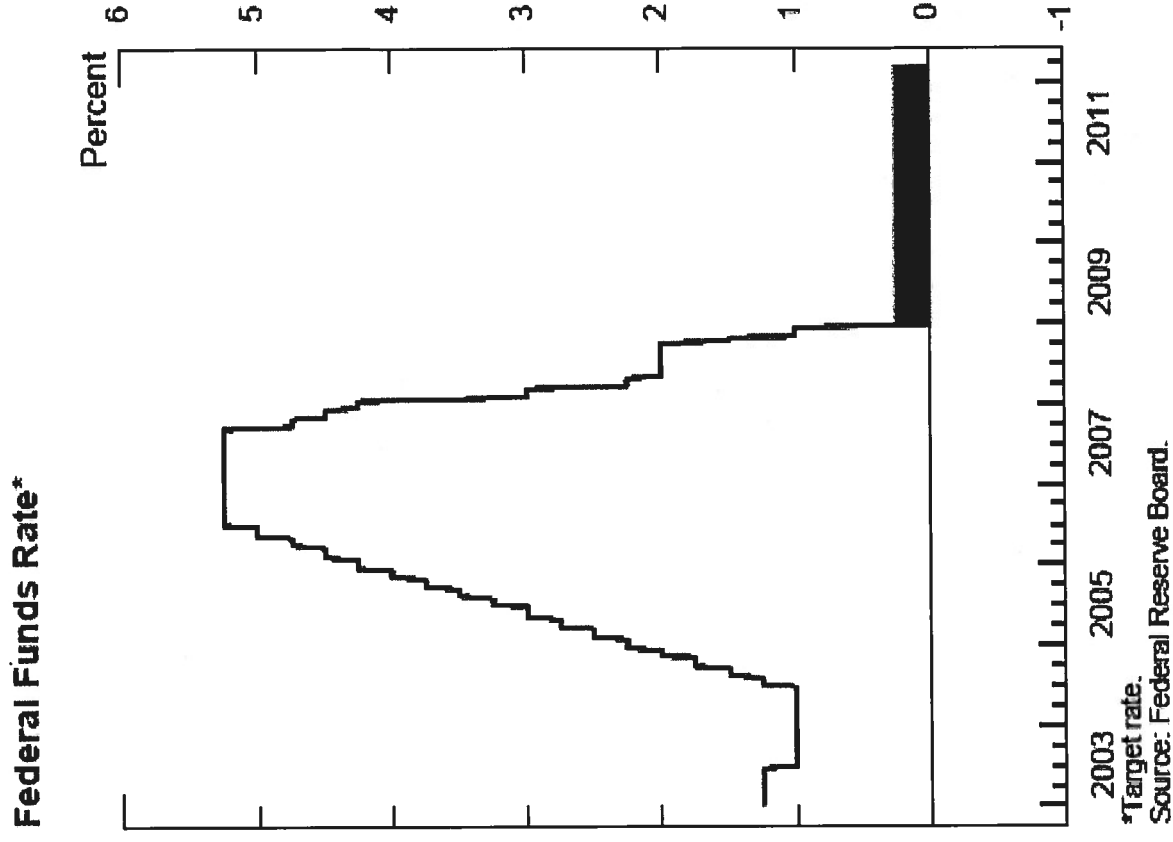
## Monetary Policy during the Crisis

- The FOMC consists of 12 members:
  - the 7 members of the Board of Governors of the Federal Reserve System
  - the president of the New York Federal Reserve Bank
  - 4 of the remaining 11 Reserve Bank presidents, who serve one-year terms on a rotating basis
- Other Reserve Bank presidents participate in deliberations but do not vote.



# Federal Funds Rate

- To support the recovery, the Fed reduced the federal funds rate from 5¼ percent in September 2007 to nearly zero in December 2008, where it has remained since.





# THE FEDERAL RESERVE AND THE FINANCIAL CRISIS

## THE AFTERMATH OF THE CRISIS

### Large-Scale Asset Purchases

- With the federal funds rate near zero, the scope for conventional monetary policy was exhausted. But the economy remained weak and some worried about the risk of deflation (falling wages and prices).



# THE FEDERAL RESERVE AND THE FINANCIAL CRISIS

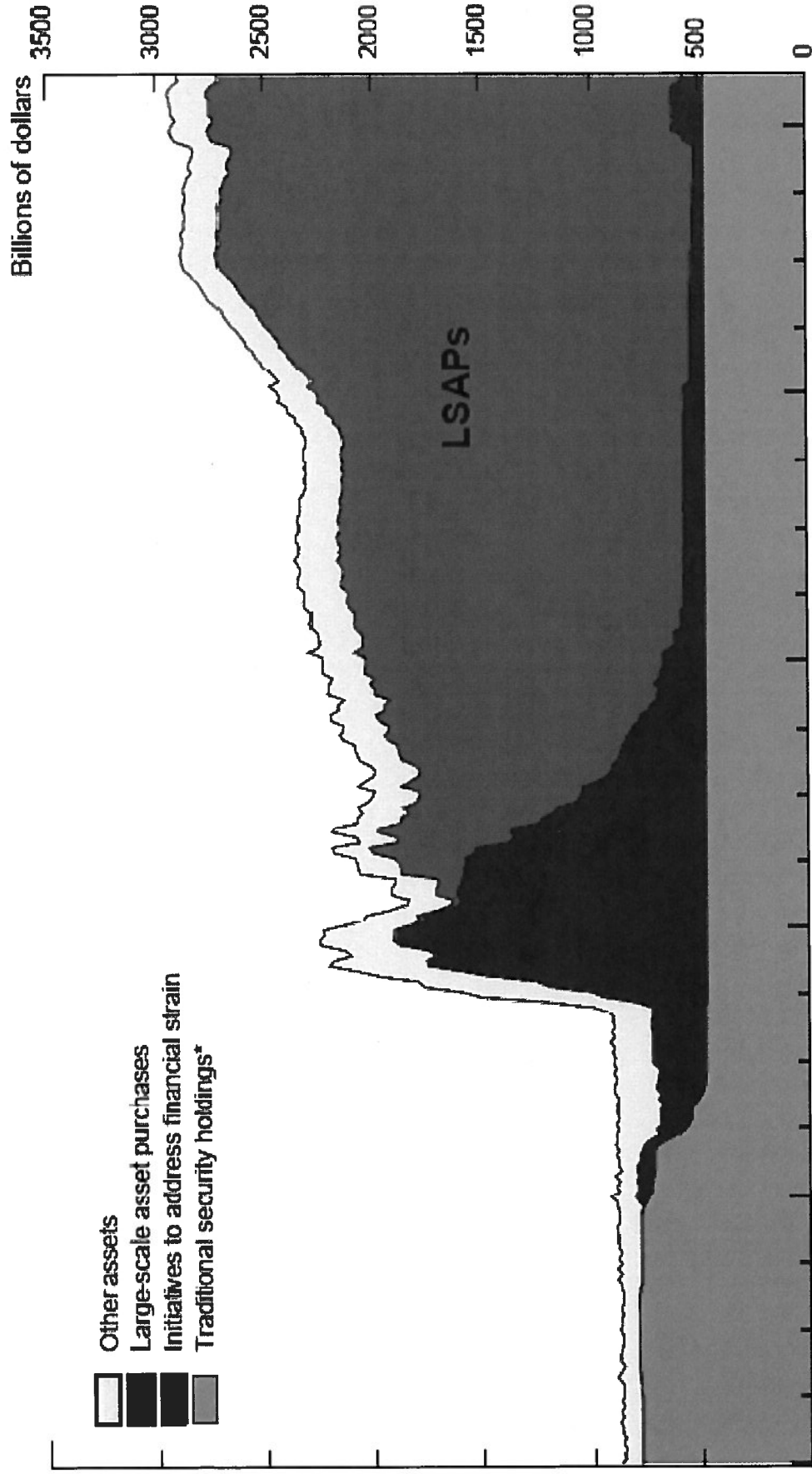
## THE AFTERMATH OF THE CRISIS

### Large-Scale Asset Purchases

- To influence longer-term rates directly, the Fed undertook large-scale purchases of Treasury and government-sponsored enterprise (GSE) mortgage-related securities.
- Large purchase programs were announced in March 2009 and November 2010.
- These actions boosted the Fed's balance sheet by more than \$2 trillion.

# Large-Scale Asset Purchases

Federal Reserve Balance Sheet, Assets



\*Traditional security holdings reflect Treasury holdings through November 28, 2008; they are held constant after November 28.  
Source: Federal Reserve Board.



## Large-Scale Asset Purchases

- With the available supply of Treasury and GSE securities reduced by Fed purchases, investors were willing to accept lower yields. Lower longer-term rates helped stimulate the economy, just as they do under conventional policies.
- Reduced availability of Treasury and GSE securities led investors to purchase other assets, such as corporate bonds, lowering the yields on those assets as well.

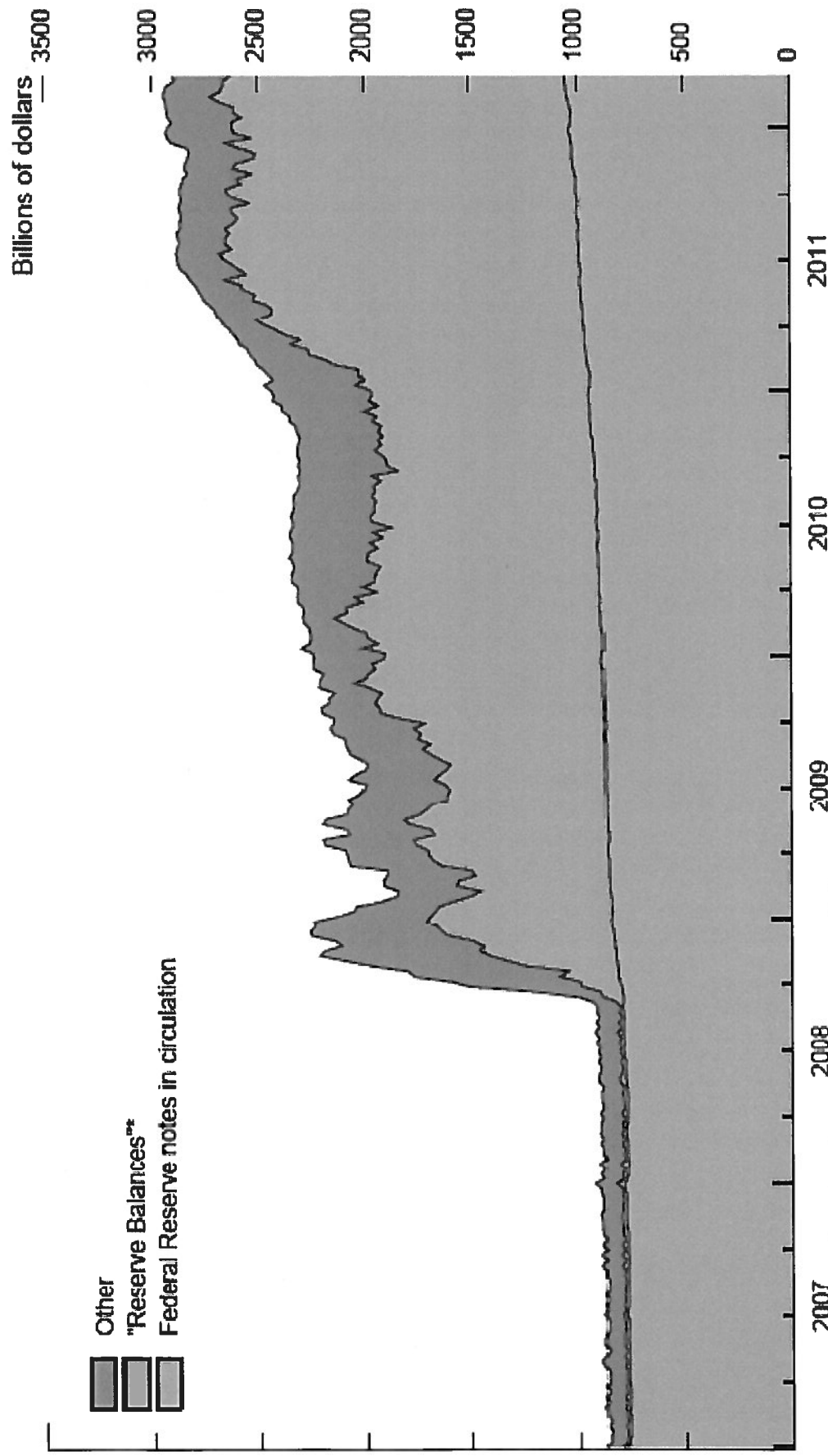


## Large-Scale Asset Purchases

- These securities purchases were financed by adding to the reserves held by banks at the Fed; they did not significantly affect the amount of money in circulation. The Fed has multiple ways to unwind the large-scale asset purchases (LSAPs), including selling the securities back into the market.

