



PENSION RESERVES
INVESTMENT
MANAGEMENT BOARD

2017 PRIM Investor Conference

***College of the Holy Cross, Worcester, MA
Hogan Center Ballroom***

Thursday, November 9, 2017

***Deborah B. Goldberg, Treasurer and Receiver-General, Chair
Michael G. Trotsky, CFA, Executive Director and Chief Investment Officer***



Agenda



**PENSION RESERVES
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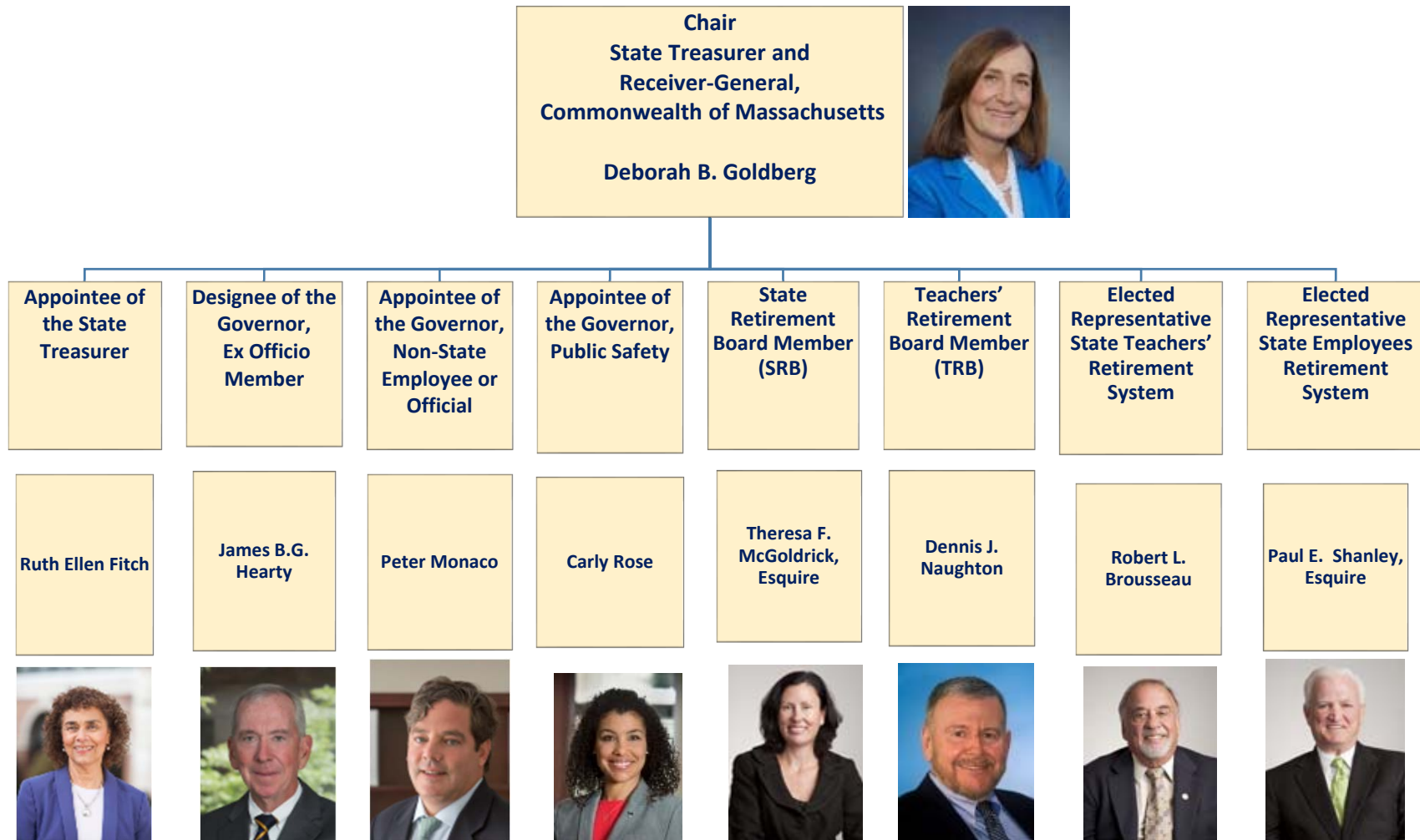
College of the Holy Cross, Worcester, MA

Hogan Center Ballroom

8:15 a.m. – 9:00 a.m.	Registration and Continental Breakfast
9:00 a.m. – 9:05 a.m.	Opening Ceremonies/Welcome <ul style="list-style-type: none"> Paul W. Todisco, Senior Client Services Officer
9:05 a.m. – 9:15 a.m.	Chair's Welcome <ul style="list-style-type: none"> Deborah B. Goldberg, Massachusetts State Treasurer and Receiver-General, Chair of the PRIM Board
9:15 a.m. – 9:45 a.m.	Executive Director/Chief Investment Officer's Welcome <ul style="list-style-type: none"> Michael G. Trotsky, CFA, Executive Director and Chief Investment Officer
9:45 a.m. – 11:00 a.m.	Innovation Roundtable <ul style="list-style-type: none"> Michael R. Bailey, Senior Investment Officer – Director of Private Equity David M. Gurtz, CPA, CFA, Deputy Chief Investment Officer- Director of Public Markets Eric R. Nierenberg, Ph.D., Chief Strategy Officer Luis J. Roman, Ph.D., Senior Investment Officer- Director of Risk Management Timothy V. Schlitzer, CRE, CFA, Senior Investment Officer – Director of Real Estate and Timberland
11:00 a.m.-11:30 a.m.	Break
11:30 a.m. – 11:45 a.m.	Portfolio Strategy <ul style="list-style-type: none"> Eric R. Nierenberg, Ph.D., Chief Strategy Officer
11:45 a.m.-12:00 p.m.	Legal Update <ul style="list-style-type: none"> Christopher J. Supple, Deputy Executive Director and General Counsel
12:00 p.m.-12:45 p.m.	Keynote Speaker Prof. Laura Alfaro Harvard Business School <ul style="list-style-type: none"> Global Growth with Emerging and Developed Markets
12:45 p.m. – 1:45 p.m.	Lunch



PRIM Board Membership



Speakers' Biographies



Deborah B. Goldberg

State Treasurer and Receiver General

Deborah B. Goldberg is the Massachusetts State Treasurer and Receiver General. In that role she is responsible for the state's cash and debt management, unclaimed property, and chairs state boards and commissions, including the Massachusetts School Building Authority, the Pension Reserves Investment Management Board, the State Board of Retirement, Massachusetts State Lottery Commission, and the Massachusetts Clean Water Trust. In 2015, she established the new Office of Economic Empowerment, the first of its kind in the country, and chairs its Economic Empowerment Trust Fund. Treasurer Goldberg also serves on the Executive Committee of the National Association of State Treasurers.

As a former businesswoman and local elected leader, Treasurer Goldberg brings innovative leadership, disciplined fiscal management and an unwavering commitment to uphold economic stability and create opportunity for every Massachusetts resident. Treasurer Goldberg served for six years on the Brookline Board of Selectmen, including two as its Chair. Prior to her career in public service, she worked in retail operations, buying, and consumer affairs at The Stop & Shop Companies, Inc.

Treasurer Goldberg is the President of Adoptions with Love and serves on the Advisory Board of the Greater Boston Food Bank. She was one of the founders of Berkshire Hills Music Academy, a school for individuals with intellectual disabilities, is a trustee emeritus at Beth Israel Deaconess Medical Center, and a Director at Affiliated Physicians Group / Beth Israel Deaconess HealthCare. Treasurer Goldberg has been actively involved with numerous philanthropic activities, including The Grow Clinic, the 100 Club, Planned Parenthood League of Massachusetts, and the Combined Jewish Philanthropies.

A graduate of Boston University, Boston College Law School and Harvard Business School, Treasurer Goldberg lives in Brookline with her husband Michael Winter and their son, Evan, and daughter, Meredith.



Speakers' Biographies – Keynote Speaker



Laura Alfaro, Ph.D

Harvard Business School

Laura Alfaro is the Warren Alpert Professor of Business Administration. She is also a Faculty Research Associate in the National Bureau of Economic Research's International Macroeconomics and Finance Program, Member of the Latin-American Financial Regulatory Committee (CLAAF), Faculty Associate at Harvard's Weatherhead Center for International Affairs, and member of the David Rockefeller Center for Latin American Studies' (DRCLAS) policy committee. In 2008, she was honored as a *Young Global Leader* by the World Economic Forum. She served as Minister of National Planning and Economic Policy in Costa Rica from 2010-2012. She currently teaches Microeconomics of Competitiveness, a course listed at Harvard Business School and the Kennedy School of Government.

Professor Alfaro is the author of multiple articles published in leading academic journals such as the *American Economic Review*, *Review of Economic Studies*, and the *Journal of International Economics*, and of Harvard Business School cases related to the field of international economics and in particular international capital flows, foreign direct investment, and sovereign debt. At Harvard Business School since 1999, Professor Alfaro has taught in General Management Program, the Program for Leadership Development, and in other executive education offerings as well the first year and second year of the MBA program and the doctoral program. She earned her Ph.D. in Economics from the University of California, at Los Angeles (UCLA), where she was recipient of the Dissertation Fellowship award. She received a B.A in economics with honors from the Universidad de Costa Rica and a 'Licenciatura' from the Pontificia Universidad Catolica of Chile where she graduated with highest honors. She was awarded a Francisco Marroquin Foundation scholarship.



Speakers' Biographies



Michael R. Bailey

Senior Investment Officer – Director of Private Equity

Mr. Bailey is a 28-year veteran of the investment industry. He joined PRIM on February 26, 2013. Mr. Bailey came to PRIM from Boston's High Vista Strategies, an endowment investment fund. Prior to that, he was at Lucent Asset Management in Boston, where he headed the private equity group, and Deutsche Bank and J.P. Morgan in New York. Michael brings superb experience and a sharp mind to overseeing the private equity portfolio. His unique skill set is built from years of work in private equity as an investment banker, at a large pension, and with an elite endowment investment manager. Mr. Bailey is a graduate of Northwestern University. He is a resident of Winchester.



David M. Gurtz, CPA, CFA

Deputy Chief Investment Officer- Public Markets

Mr. Gurtz joined PRIM in January of 2008 and serves as Deputy Chief Investment Officer – Director of Public Markets. During his time at PRIM, Mr. Gurtz has held various senior roles including Chief Operating Officer and Chief Financial Officer for over two years. Prior to that, Mr. Gurtz served as Deputy Chief Investment Officer – Director of Risk Management, and is largely responsible for building the risk management program here at PRIM. Prior to joining the PRIM Board, he was a Senior Manager at KPMG, auditing clients such as hedge funds, private equity and venture capital funds. Mr. Gurtz earned a Bachelor of Science in Accounting from Bucknell University and is a Certified Public Accountant and a Chartered Financial Analyst.



Eric R. Nierenberg, Ph.D.

Chief Strategy Officer

Eric holds a Ph.D. in Business Economics from Harvard University with a concentration in Behavioral Finance and spent seven years as a portfolio co-manager at Lee Munder Capital Group. He also worked at Independence Investments and Charles River Associates. Eric holds bachelor's and master's degrees in economics, and a Ph.D. in business economics, all from Harvard University. Eric currently teaches a pair of graduate finance courses at Brandeis University.



Speakers' Biographies



Luis J. Roman, Ph.D.

Senior Investment Officer- Director of Risk Management

Luis J. Roman is the Director of Risk Management of the Massachusetts Pension Reserves Investment Management ("PRIM") Board. His responsibilities include: due diligence of investment managers; analysis and monitoring of investment risk; and overseeing that the management of the investment strategies is compatible with expected risk profile and best investments practices. Prior to joining the PRIM Board, Luis was the U.S. Head of Multi Asset Class and Alternatives Investment Risk at Columbia Threadneedle Investments, Global Head of Fixed Income Investment Risk at SSgA and a Quantitative Analyst at Putnam Investments. He is an expert in the design and implementation of risk management processes for asset management firms. His approach produced cooperative relationships between portfolio managers and risk managers, enhancing a risk-conscious culture firm-wide. Luis began his career in academia where he was visiting assistant professor at the University of California in Irvine, and Worcester Polytechnic Institute. He earned his Masters in Applied Mathematics from the University of Chicago and his Ph.D. in Mathematics from the University of Minnesota.



Christopher J. Supple

Deputy Executive Director and General Counsel

Chris Supple's 25-plus years of experience in law/government/investments includes over 5 years as a federal prosecutor, 6 years in senior leadership positions with MA Governors Bill Weld and Paul Cellucci (and their then-A&F Secretary and now-Governor Charlie Baker), and nearly 15 years in a private law practice focused on government and litigation, where Chris' clients included businesses, nonprofits, individuals, and government agencies (including both MA PRIM and its sibling MA Health Care Security/State Retiree Benefits Trust Fund, where Chris served as outside general counsel for over 10 years). Chris currently serves as Deputy Executive Director and General Counsel at the MA PRIM Board, a \$70 B investment fund. Chris began his career as a litigating attorney at the Boston law firm of Hale and Dorr (now WilmerHale) after serving as law clerk to U.S. District Court Judge Edward F. Harrington in Boston. Chris has litigated in state and federal courts throughout the nation, and has successfully tried over 25 cases to jury verdict, tried dozens of cases to judges sitting without juries, argued hundreds of evidentiary and non-evidentiary motions, and settled hundreds of cases by negotiated agreement. Chris serves as Chairman of the Securities Litigation Committee of the National Association of Public Pension Attorneys (NAPPA), and holds the Investment Foundations™ Certificate awarded by the CFA (Chartered Financial Analyst) Institute. For nearly a decade Chris taught a course in Federal Criminal Prosecution at the Suffolk University School of Law in Boston, and Chris also served two 5-year terms on the Board of the Boston Redevelopment Authority (BRA). Chris has been active in autism advocacy for over a decade, and presently serves as a Member of the Board of Directors of the New England Chapter of Autism Speaks and Chair of its Advocacy Committee, and also as Governor Charlie Baker's appointment to the Massachusetts Autism Commission; Chris also served on the Transition Team of Boston Mayor Marty Walsh, advising on a number of issues including Autism education in Boston schools, and real estate development/permitting in Boston. Chris earned his law degree with honors from the Duke University School of Law where he was a law review editor, and his BA from The College of the Holy Cross. Chris' interests include running (having completed 11 Boston Marathons and the Marine Corps Marathon), bicycling (having completed several 200-mile PanMass Challenge rides), and golf (as a member of the Needham Golf Club). Chris has two teenage sons, Stuart and Timmy, and grew up and currently resides in Needham MA.



Timothy V. Schlitzer, CRE, CFA

Senior Investment Officer - Real Estate & Timberland

Tim Schlitzer directs the investment activities for PRIM's allocation to real estate and timberland. Tim's responsibilities include portfolio oversight and manager selection for PRIM's direct real estate, REIT and timberland investments. He also oversees 13 current manager relationships in both the private and public real estate and timber markets. Tim joined PRIM in 2005 and was previously employed by Grubb & Ellis, a publicly traded commercial real estate services company. He has received an MBA from Northeastern University in Boston, MA and holds a Bachelor of Arts Degree from the University of Massachusetts in Amherst, MA. He is a Counselor of Real Estate, holds the Chartered Financial Analyst designation, is a member of the CFA Institute, and the Boston Security Analysts Society.