# Large-Scale Asset Purchases

Federal Reserve Balance Sheet, Liabilities and Capital



\* Term deposits and other deposits held by depository institutions.  
Source: Federal Reserve Board.



## Effects of Large-Scale Asset Purchases

- LSAPs (also known as quantitative easing) lowered longer-term interest rates.
  - 30-year mortgage rates fell below 4 percent.
  - Corporate credit became more available, and stock prices rose.
- Lower longer-term interest rates helped promote recovery, though the effect on housing was weaker than hoped.





## Effects of Large-Scale Asset Purchases

- The Fed's credibility and long-standing commitment to price stability has helped anchor inflation and inflation expectations, which have remained low.
- At the same time, LSAPs guarded against the risk of deflation (falling wages and prices).



## Effects of Large-Scale Asset Purchases

- The Fed's asset purchases are not government spending, because the assets the Fed acquired will ultimately be sold back into the market. Indeed, the Fed has made money on its purchases so far, transferring about \$200 billion to the Treasury from 2009 through 2011, money that benefited taxpayers by reducing the federal deficit.



## Monetary Policy Communication

- Clear communication from the central bank can help make monetary policy more effective by helping investors better understand policy goals and better anticipate future policy actions.



# THE FEDERAL RESERVE AND THE FINANCIAL CRISIS

## THE AFTERMATH OF THE CRISIS



# Monetary Policy Communication

- The Fed has become more transparent about monetary policy. For example, the Chairman began holding news conferences in 2011.





# THE FEDERAL RESERVE AND THE FINANCIAL CRISIS

## THE AFTERMATH OF THE CRISIS

### Monetary Policy Communication

- The Fed also has recently provided more information about its goals and policy approach (for example, by defining price stability as inflation of 2 percent in the medium term).



## Monetary Policy Communication

- The Fed has also begun providing guidance to investors and the public about how it expects to adjust the federal funds rate in the future, given current information about the economic outlook.
- This guidance helps the public better understand the FOMC's views and policy.



# THE FEDERAL RESERVE AND THE FINANCIAL CRISIS

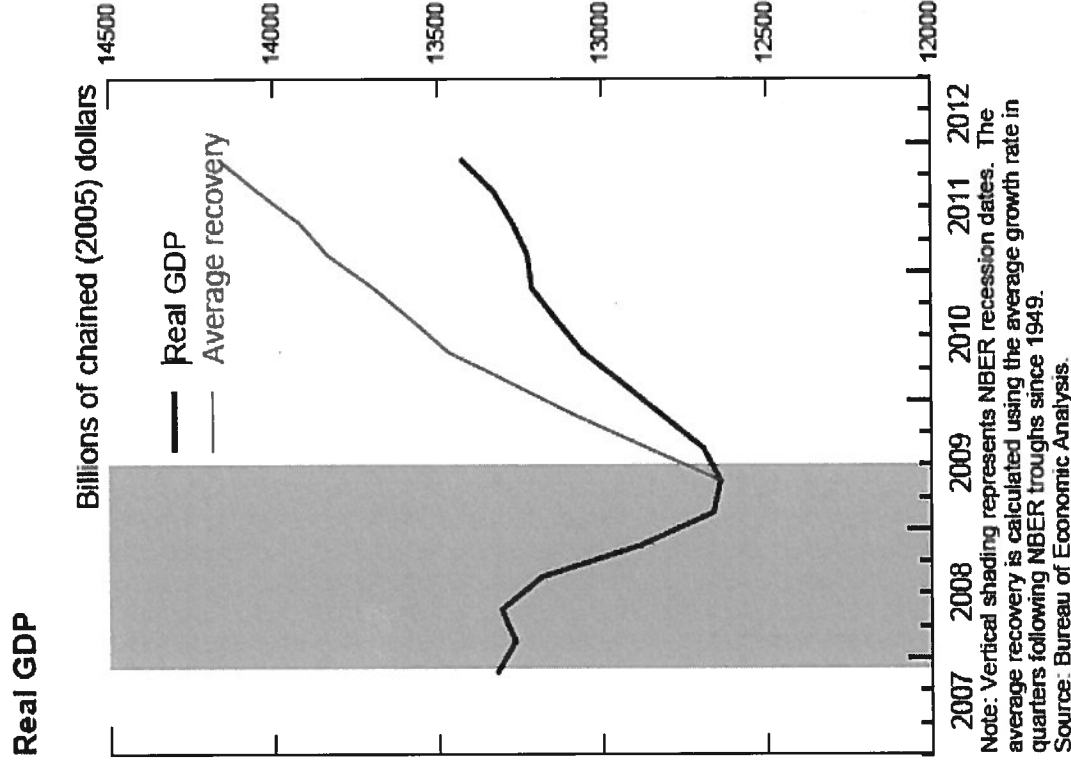
## THE AFTERMATH OF THE CRISIS

### **Economic Recovery**

- Aided by the effects of monetary and fiscal policy as well as the economy's natural recuperative powers, economic activity began to recover in mid-2009.
- Since then, real GDP has increased at an average annual rate of about 2½ percent.

# Sluggish Economic Recovery

- But the pace of recovery has been extremely sluggish compared with previous post-World War II cyclical recoveries.

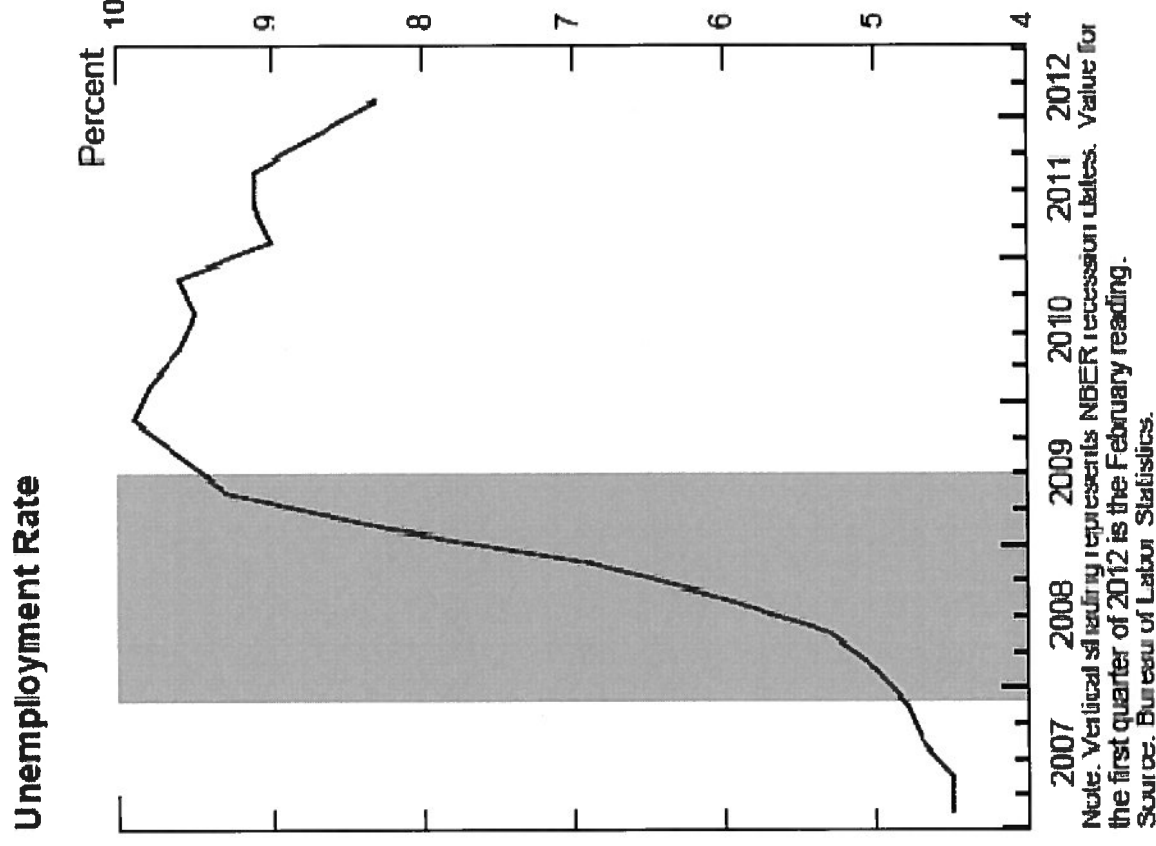


Note: On June 21, 2012, the above Real GDP chart was revised to correct the calculation of GDP during the average of previous recoveries.



# Sluggish Economic Recovery

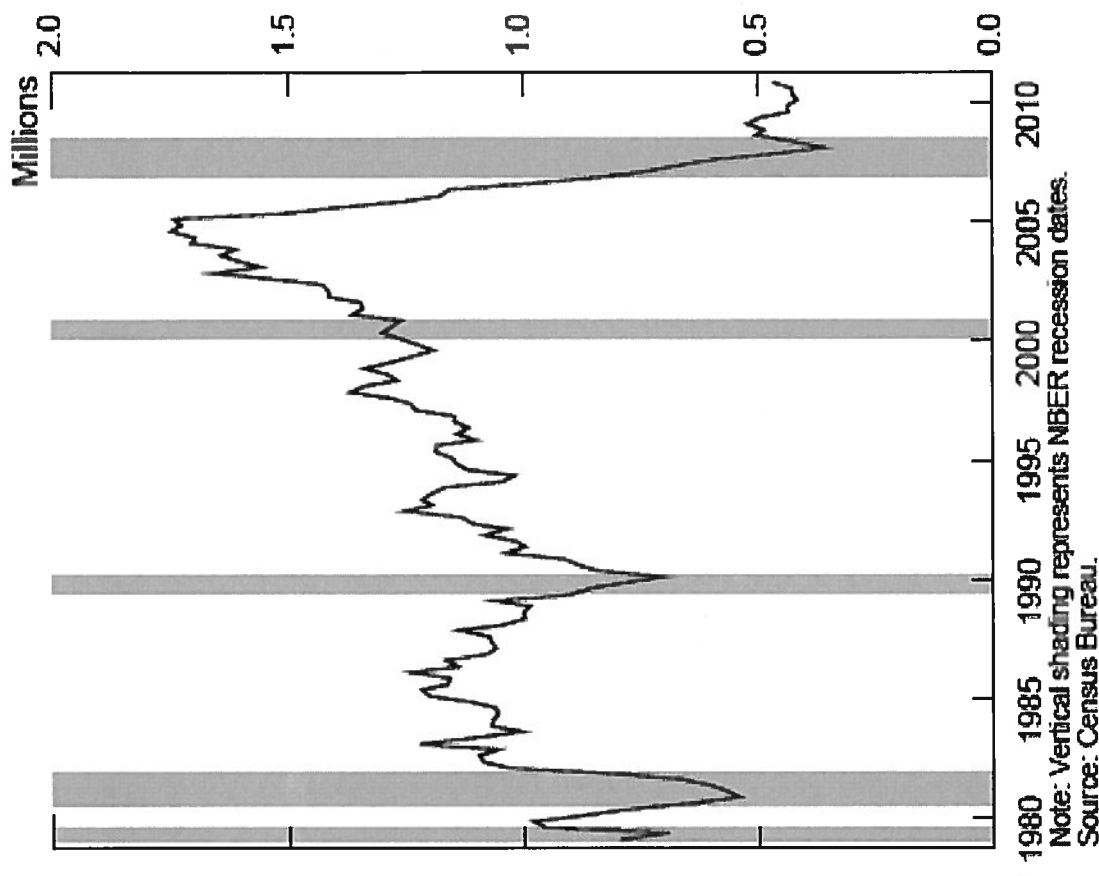
- As a result, job prospects have improved only gradually and the unemployment rate remains painfully high.



# Slowing the Recovery: Housing

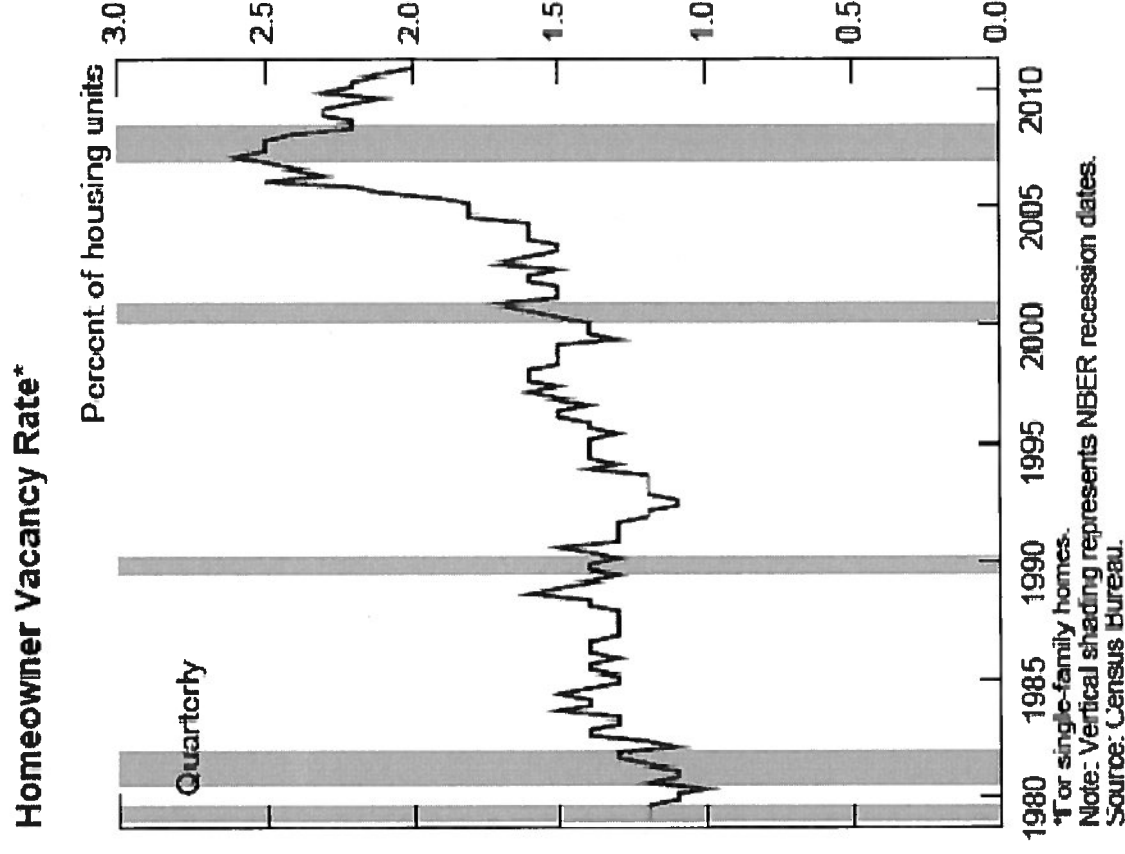
- Why has the recovery been slower than hoped?
- A resurgent housing market normally helps power economic recoveries, but not this time.

Single-Family Housing Starts



# Slowing the Recovery: Housing

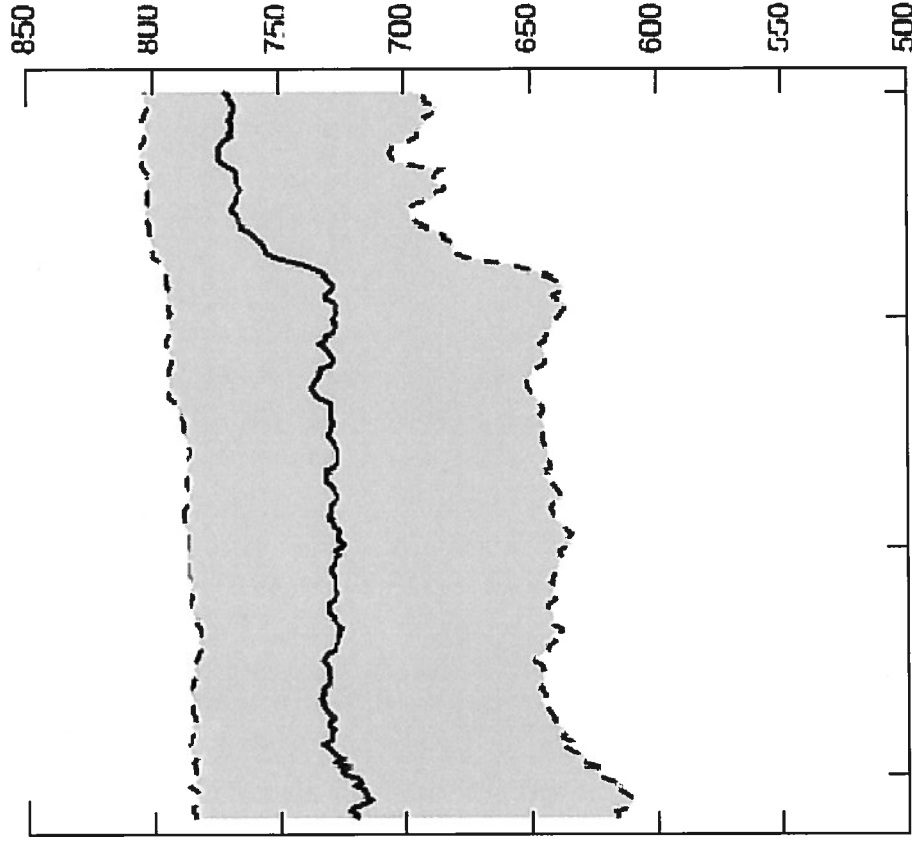
- Factors weighing on the housing market include
  - a continuing high foreclosure rate
  - an overhang of unsold homes
  - falling house prices



# Slowing the Recovery: Housing

- Very tight lending standards on mortgages have blunted some of the effects of low mortgage rates.

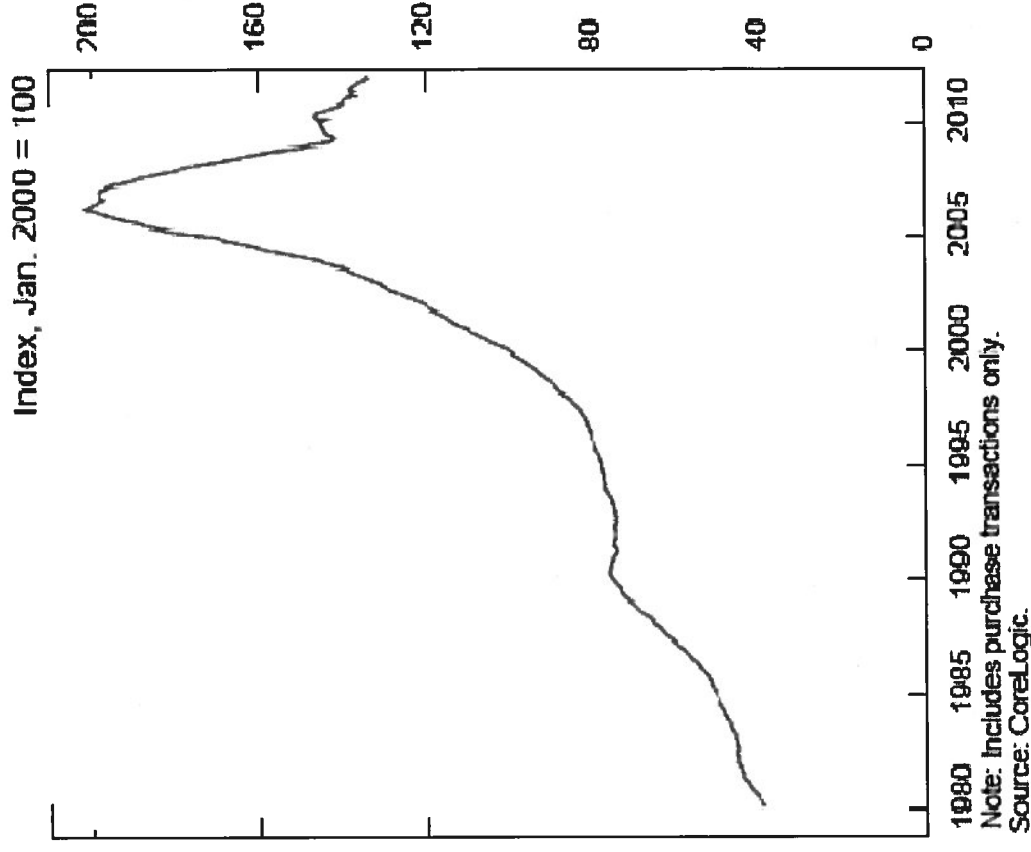
Credit Scores on Newly Originated Mortgages



# Slowing the Recovery: Housing

- Declining house prices discourage new construction.
- More generally, sharp declines in house prices make consumers feel poorer, and thus less willing to spend.

Prices of Existing Single-Family Houses





# THE FEDERAL RESERVE AND THE FINANCIAL CRISIS

## THE AFTERMATH OF THE CRISIS



### **Slowing the Recovery:**

#### **Financial and Credit Markets**

- The U.S. banking system is significantly stronger than it was three years ago, and credit is more available to households and businesses.



# THE FEDERAL RESERVE AND THE FINANCIAL CRISIS

## THE AFTERMATH OF THE CRISIS

### Slowing the Recovery:

### Financial and Credit Markets

- However, difficulties remain for some borrowers:
  - For households, mortgages are difficult to obtain
  - for borrowers with less-than pristine credit scores.
  - For small businesses, credit market conditions remain tight but appear to have begun to improve.