Speakers' Biographies



Paul W. Todisco

Senior Client Service Officer

Paul Todisco has four decades of experience in the public investment fund arena. He first joined PRIM on November 5, 1984, as a seminal member of the staff, and played an integral role in developing the Pension Reserves Investment Management ("PRIM") Board's modern client service program. In 1996, Paul worked on the legislative strategy that led to the passage of a bill creating the highly successful "Segmentation" investment program, which allows local retirement systems to invest in eligible asset classes of the Pension Reserves Investment Trust ("PRIT") as an option to investing in the total PRIT Fund. Paul left PRIM in October 2002 to serve as the first Executive Director of Health Care Security Trust, but re-joined PRIM as Senior Client Services Officer on September 15, 2008, during the height of the Global Financial Crisis, and a critical time for PRIM and its member retirement systems. Prior to joining PRIM, Paul served as Staff and Research Director for the Joint Committee on Public Service in the Massachusetts Legislature from 1982-1984, where he advised the Committee members on legislation concerning public pensions, collective bargaining, civil service, and state and municipal administrative matters. Paul is a graduate of Suffolk University (BS cum laude 1976), and holds the Investment Foundations™ Certificate awarded by the CFA (Chartered Financial Analyst) Institute.



Michael G. Trotsky, CFA

Executive Director and Chief Investment Officer

Michael G. Trotsky, CFA, is the Executive Director and Chief Investment Officer of the Massachusetts Pension Reserves Investment Management ("PRIM") Board, the entity responsible for investing the \$68 billion Massachusetts pension fund, which contains the assets of the Massachusetts Teachers' and State Employees' Retirement Systems as well as the assets of approximately 100 participating municipal and county retirement systems. Mr. Trotsky's work at PRIM was preceded by a 25-year career in the private sector, most recently as senior vice president and portfolio manager at PAR Capital Management, a Boston-based absolute return strategy fund. Previously, he was a senior analyst at Greenberg-Summit Partners in Boston and also served as a principal and senior vice president at Independence Investment Associates (a John Hancock subsidiary), also in Boston. Mr. Trotsky began his professional career in 1985 as an engineer at Intel Corporation in California. Mr. Trotsky is a member of the CFA Boston Society's Board of Directors and is a member of the Boston Economics Club. Mr. Trotsky previously served as a member of the CFA Institute Board of Governors and as Chairman of the CFA Institute's Asset Manager Code of Professional Conduct Advisory Committee. Mr. Trotsky received a BS in electrical engineering from the University of Pennsylvania and an MBA from the Wharton School of the University of Pennsylvania.





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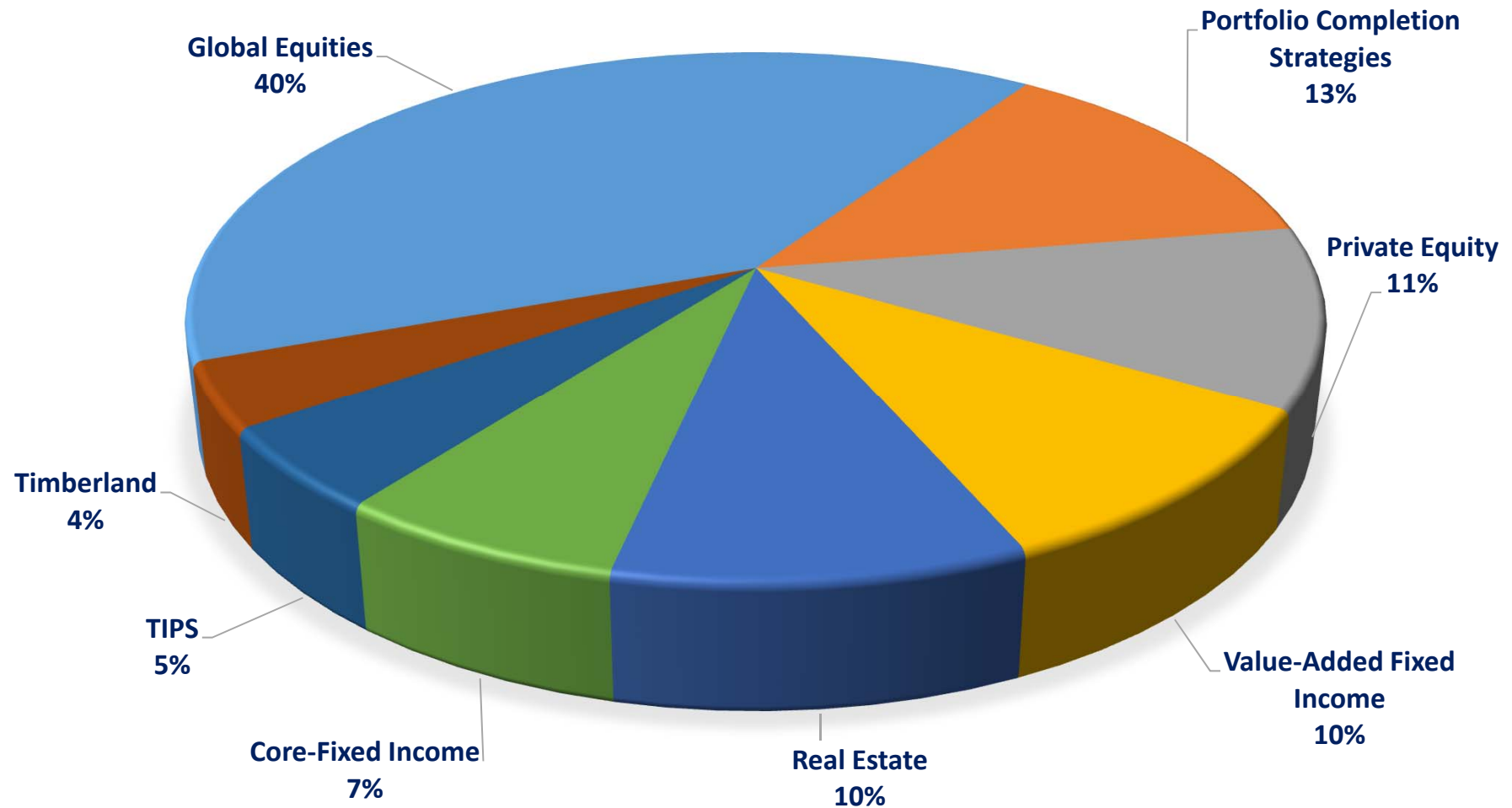
Executive Director and Chief Investment Officer's Welcome

***Presented by
Michael G. Trotsky, CFA
Executive Director and Chief Investment Officer***

***Deborah B. Goldberg, Treasurer and Receiver-General, Chair
Michael G. Trotsky, CFA, Executive Director and Chief Investment Officer***



PRIT Fund Overview



PRIT Fund Overview

❑ Oversight and staffing:

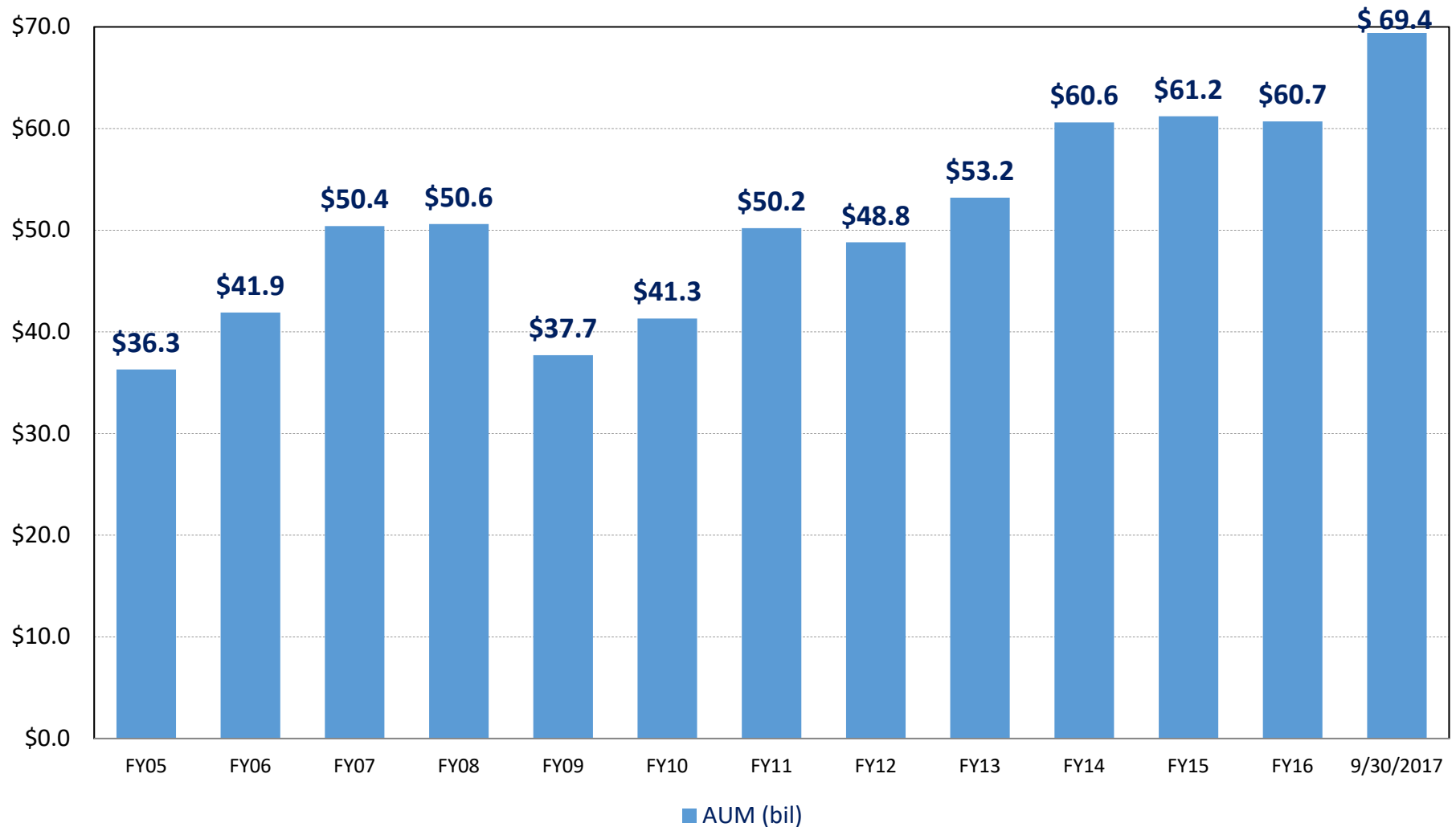
- 9 appointed and elected trustees
- 4 advisory committees consisting of 37 industry professionals and board members
- Staff of 41 professionals

❑ Core Fund Facts

- \$69.4 billion AUM as of 9/30/2017
- 45 public markets portfolios
- 14 real estate, timber and REIT managers
- 100+ private equity managers; 200+ partnerships
- 39 portfolio completion strategies managers

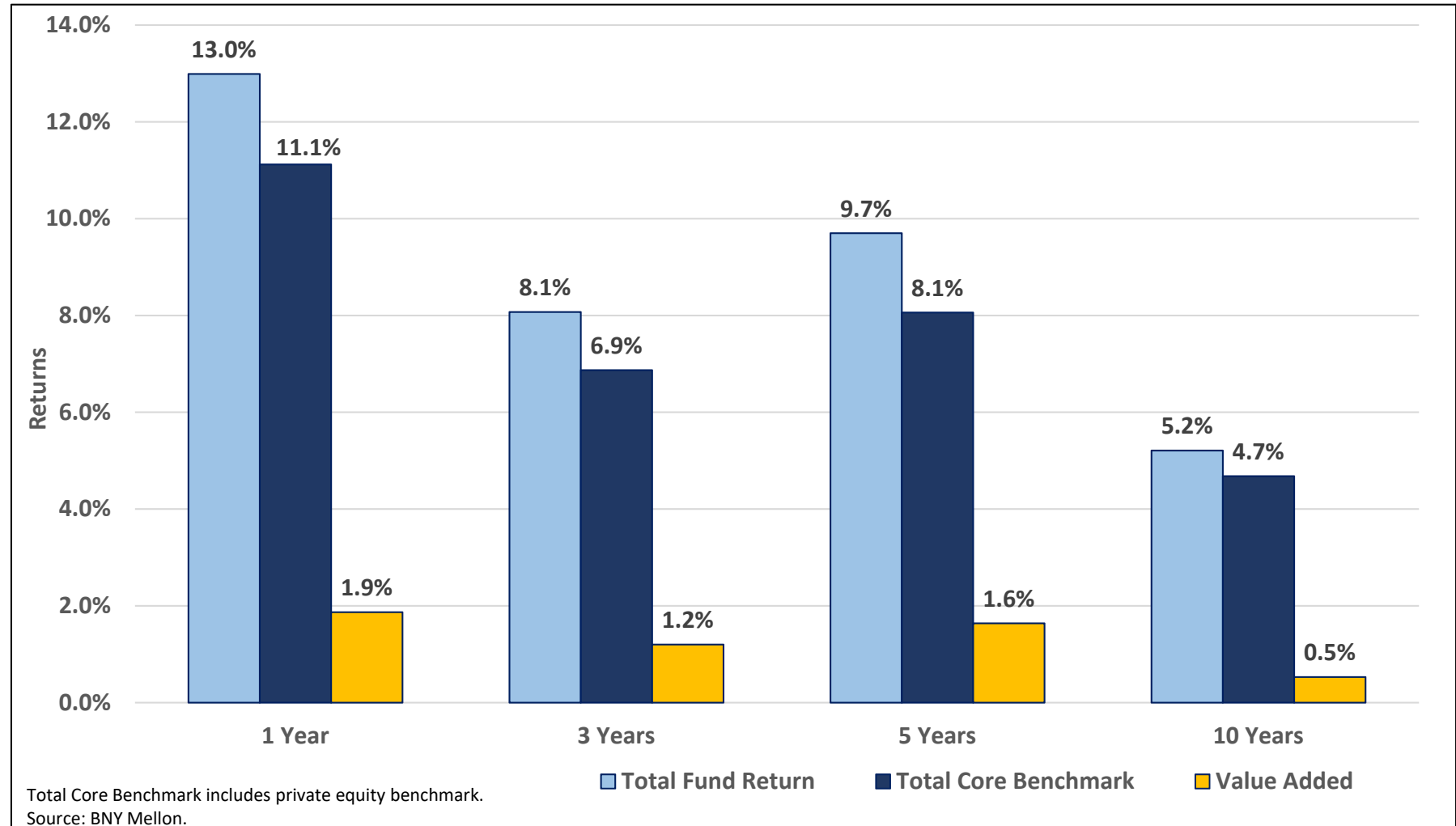


Total PRIT Fund Fiscal Year Market Value (\$Billions)