# THE FEDERAL RESERVE AND THE FINANCIAL CRISIS

## THE AFTERMATH OF THE CRISIS



### **Slowing the Recovery:**

#### **Financial and Credit Markets**

- Concerns about European fiscal and banking conditions have also stressed financial markets and led to more-conservative lending and diminished confidence.





# THE FEDERAL RESERVE AND THE FINANCIAL CRISIS

## THE AFTERMATH OF THE CRISIS

### Long-Term Economic Growth

#### in the United States

- The financial crisis and recession were a major trauma. Many people who have been unemployed for a long time have seen their skills erode. And longer-term problems, like rising federal deficits, have not gone away.



# THE FEDERAL RESERVE AND THE FINANCIAL CRISIS

## THE AFTERMATH OF THE CRISIS

# Long-Term Economic Growth in the United States

- On the upside, however:
  - The U.S. economy remains the largest in the world, with a highly diverse mix of industries.
  - Our economy has a robust entrepreneurial culture, with flexible capital and labor markets.



# THE FEDERAL RESERVE AND THE FINANCIAL CRISIS

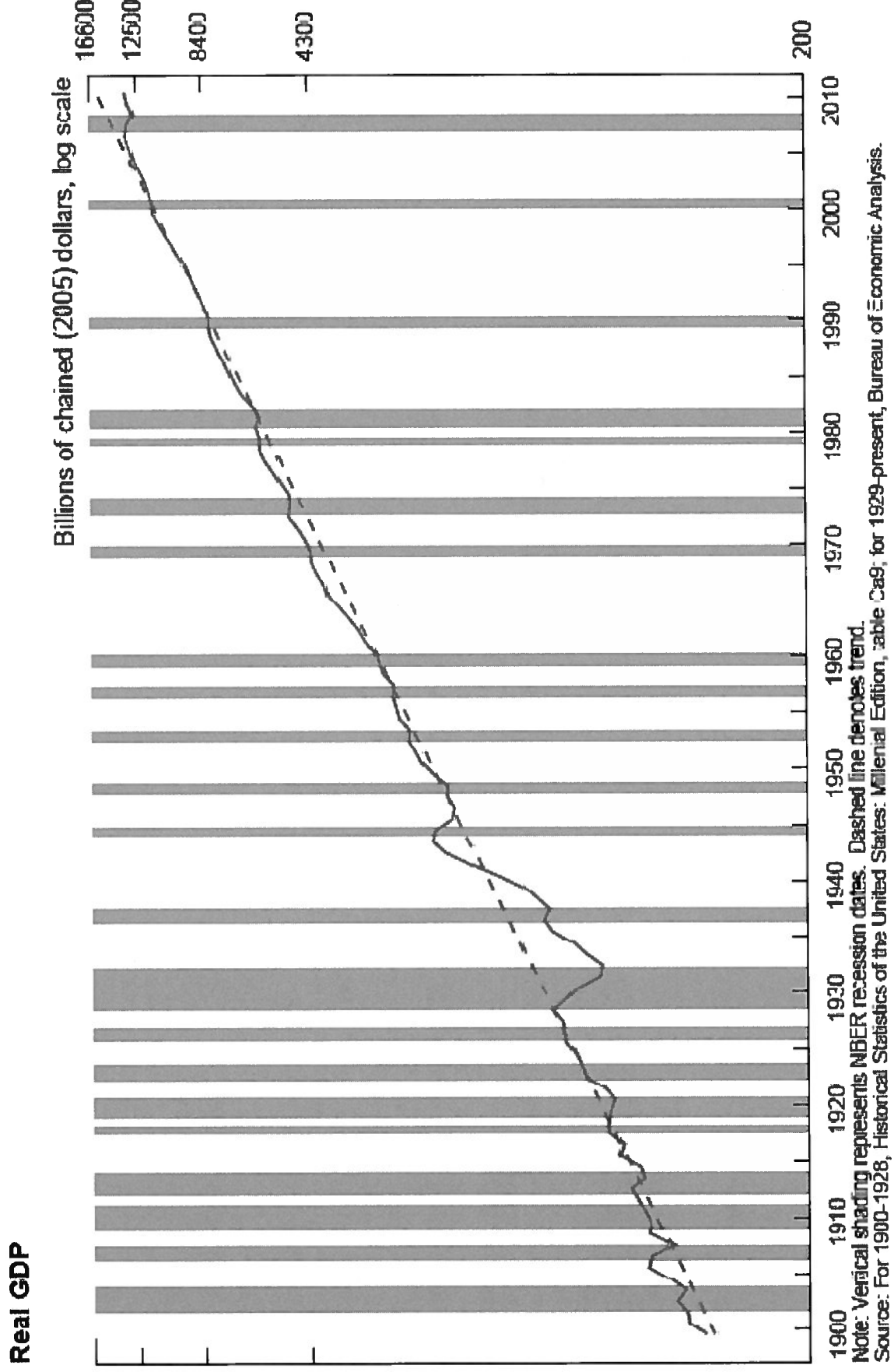
## THE AFTERMATH OF THE CRISIS

# Long-Term Economic Growth

## in the United States

- On the upside, however:
  - We remain a technological leader, with many of the world's top research universities and the highest spending on research and development of any nation.
  - And, in the aftermath of the crisis, we have strengthened our financial regulatory system.

# Long-Term Economic Growth



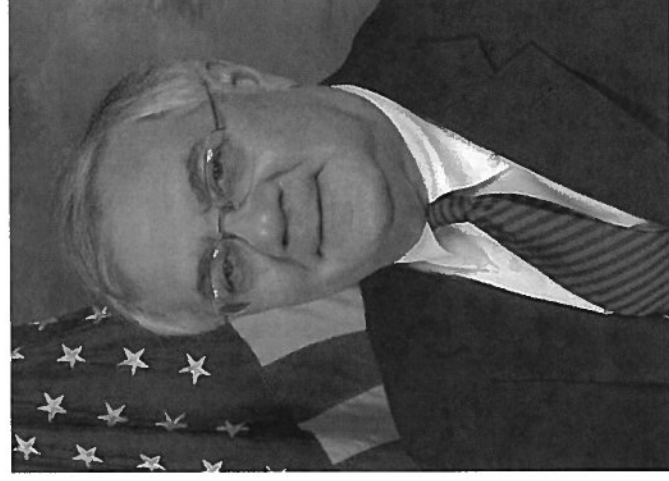


## Post-crisis Regulatory Changes

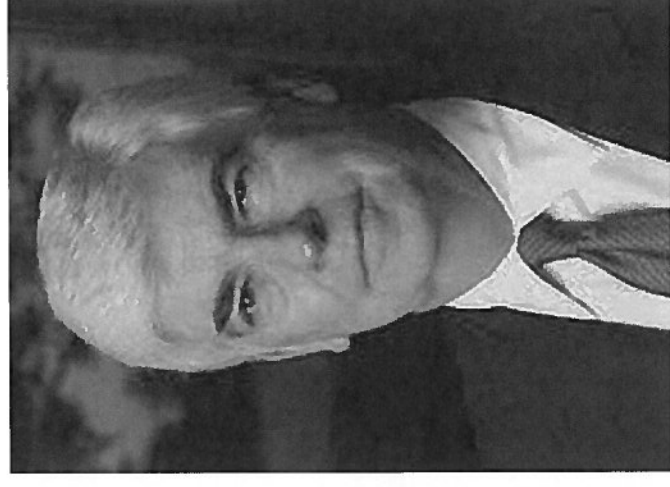
- The crisis revealed many important regulatory gaps and weaknesses.
- Lehman Brothers and AIG endangered the financial system and highlighted the need for new tools to address problems at systemically important financial institutions.
- More oversight of the system as a whole was needed.

# Post-crisis Regulatory Changes

- The Dodd–Frank Wall Street Reform and Consumer Protection Act of 2010 instituted wide-ranging reforms of financial regulation in the United States.



Rep. Barney Frank



Sen. Christopher Dodd



## Key Provisions of the Dodd–Frank Act:

### Supervision and Regulation

- The act expanded the financial stability duties of financial regulators, including the Fed:
  - It created the Financial Stability Oversight Council (FSOC) to help regulators coordinate their efforts.
  - It gave all regulators the responsibility to track and respond to possible risks to the financial system as a whole.



# THE FEDERAL RESERVE AND THE FINANCIAL CRISIS

## THE AFTERMATH OF THE CRISIS

# Key Provisions of the Dodd–Frank Act:

## Supervision and Regulation

- It closed gaps in the oversight of the financial system:
  - The FSOC can “designate” systemically important nonbank institutions to be supervised by the Fed.
  - The FSOC can also designate key financial market utilities (for example, stock exchanges) for enhanced supervision.





## Key Provisions of the Dodd–Frank Act:

### Systemically Important Institutions

- The act subjected systemically important financial institutions to tougher supervision and regulation:
  - Higher capital requirements were established for most systemic firms.
  - Bank affiliates are prohibited from trading on their own account (Volcker rule).



# THE FEDERAL RESERVE AND THE FINANCIAL CRISIS

## THE AFTERMATH OF THE CRISIS



# Key Provisions of the Dodd–Frank Act: Systemically Important Institutions

- The act made systemically important financial institutions subject to tougher supervision and regulation:
  - Regular “stress tests” are being conducted to ensure that firms will have adequate capital even in bad economic scenarios.



# THE FEDERAL RESERVE AND THE FINANCIAL CRISIS

## THE AFTERMATH OF THE CRISIS

# Key Provisions of the Dodd–Frank Act: Systemically Important Institutions

- It also tackled the problem of “too big to fail” financial firms:
  - New “orderly liquidation authority” allows the Federal Deposit Insurance Corporation (FDIC) to close failing systemic firms in a way that causes less damage to the financial system.



# THE FEDERAL RESERVE AND THE FINANCIAL CRISIS

## THE AFTERMATH OF THE CRISIS

# Key Provisions of the Dodd–Frank Act:

## Other Features

- The act took steps to make the financial system more resilient:
  - It required more transparency and standardization of derivative transactions.



# THE FEDERAL RESERVE AND THE FINANCIAL CRISIS

## THE AFTERMATH OF THE CRISIS

# Key Provisions of the Dodd–Frank Act:

## Other Features

- It created a new agency (the Consumer Financial Protection Bureau) with broad powers to protect consumers in their financial dealings.
- Financial regulators are implementing these and other provisions, in consultation with foreign regulators.



# THE FEDERAL RESERVE AND THE FINANCIAL CRISIS

## THE AFTERMATH OF THE CRISIS

### **The Effects of the Crisis on Central Bank Practice**

- In the decades before the crisis, central banks often viewed financial stability policy as the junior partner to monetary policy.
- The crisis underscored that maintaining financial stability is an equally critical responsibility.



# THE FEDERAL RESERVE AND THE FINANCIAL CRISIS

## THE AFTERMATH OF THE CRISIS

# The Effects of the Crisis on Central Bank Practice

- Financial crises will always be with us. But as much as possible, central banks and other regulators should try to anticipate and defuse threats to financial stability and mitigate the effects when a crisis occurs.



# THE FEDERAL RESERVE AND THE FINANCIAL CRISIS

## THE AFTERMATH OF THE CRISIS

### Conclusion

- We began by noting the two principal tools and responsibilities of central banks
  - serving as lender of last resort to prevent or mitigate financial crises
  - using monetary policy to enhance economic stability





# THE FEDERAL RESERVE AND THE FINANCIAL CRISIS

## THE AFTERMATH OF THE CRISIS

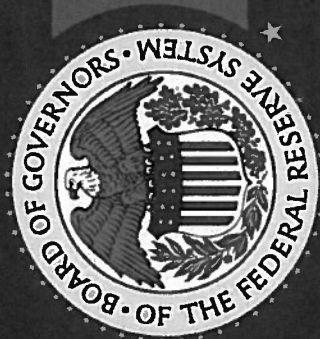
### Conclusion

- The Fed and other central banks used both tools extensively in the crisis and its aftermath. These tools helped prevent a repeat of the Great Depression of the 1930s and set the stage for a slow but continuing economic recovery.