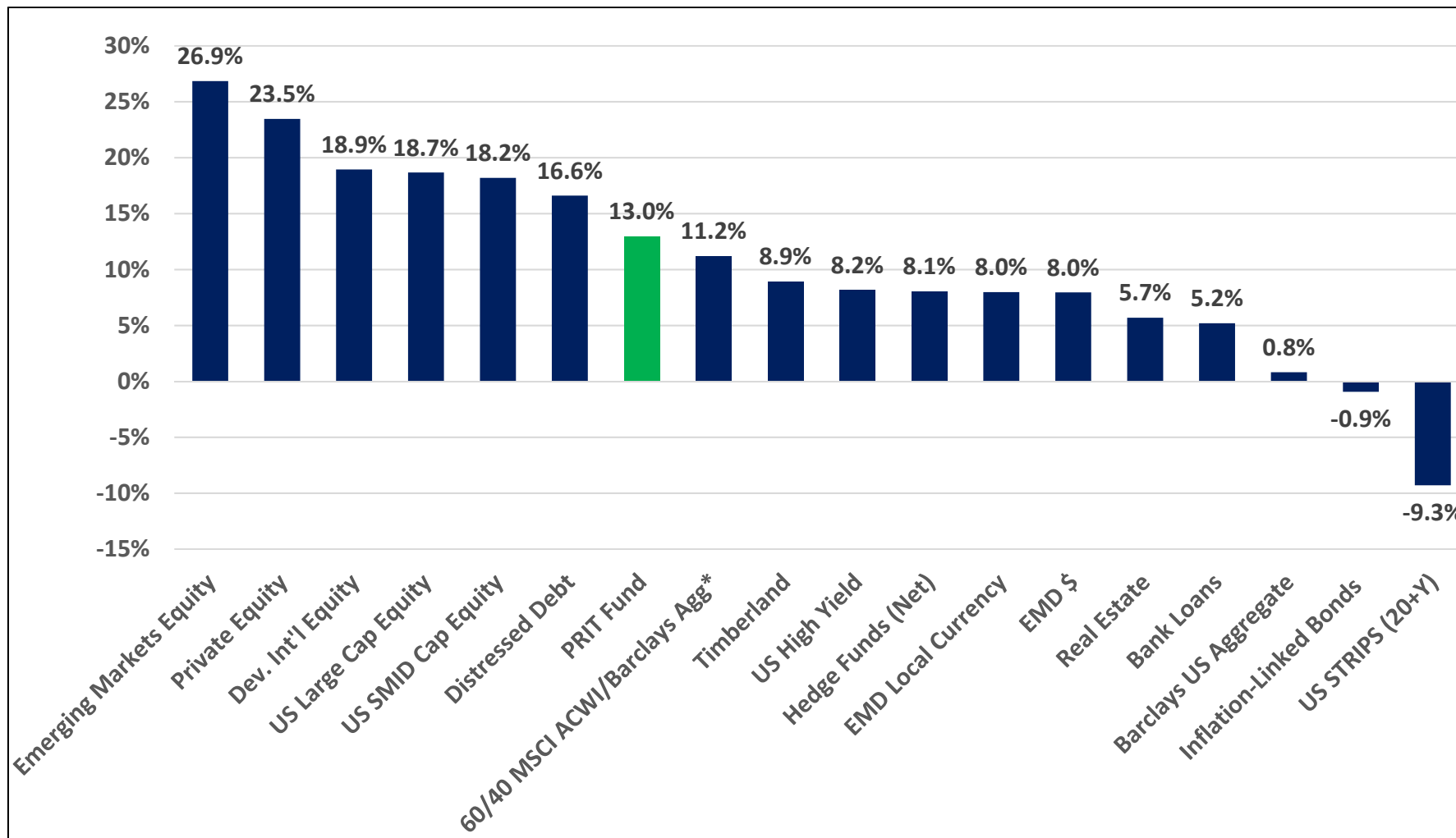
PRIT Fund Returns

Annualized Returns as of September 30, 2017 (Gross of Fees)



Asset Class Performance Summary

One Year Ended September 30, 2017 (Gross of Fees)



Source: BNY Mellon, FactSet.

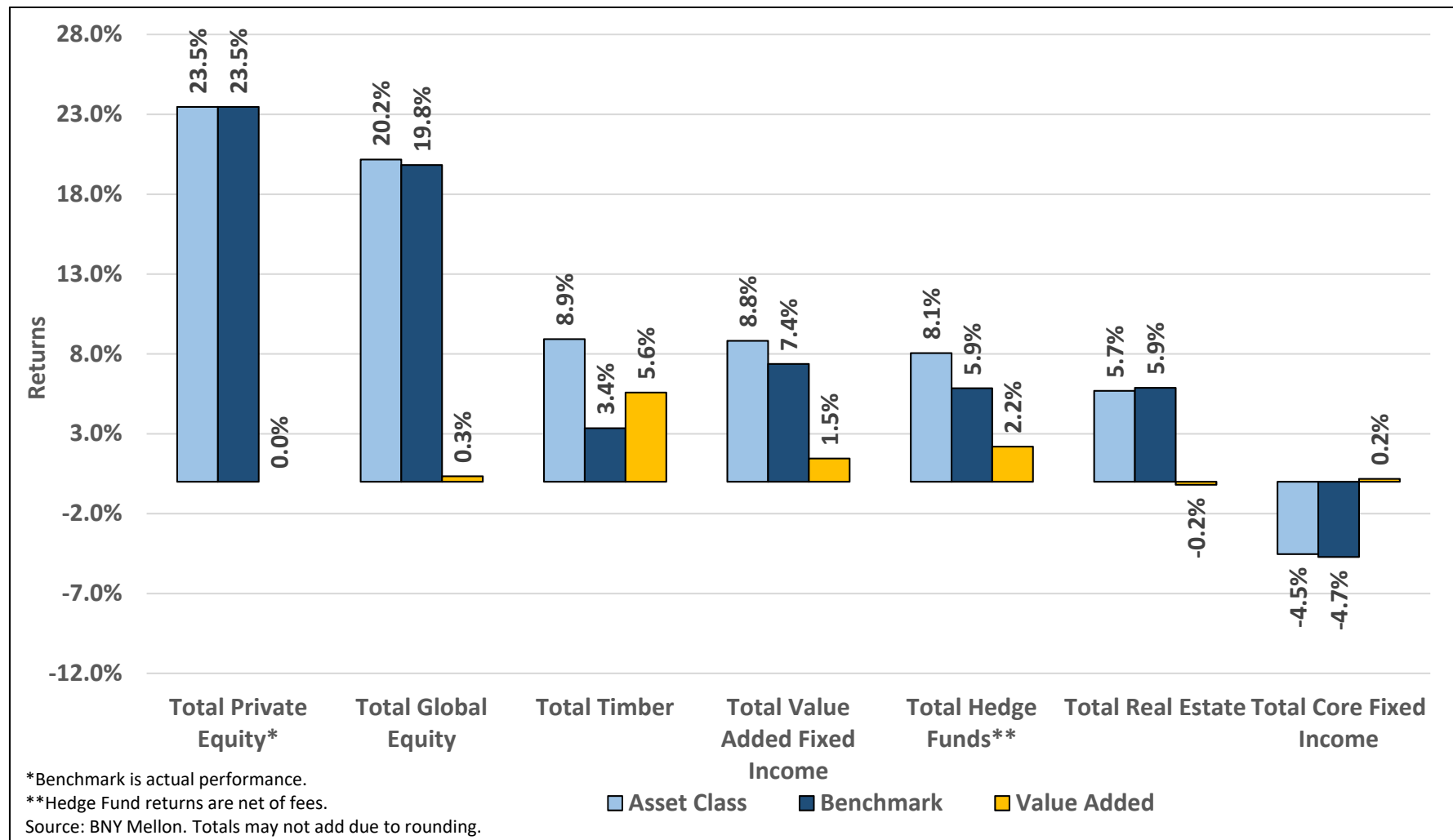
All performance figures reflected are PRIT Fund Asset Class returns.

*MSCI ACWI/Barclays Aggregate is derived from a 60/40 combination of index returns.



PRIT Asset Class Performance

One Year Ended September 30, 2017 (Gross of Fees)



PRIT Asset Class Performance

Annualized Returns as of September 30, 2017 (Gross of Fees)

1 Year	3 Year	5 Year	10 Year
PRIVATE EQUITY 23.5%	PRIVATE EQUITY 17.2%	PRIVATE EQUITY 19.0%	PRIVATE EQUITY 12.8%
GLOBAL EQUITY 20.2%	REAL ESTATE 10.6%	REAL ESTATE 11.1%	VALUE-ADDED FIXED INCOME 6.7%
TIMBER 8.9%	GLOBAL EQUITY 8.6%	GLOBAL EQUITY 11.0%	REAL ESTATE 6.4%
VALUE-ADDED FIXED INCOME 8.8%	TIMBER 5.9%	TIMBER 7.5%	TIMBER 5.9%
HEDGE FUNDS (NET OF FEES) 8.1%	CORE FIXED INCOME 4.4%	HEDGE FUNDS (NET OF FEES) 5.7%	CORE FIXED INCOME 4.9%
REAL ESTATE 5.7%	VALUE-ADDED FIXED INCOME 4.0%	VALUE-ADDED FIXED INCOME 4.9%	GLOBAL EQUITY 4.6%
CORE FIXED INCOME (4.5%)	HEDGE FUNDS (NET OF FEES) 3.0%	CORE FIXED INCOME 3.6%	HEDGE FUNDS (NET OF FEES) 3.0%





PENSION RESERVES
INVESTMENT
MANAGEMENT BOARD

PRIM KEY INVESTMENT BELIEFS

Deborah B. Goldberg, Treasurer and Receiver-General, Chair
Michael G. Trotsky, CFA, Executive Director and Chief Investment Officer



Top 10 Accomplishments

1. Strong relative and absolute investment performance
2. Exceptional staff with low turnover
3. National recognition for PRIM and its staff
4. Project SAVE
5. Timely asset allocation decisions
6. Re-engineered Hedge Fund program – Portfolio Completion Strategies
 - a. Direct hedge funds
 - b. Hedge fund replication
 - c. Alternative risk premia harvesting strategies
 - d. Equity risk mitigation
7. Enhanced manager search and selection process
8. Private Equity co-investment
9. Direct Real Estate
10. Deployed risk management platform and framework





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Innovation Roundtable

Deborah B. Goldberg, Treasurer and Receiver-General, Chair
Michael G. Trotsky, CFA, Executive Director and Chief Investment Officer



Innovation Roundtable



Michael R. Bailey, Senior Investment Officer – Director of Private Equity



David M. Gurtz, CPA, CFA, Deputy Chief Investment Officer- Director of Public Markets



Eric R. Nierenberg, Ph.D., Chief Strategy Officer



Luis J. Roman, Ph.D., Senior Investment Officer- Director of Risk Management

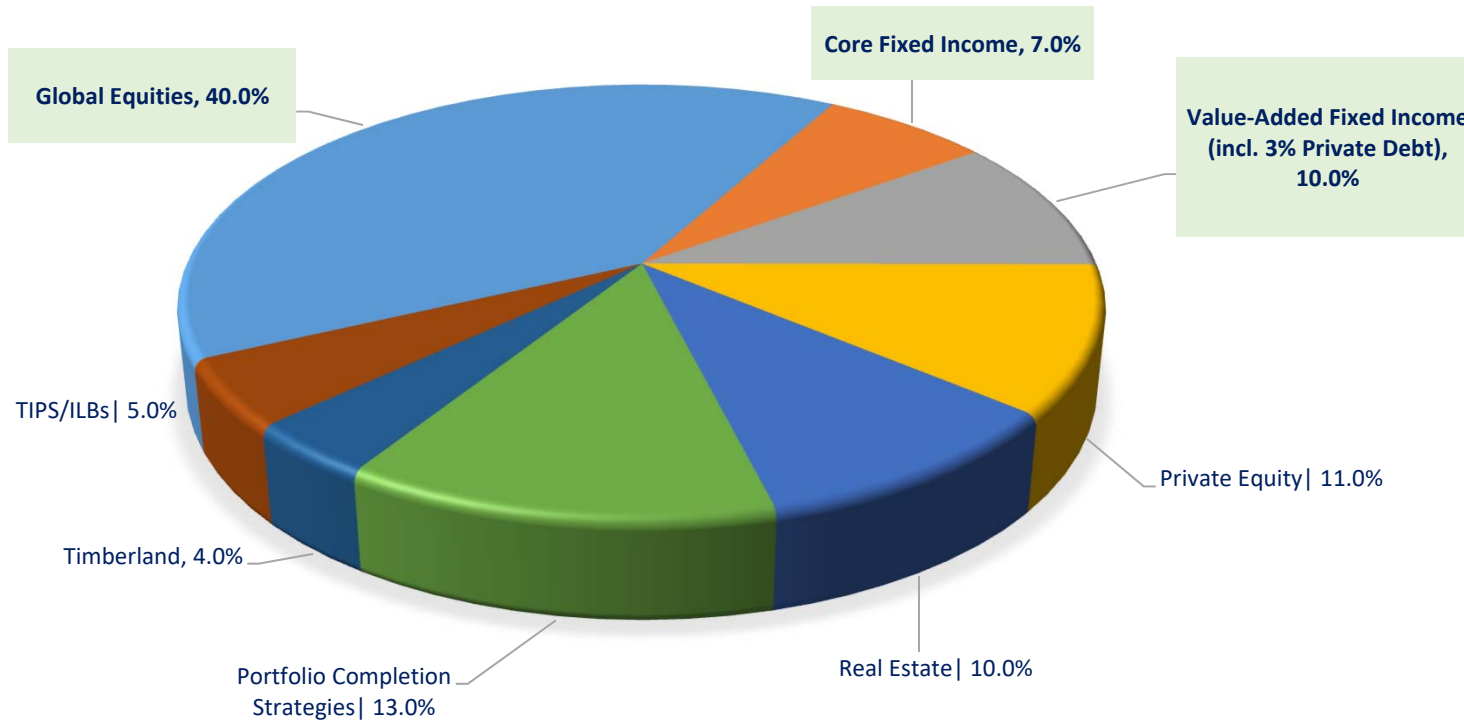


Timothy V. Schlitzer, CRE, CFA, Senior Investment Officer – Director of Real Estate and Timberland



Public Markets Portfolios

PRIT FUND TARGET ASSET ALLOCATION



Public Markets Portfolios

Key Initiatives:

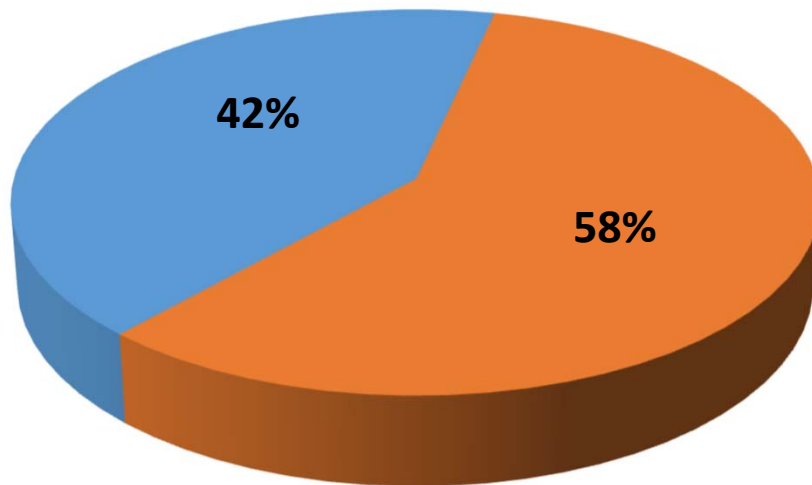
- ❑ Continue to Source Other Credit opportunities
- ❑ Review Equity Portfolios
 - Smart beta
 - Active/Passive Split
 - Researching U.S. Microcap Equities
- ❑ Research Project SAVE Phase II (Internal Investment Management)



Global Equity: Total Assets \$30.8 Billion

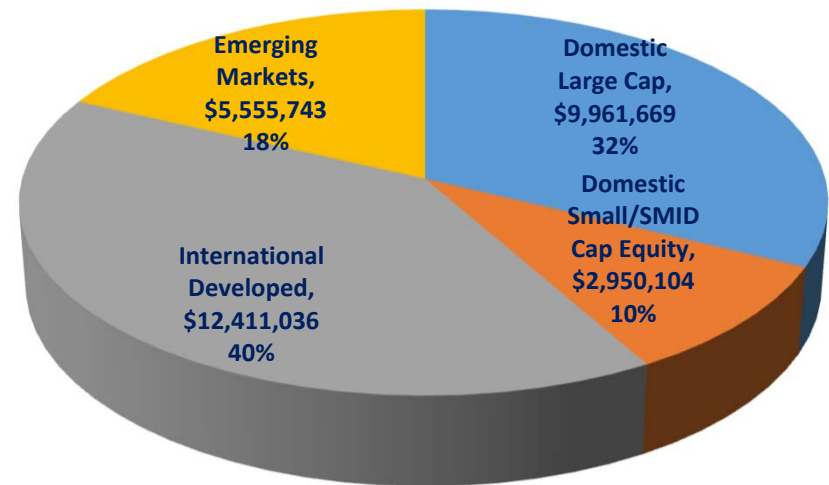
(Target Allocation: 40%)