## Conclusion

- A new regulatory framework will reduce, but not eliminate, the risk of financial crises in the future. Greater monitoring of potential systemic risks should help.
- However, the recent financial crisis shows both that a crisis can be hard to anticipate and that it can cause major damage to the economy.



# THE FEDERAL RESERVE AND THE FINANCIAL CRISIS



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THE FEDERAL RESERVE  
AND THE FINANCIAL CRISIS



# **Lecture 3: The Federal Reserve's Response to the Financial Crisis**



## The Two Main Tools of Central Banking

- Lender of last resort powers
  - For financial stability: Central banks provide liquidity (short-term loans) to financial institutions or markets to help calm financial panics.
- Monetary policy
  - For macroeconomic stability: In normal times, central banks adjust the level of short-term interest rates to influence spending, production, employment, and inflation.



THE FEDERAL RESERVE AND THE FINANCIAL CRISIS

THE FEDERAL RESERVE'S RESPONSE TO THE FINANCIAL CRISIS

## The Two Main Tools of Central Banking

- Today's lecture will focus on lender-of-last-resort policy during the financial crisis. Monetary policy will be covered in the next lecture.





## Financial System

### Vulnerabilities Before the Crisis

- Private-sector vulnerabilities
  - excessive leverage (debt)
  - banks' failure to adequately monitor and manage risks
  - excessive reliance on short-term funding
  - increased use of exotic financial instruments that concentrated risk



THE FEDERAL RESERVE AND THE FINANCIAL CRISIS

THE FEDERAL RESERVE'S RESPONSE TO THE FINANCIAL CRISIS

## Financial System

# Vulnerabilities Before the Crisis

- Public-sector vulnerabilities
  - gaps in regulatory structure
  - failures of regulation and supervision
  - insufficient attention paid to the stability of the financial system as a whole



THE FEDERAL RESERVE AND THE FINANCIAL CRISIS

THE FEDERAL RESERVE'S RESPONSE TO THE FINANCIAL CRISIS



## **An Important Public-Sector Vulnerability:**

### **Fannie Mae and Freddie Mac**

- Fannie Mae and Freddie Mac are private corporations that were established by the Congress and are referred to as government-sponsored enterprises, or GSEs.
- They are the largest “packagers” of individual mortgages into mortgage-backed securities (MBS), which they guarantee against loss.



## **An Important Public-Sector Vulnerability:**

### **Fannie Mae and Freddie Mac**

- Fannie and Freddie were permitted to operate with inadequate capital to back their guarantees – a point recognized by the Fed and others prior to the crisis.
- Their balance sheets grew rapidly, including through purchases of subprime MBS, exposing them to additional risks.



## A Key Trigger:

### **Bad Mortgage Products and Practices**

- Exotic mortgages (such as “exploding ARMS”) and sloppy lending practices (such as no-doc loans) proliferated before the crisis.
- Repayment of these loans depended on continually rising house prices.



## A Key Trigger:

### **Bad Mortgage Products and Practices**

- Rising house prices created home equity for borrowers, allowing them to refinance into more-standard mortgages after a few years.
- When house prices stopped rising, however, borrowers could neither refinance nor meet the (typically increasing) payments on their exotic mortgages.



## Examples of Bad Mortgage Practices

- interest-only (IO) adjustable-rate mortgages (ARMs)
- option ARMs (permit borrowers to vary the size of monthly payments)
- long amortization (payment period greater than 30 years)
- negative amortization ARMs (initial payments do not even cover interest costs)
- no-documentation loans

# The Deterioration of Lending Practices



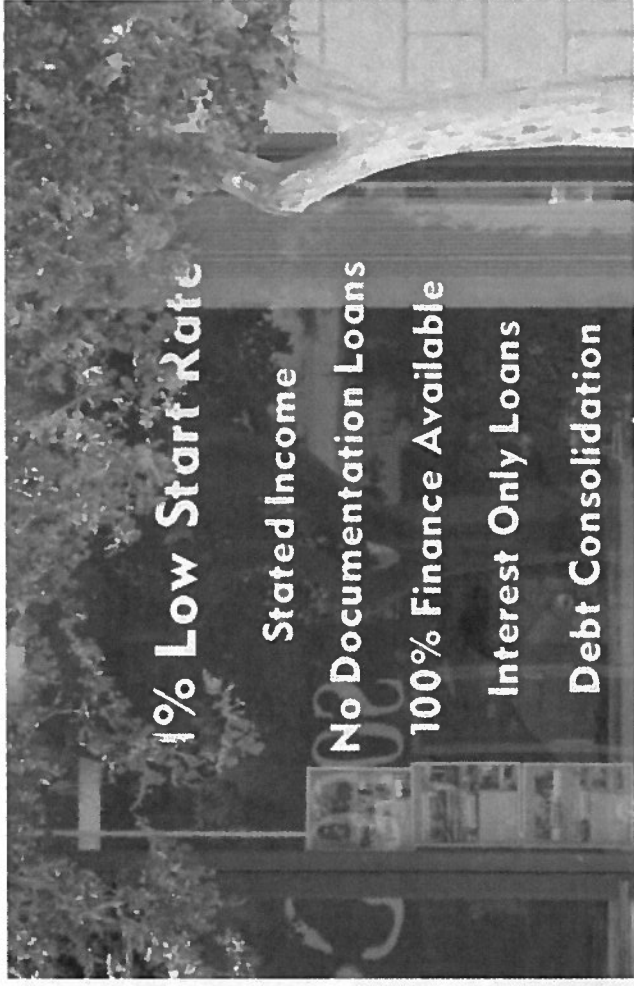
**You Could Save \$\$\$ With The Combo Loan.**

**Home Loans Made Easy!**

- Low Monthly Payments
- 4 out of 5 Approved\*
- No Up-Front Cost Or Obligation

**Loans for Homeowners With Less Than Perfect Credit!**

The sign features a stylized house with two windows and a photograph of a family of four (two adults and two children) standing in front of a real house.



- 1% Low Start Rate**
- Stated Income**
- No Documentation Loans**
- 100% Finance Available**
- Interest Only Loans**
- Debt Consolidation**

The sign is set against a background of a house with a tree in front.





## The Financing of Exotic and Subprime Mortgages

- Many types of financial institutions “packaged” exotic and subprime mortgages into securities.
  - Some securities were relatively simple in structure—for example, most GSE-backed MBS.
  - Other securities were very complex and opaque derivatives—for example, collateralized debt obligations, or CDOs.
- Rating agencies gave AAA ratings to many of these securities.



## **The Financing of Exotic and Subprime Mortgages**

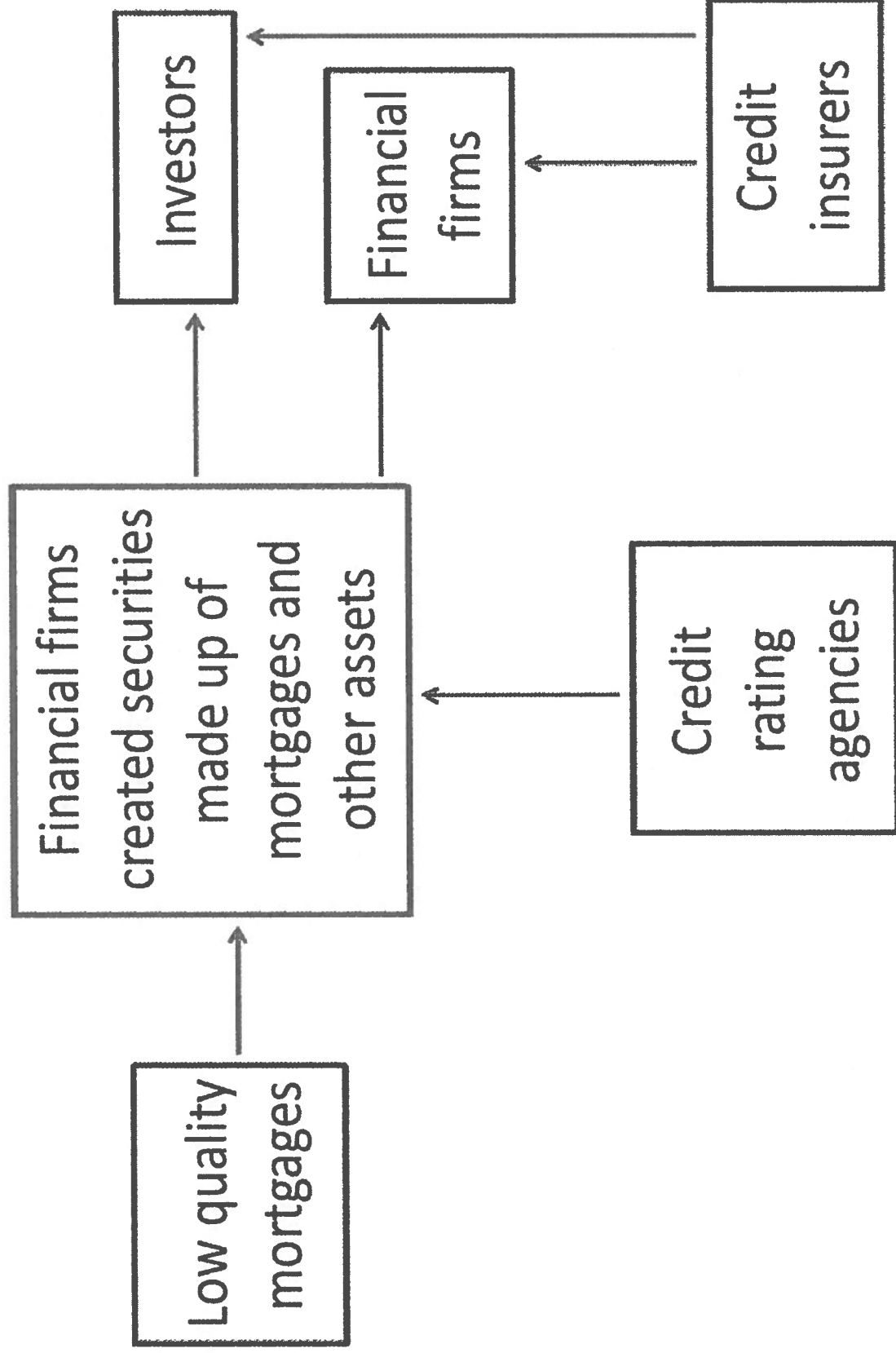
- Many of these securities were sold to investors.
- Financial institutions also retained some of these securities – often in off-balance-sheet vehicles, financed by cheap short-term funding like commercial paper.



## **The Financing of Exotic and Subprime Mortgages**

- Companies like AIG sold “insurance” to protect investors or financial firms that held these securities.
- These financial system practices amplified the risks of low-quality lending.

# Subprime Mortgage Securitization





THE FEDERAL RESERVE AND THE FINANCIAL CRISIS

THE FEDERAL RESERVE'S RESPONSE TO THE FINANCIAL CRISIS

## The Crisis: A Classic Financial Panic

- A financial panic occurs when providers of short-term credit (think *depositors in a bank*) suddenly lose confidence in the ability of the borrower (think *the bank*) to repay; providers of short-term credit then quickly withdraw their funds.