Active/Passive Portfolio



■ Active ■ Passive

Asset Allocation



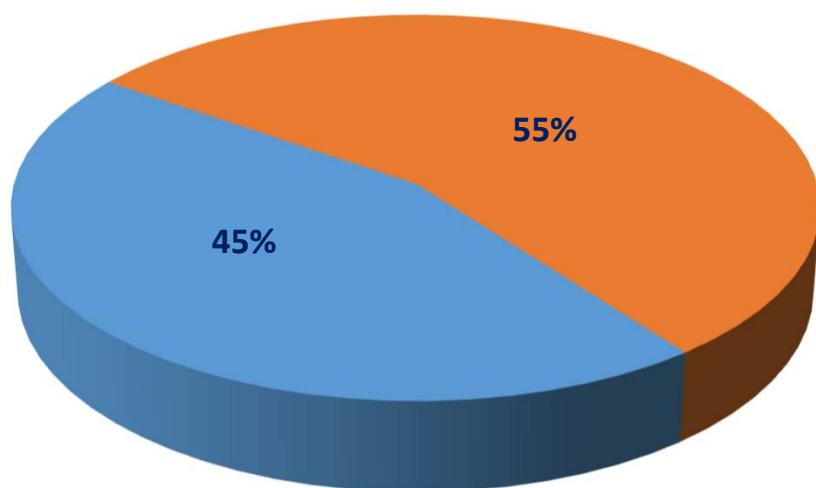
* \$ in 000's



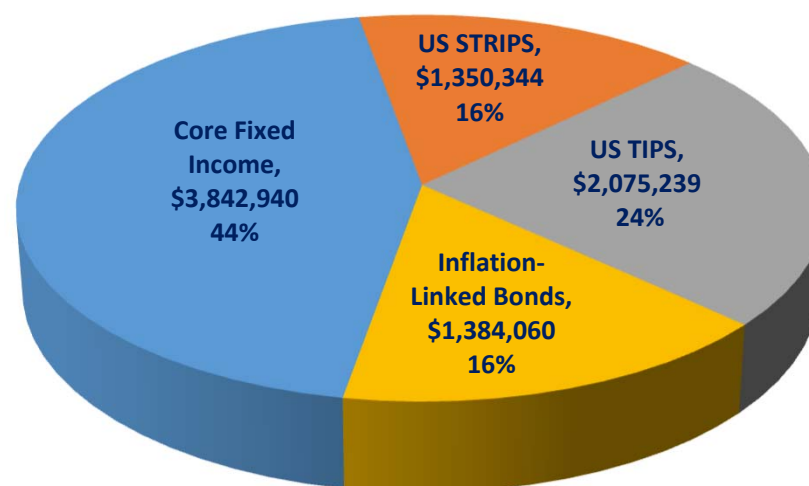
Domestic Investment Grade & Inflation-Linked Fixed Income: Total Assets \$8.7 Billion

(Target Allocation: 12.0%)

Active/Passive Portfolio



■ Active ■ Passive



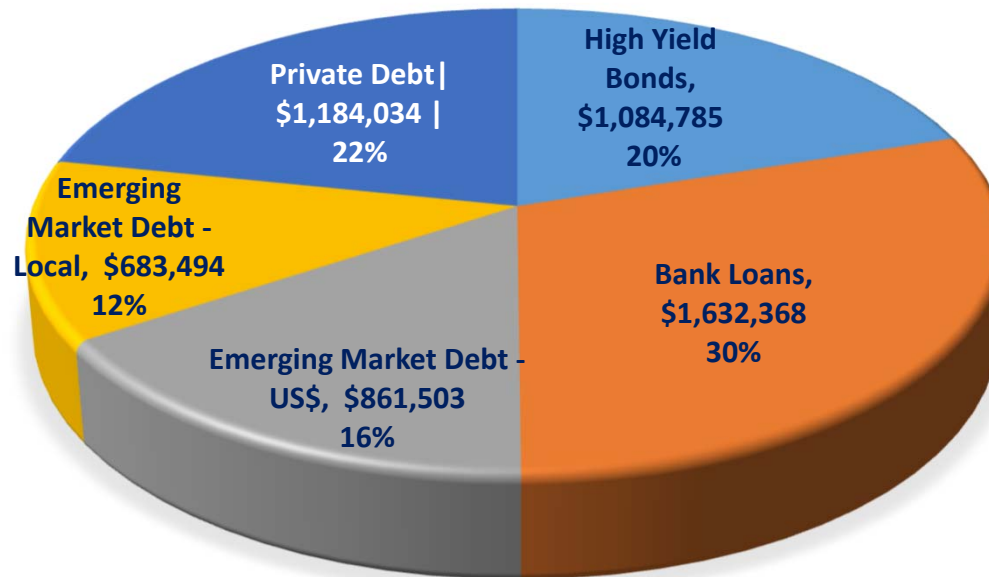
Asset Allocation

* \$ in 000's



Value Added Fixed Income: Total Assets \$5.4 Billion

(Target Allocation: 10.0%)