## The Crisis: A Classic Financial Panic

- As house prices fell, it became clear that the values of many mortgage-related securities would fall sharply, imposing losses on financial firms, investment vehicles, and credit insurers (like AIG).
- Because of complexity of many securities and poor risk monitoring, however, investors and even the firms themselves were unsure about where losses would fall.



THE FEDERAL RESERVE AND THE FINANCIAL CRISIS

THE FEDERAL RESERVE'S RESPONSE TO THE FINANCIAL CRISIS

## The Crisis: A Classic Financial Panic

- Runs began, as financial firms and investors pulled funding from any firm thought to be vulnerable to losses.
- These runs generated huge pressures on key financial firms and disrupted many important financial markets.



## Large Financial Firms Came Under Intense Pressure in 2008

- **Bear Stearns:** Forced sale, March 16
- **Fannie and Freddie:** Placed in conservatorship, liabilities guaranteed by the U.S. Treasury, Sept. 7
- **Lehman Brothers:** Filed for bankruptcy, Sept. 15
- **Merrill Lynch:** Acquisition by Bank of America announced, Sept. 15





## Large Financial Firms Came Under Intense Pressure in 2008

- **AIG:** Received emergency liquidity assistance from the Fed, Sept. 16
- **Washington Mutual Bank:** Closed by regulators, acquisition by JP Morgan Chase announced, Sept. 25
- **Wachovia:** Acquisition by Wells Fargo announced, Oct. 3



THE FEDERAL RESERVE AND THE FINANCIAL CRISIS

THE FEDERAL RESERVE'S RESPONSE TO THE FINANCIAL CRISIS

## Policy Response: Overview

- Lessons from the Great Depression
  - In a financial panic, the central bank needs to lend freely to halt runs and restore market functioning.
  - Highly accommodative monetary policy helps support economic recovery and employment.



## Policy Response: Overview

- Heeding those lessons, the Federal Reserve and the federal government took vigorous actions to stem the financial panic, support key financial markets and institutions, and limit the contraction in output and employment.
- Similar actions were taken by foreign central banks and governments.



## Global Response

- On October 10, 2008, G-7 countries agreed to work together to stabilize the global financial system. They agreed to
  - prevent the failure of systemically important financial institutions
  - ensure financial institutions' access to funding and capital
  - restore depositor confidence
  - work to normalize credit markets

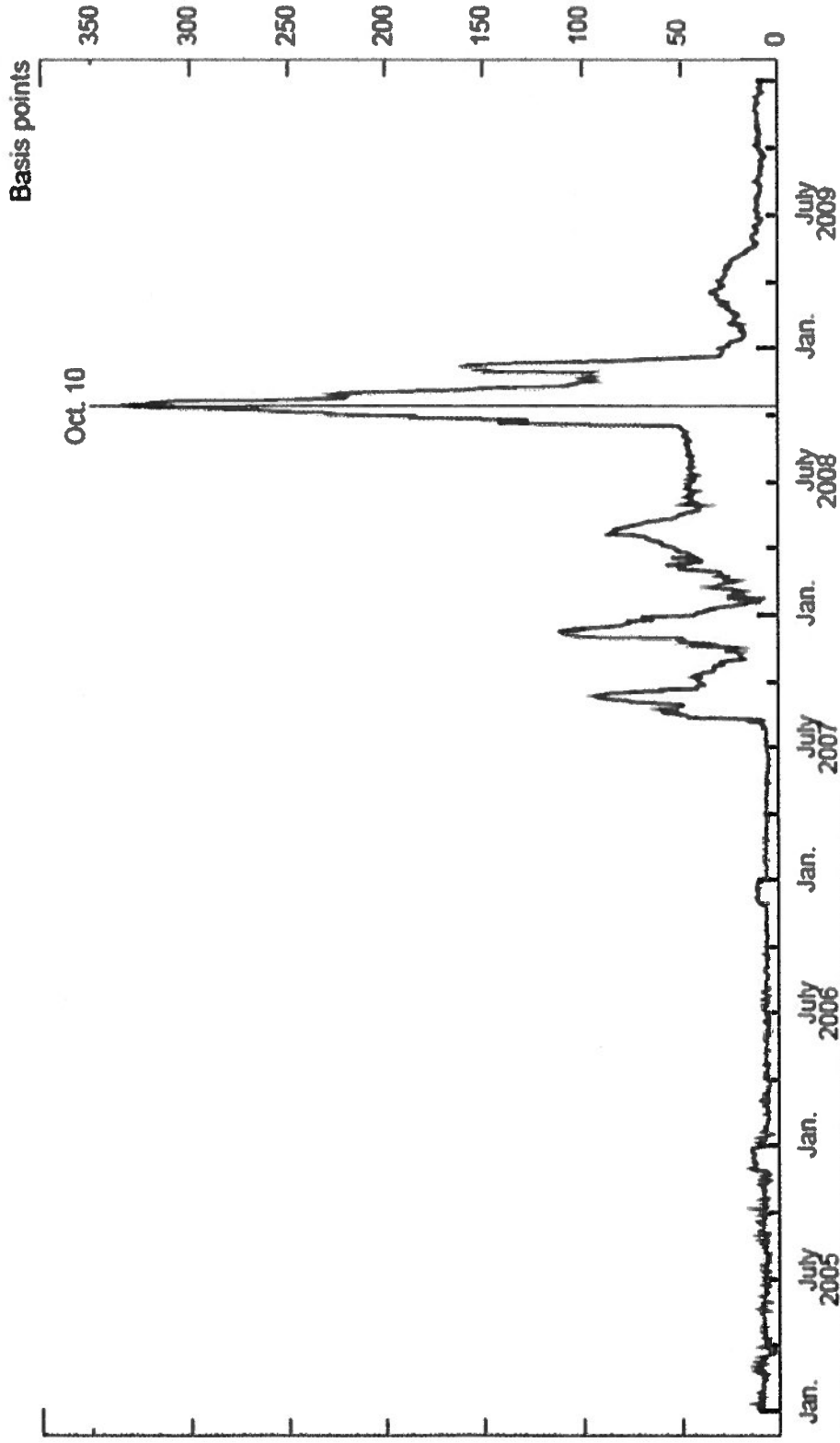


## Global Response

- The international policy response averted the collapse of the global financial system.
  - After the announcement, the interest rates banks paid to borrow short-term funds dropped dramatically.

# Interbank Rates Fall after Oct. 10, 2008

Cost of Interbank Lending\*



\*London Interbank Offered Rate (LIBOR) minus overnight index swap rate.  
Source: Bloomberg.



## Federal Reserve Actions:

### The Discount Window

- The Fed lends to banks through a facility called the discount window.
- As the crisis built, the maturity of discount window loans was extended and the interest rate reduced.
- Regular auctions of discount window funds were conducted to encourage broad participation by financial firms.



## **Federal Reserve Actions:**

### **Special Liquidity and Credit Facilities**

- New programs allowed the Federal Reserve to provide liquidity to a variety of financial institutions and markets facing runs or other illiquidity problems.
- All loans were required to be “secured” by adequate collateral.





## **Federal Reserve Actions:**

### **Special Liquidity and Credit Facilities**

- The purpose was to
  - enhance the stability of the financial system
  - promote the availability of credit to U.S. households and businesses and thereby support the recovery
- This is the traditional lender-of-last-resort function of central banks.



## **Institutions and Markets Covered by the Fed's Lender-of-Last Resort Actions**

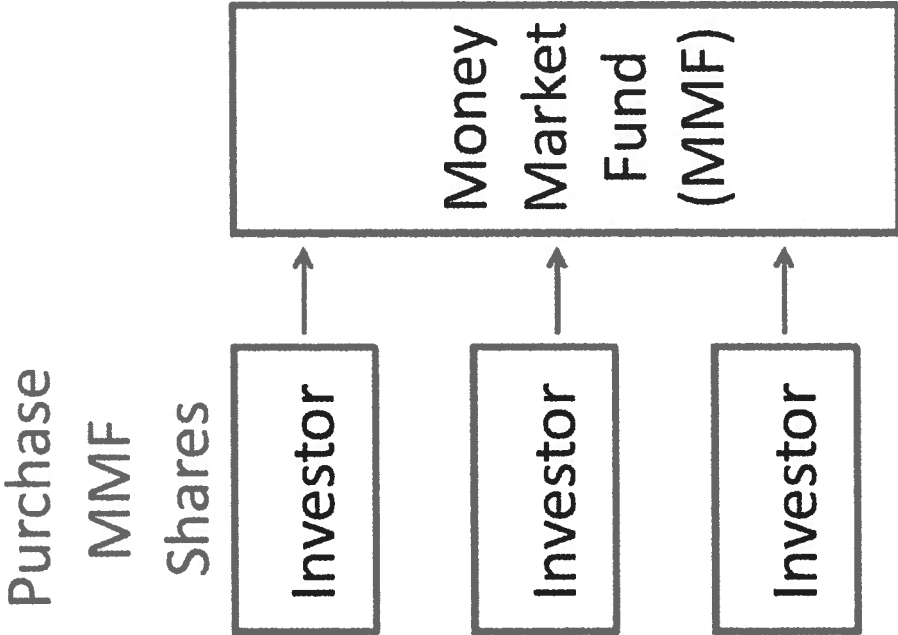
- Banks (through the discount window)
- Broker-dealers (financial firms that deal in securities and derivatives)
- Commercial paper borrowers
- Money market funds
- Asset-backed securities market



## **Case Study: Money Market Funds and the Commercial Paper Market**

- **Money market funds (MMFs)** are investment companies that sell shares and invest the proceeds in short-term assets.
- MMFs historically have almost always maintained stable \$1 share prices.

# Money Market Funds





## Case Study: Money Market Funds and the Commercial Paper Market

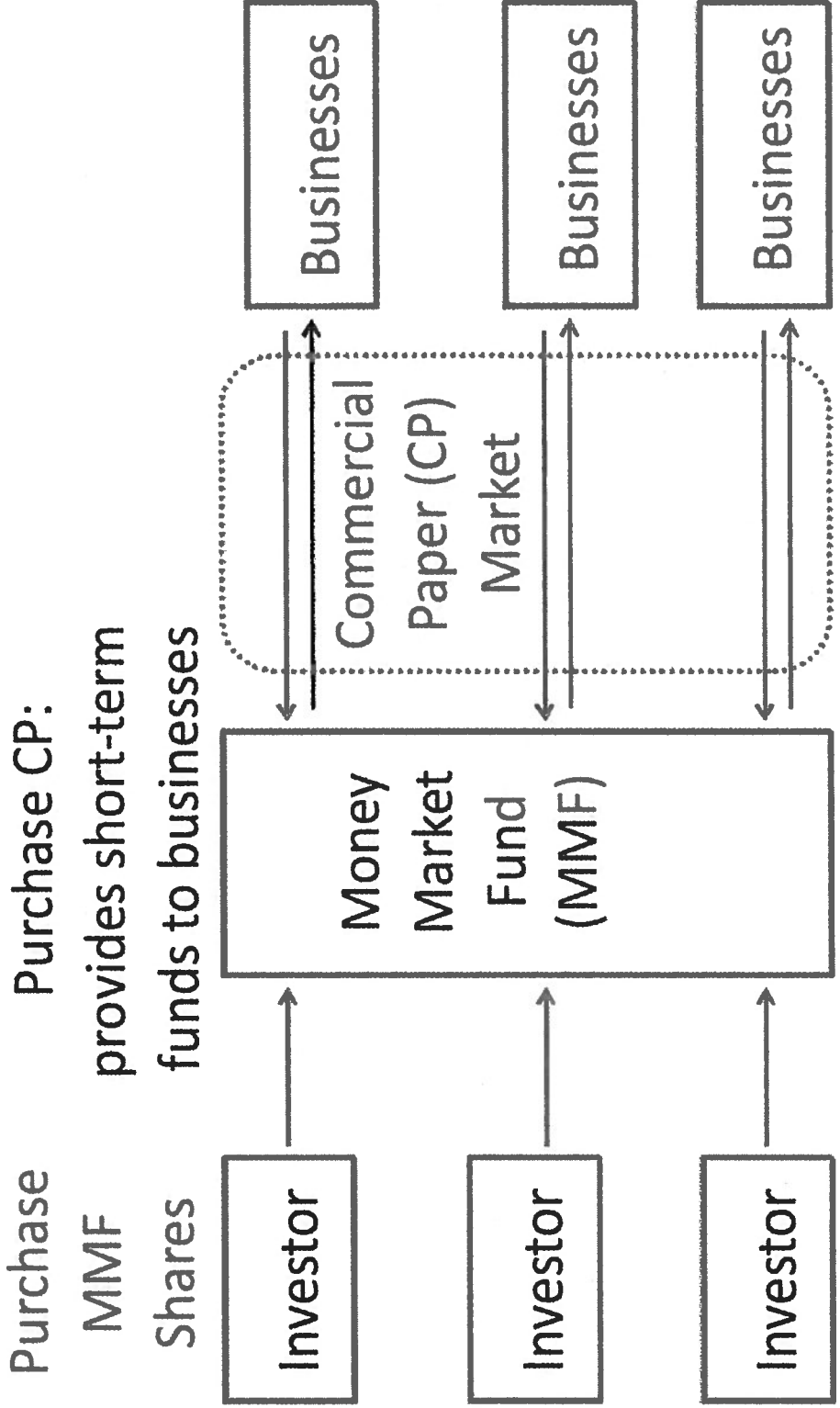
- Although MMF shares are not insured, investors use MMFs like checking accounts and expect to be able to earn interest and redeem shares *on demand* for \$1.
- MMFs invest heavily in **commercial paper (CP)** and other short-term assets.



## Commercial Paper

- **Commercial paper (CP)** is a short-term (typically 90 days or less) debt instrument issued by corporations.
- CP is used by nonfinancial corporations to pay for immediate expenses such as payroll and inventories.
- CP is used by financial corporations to raise funds that they then lend to ordinary businesses and households.

# Money Market Funds and the Commercial Paper Market





## **Lehman Bros., Money Market Funds, and Commercial Paper**

- Lehman Brothers was a global financial services firm.
- Like other securities firms, Lehman relied heavily on short-term borrowing (for example, CP) to fund their investments.
- During the 2000s, Lehman invested extensively in mortgage-related securities and commercial real estate (CRE).





## **Lehman Bros., Money Market Funds, and Commercial Paper**

- As house prices fell and delinquencies and foreclosures rose, the value of Lehman's mortgage-related assets fell.
- Lehman's CRE holdings also were showing large losses.



## **Lehman Bros., Money Market Funds, and Commercial Paper**

- As Lehman's creditors lost confidence, they withdrew funding (for example, ceased purchasing Lehman's CP) and curtailed other business with Lehman.
- With losses mounting, Lehman could not find new capital or another firm to acquire it.
- On September 15, 2008, Lehman filed for bankruptcy.



## THE FEDERAL RESERVE AND THE FINANCIAL CRISIS

THE FEDERAL RESERVE'S RESPONSE TO THE FINANCIAL CRISIS



### The Run on MMFs

- After the collapse of Lehman Brothers, one MMF that held CP issued by Lehman failed to maintain a \$1 share price.
- This led to a rapid loss of confidence by investors in other MMFs and a sudden flood of redemptions—another example of a run or panic.

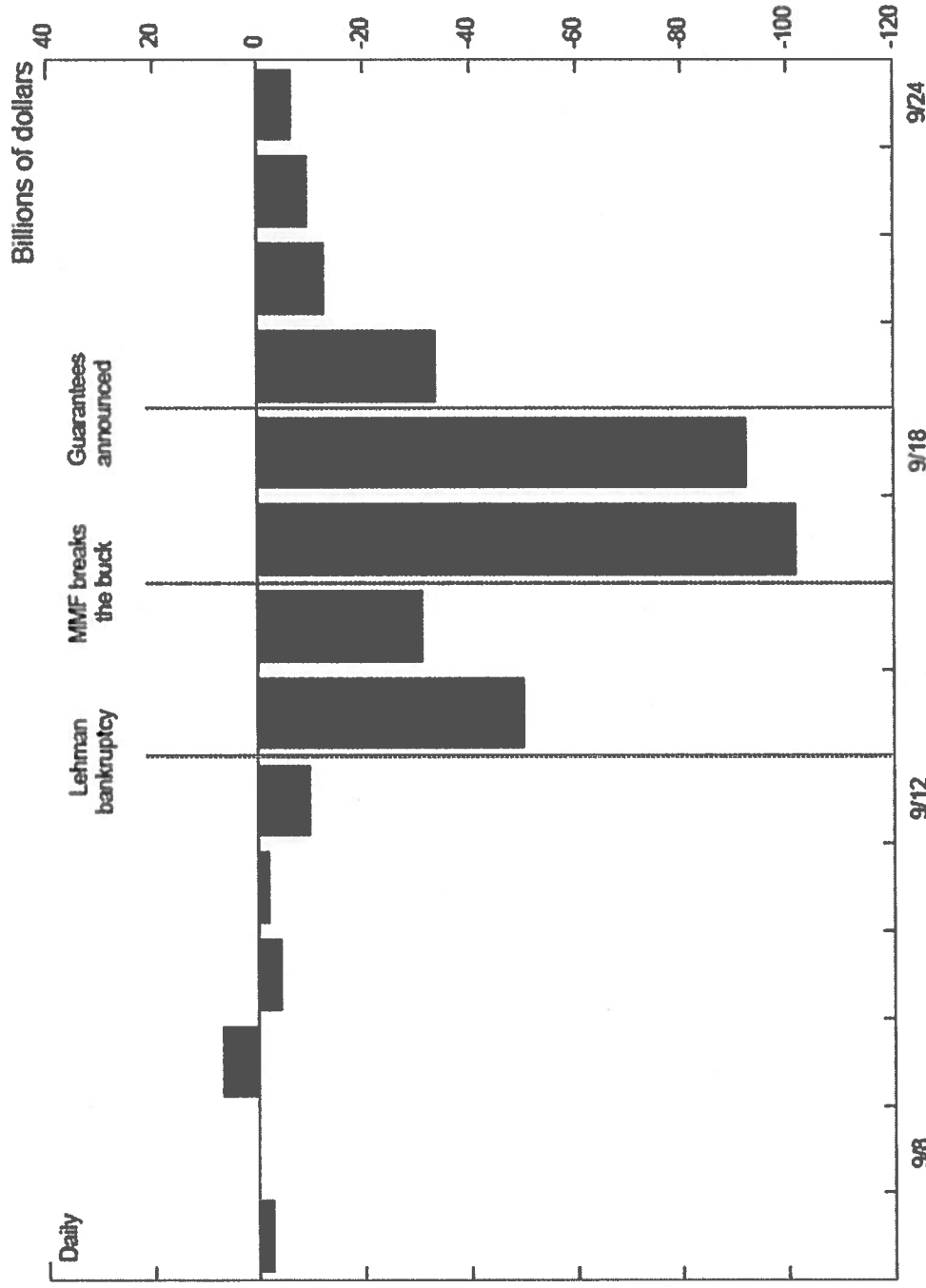


## The Run on MMFs

- In response, the Treasury provided a temporary guarantee of the value of MMF shares.
- Acting as lender of last resort, the Fed created a program to provide backstop liquidity. Under this program, the Fed lent to banks who in turn provided cash to MMFs by purchasing some of their assets.
- These actions ended the run within a few days.

# The Run on MMFs

Net Flows to Prime Money Market Funds



Source: MoneyNet and FRB staff adjustments.



## Dislocations in the CP Market

- MMFs responded to the run by curtailing their purchases of short-term assets, including CP.
- Consequently, the demand for newly issued CP dried up and interest rates on CP soared.
- This episode is an example of how a financial crisis can spread in unexpected directions (Lehman → MMFs → CP).

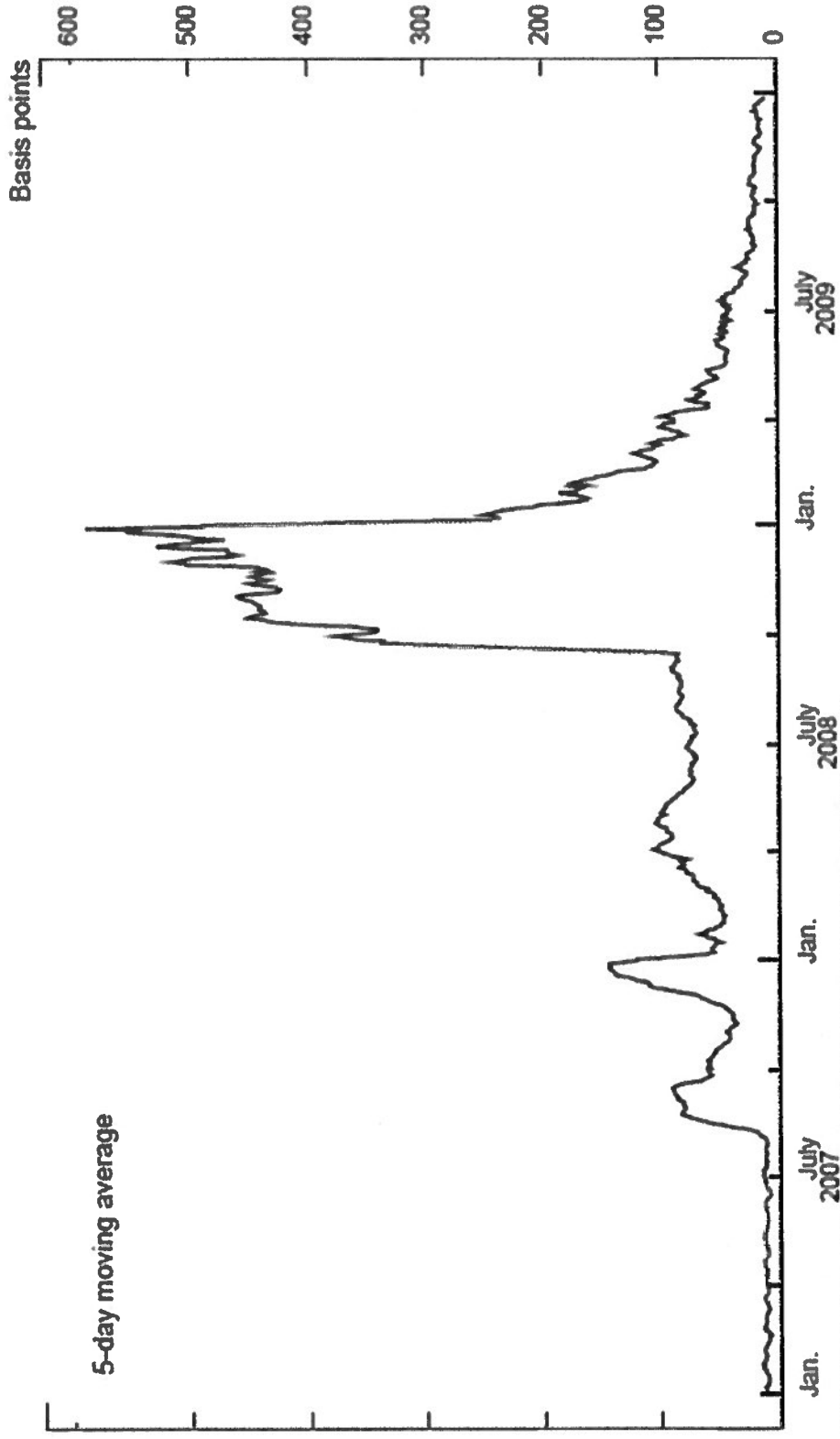


## Dislocations in the CP Market

- Strains in the CP market contributed to an overall contraction in credit available to financial institutions and to nonfinancial businesses.
- The Federal Reserve established special programs to repair functioning in the CP market and restart the flow of credit.

# CP Rates Soared during the Crisis

Cost of Short-term Borrowing\*



Note: Spread between the A2/P2 nonfinancial rate and the AA nonfinancial rate.  
Source: Depository Trust & Clearing Corporation.





## **Support of Critical Institutions:**

### **Bear Stearns and AIG**

- In March 2008, a Fed loan facilitated the takeover of the failing broker–dealer, Bear Stearns, by the bank JP Morgan Chase.
- In October 2008, the Fed intervened to prevent the failure of the nation’s largest insurance company, AIG.



## Case Study: **AIG**

- In September 2008, AIG—a multinational insurance and financial services firm—faced serious liquidity problems that threatened its survival. Many losses came from the insurance it sold on bad mortgage-related securities.
- Because AIG was interconnected with many other parts of the global financial system, its failure would have had a massive effect on other financial firms and markets.



## Case Study: AIG

- However, AIG also owned sizable assets that could be used as collateral. To prevent its collapse, the Federal Reserve loaned AIG \$85 billion, using AIG assets as collateral. Later, the Treasury provided additional assistance.
- The rescue of AIG prevented even greater shocks to the global financial system and global economy.



## Case Study: **AIG**

- Over time, AIG stabilized. It has repaid the Fed with interest and has made progress in reducing Treasury's stake in the company.
- The problems at Lehman, AIG, and other companies highlighted the need for new tools to deal with systemically critical financial institutions on the verge of failure.

# Consequences of the Crisis for Spending, Output, and Employment

- Spending and output contracted sharply in response to reduced credit flows, skyrocketing borrowing costs, and plummeting asset values.
  - GDP fell a total of more than 5 percent from its peak to its trough.
  - Manufacturing output declined nearly 20 percent, and new home construction plummeted 80 percent.
  - More than 8-1/2 million people lost their jobs.
  - Unemployment rose to 10 percent.

## **Consequences of the Crisis for Spending, Output, and Employment**

- Many of our trading partners were also hit by recessions—it was a global slowdown.
- Threat of a second Great Depression was very real.

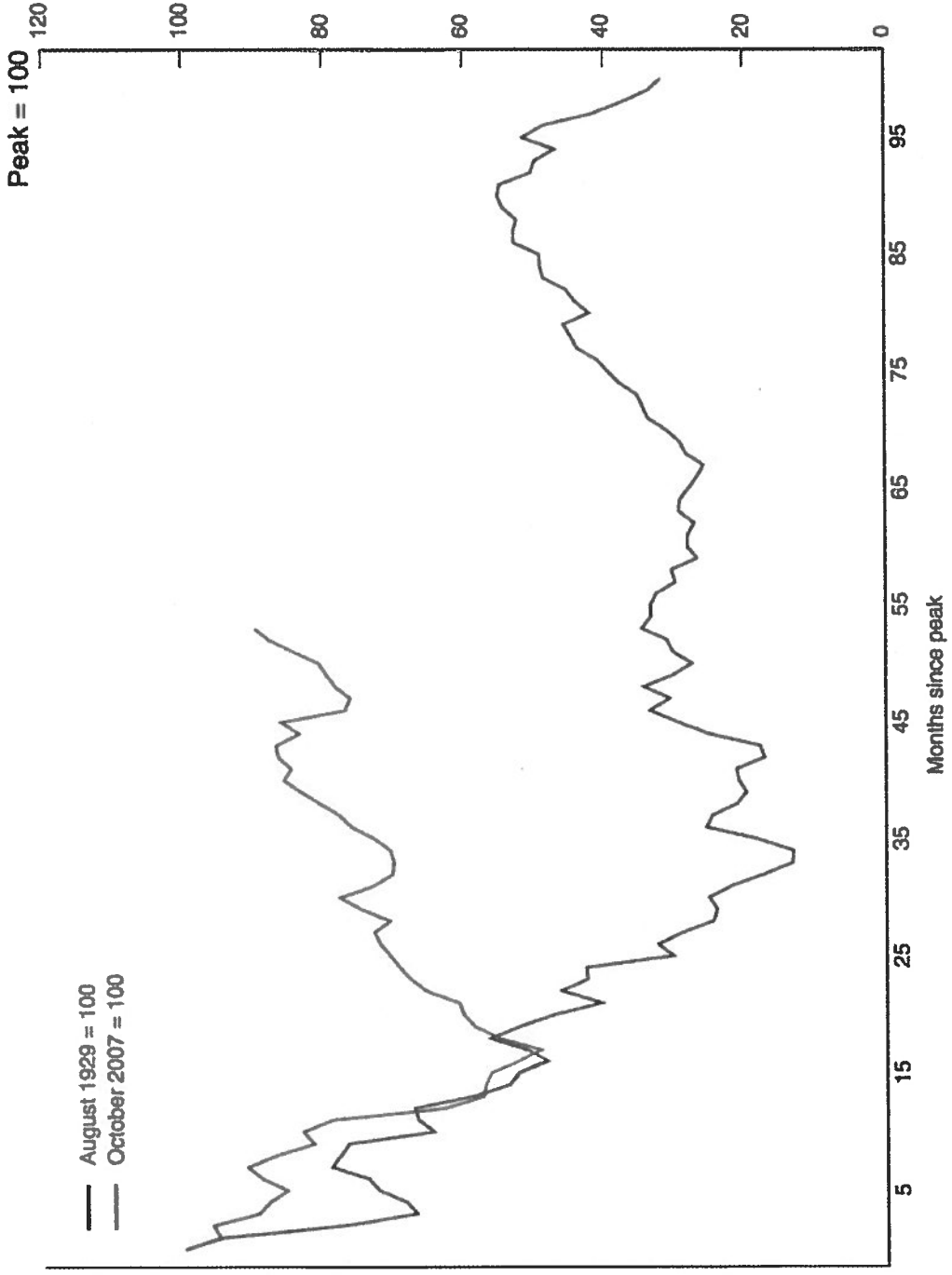


## Comparison to the Great Depression

- In terms of economic consequences, the Great Depression was considerably more severe than the recent recession.
- The forceful policy response to the recent financial crisis and recession likely averted much worse outcomes.

# Comparison to the Great Depression

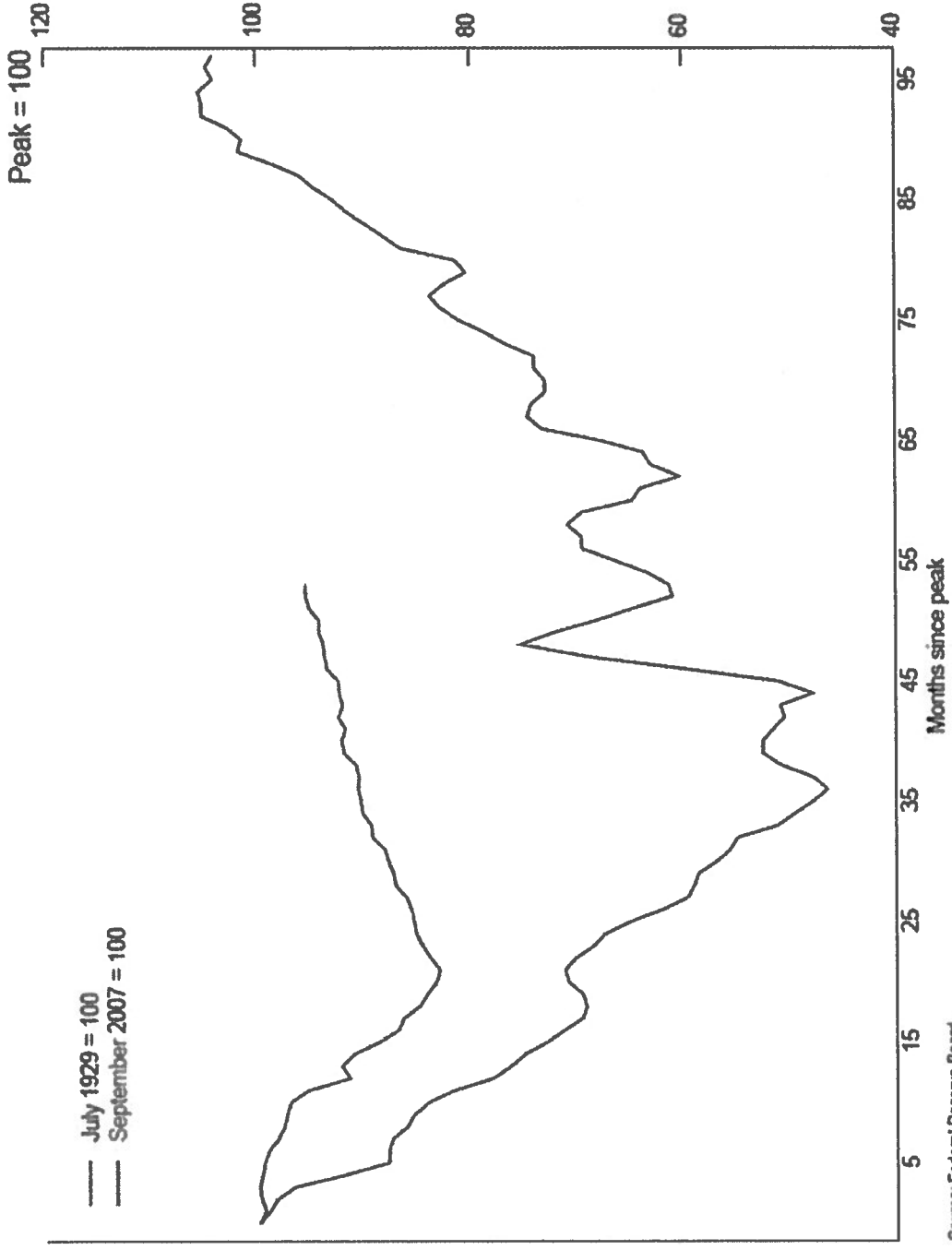
S&P 500 Composite Index





# Comparison to the Great Depression

Industrial Production

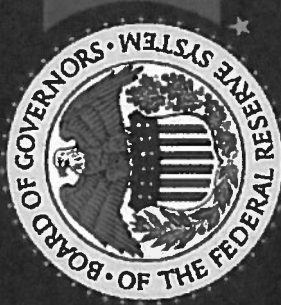


Source: Federal Reserve Board.



## Lecture 4

- Lecture 4 will discuss the aftermath of the financial crisis:
  - the recession and monetary policy response
  - the sluggish recovery
  - changes in financial regulation following the crisis
  - implications of the crisis for central bank practice



# THE FEDERAL RESERVE AND THE FINANCIAL CRISIS