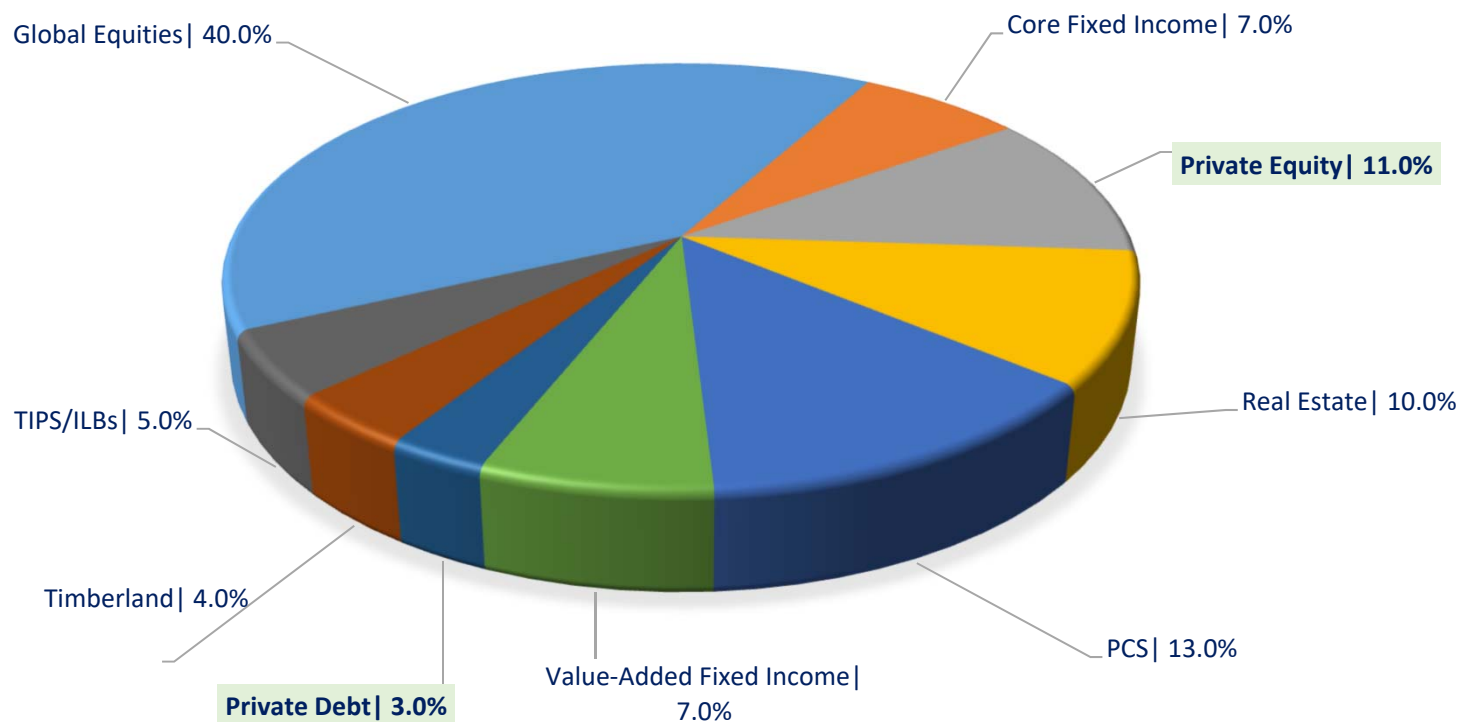


* \$ in 000's



Private Markets Portfolios

PRIT FUND TARGET ASSET ALLOCATION



Private Markets Portfolios

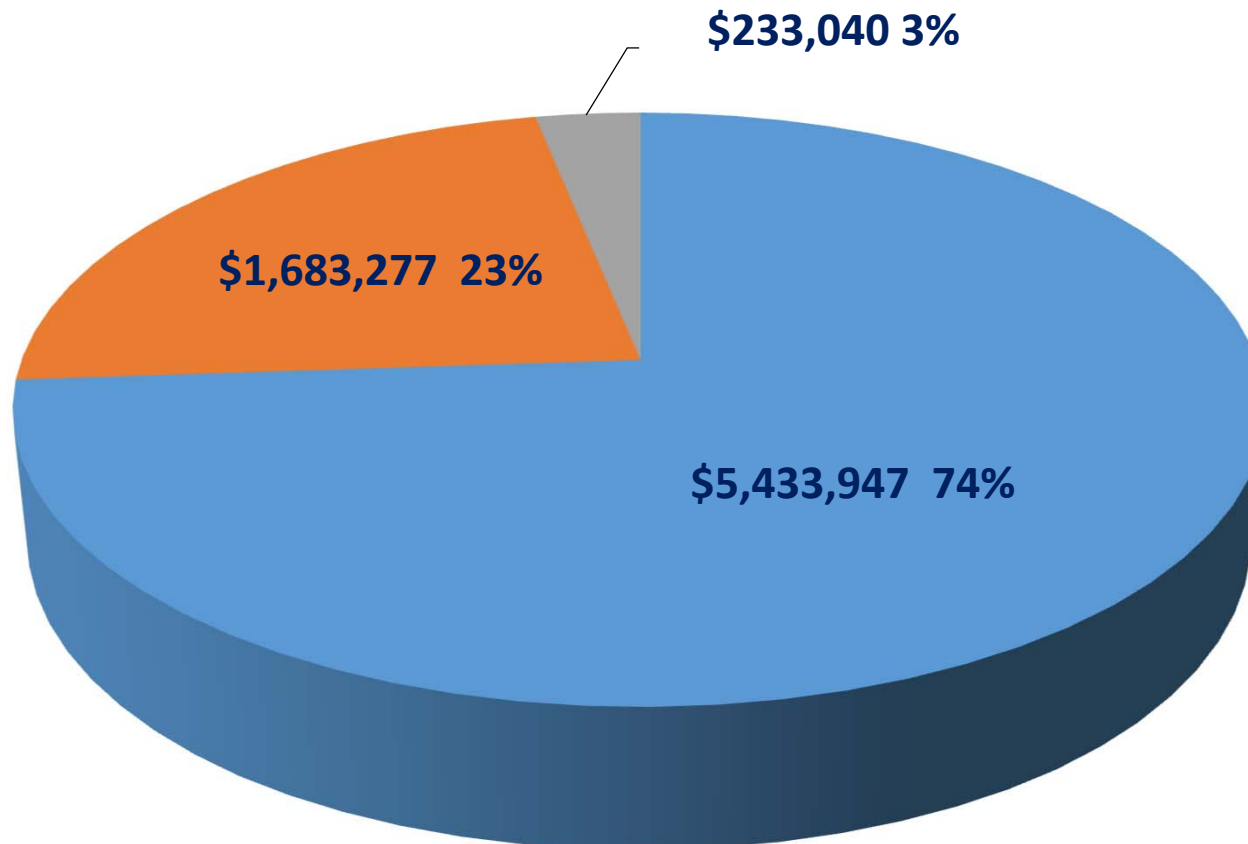
Key Initiatives:

- ❑ Launched first PRIM co-investment program and have made six co-investments totaling \$60 million
- ❑ Ongoing investment research:
 - Small and mid market buyouts
 - Growth Equity
- ❑ Strengthen decision-making and idea sharing
- ❑ Cross-collaboration with other asset class teams



Private Equity: Total Assets \$7.4 Billion

(Target Allocation: 11.0%)



■ Buyouts

■ Venture Capital

■ Private Equity Cash

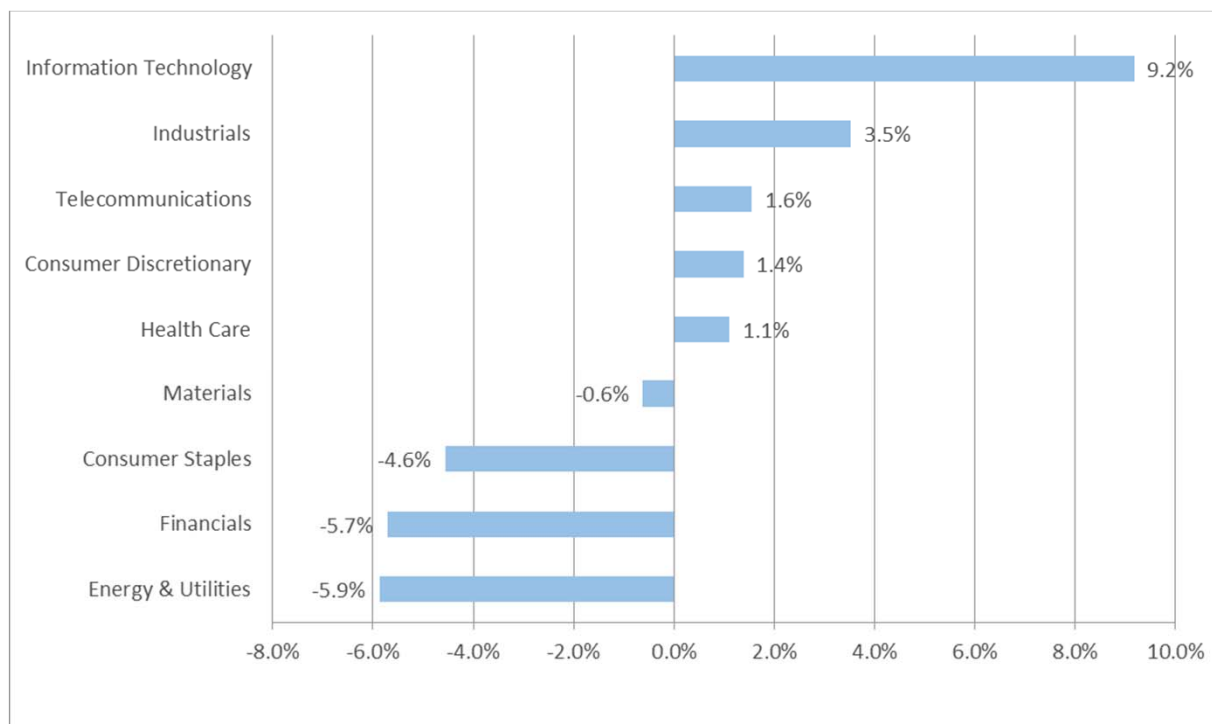
* \$ in 000's



Buyouts and Public Companies

- Buyouts are smaller than public companies
- Buyouts are overweight services and industrials

PRIM buyouts compared to Russell 3000



Russell 3000 holdings as of 6/30/17. Financials exclude real estate and banks.



Innovative Co-Investment Program

❑ Co-investments

- Equity in buyouts of U.S. and Europe based private companies
- Sourced by PRIM's leading private equity firms

❑ Goals

- Increase exposure to best-performing managers
- Reduce fees
- Improve portfolio insight

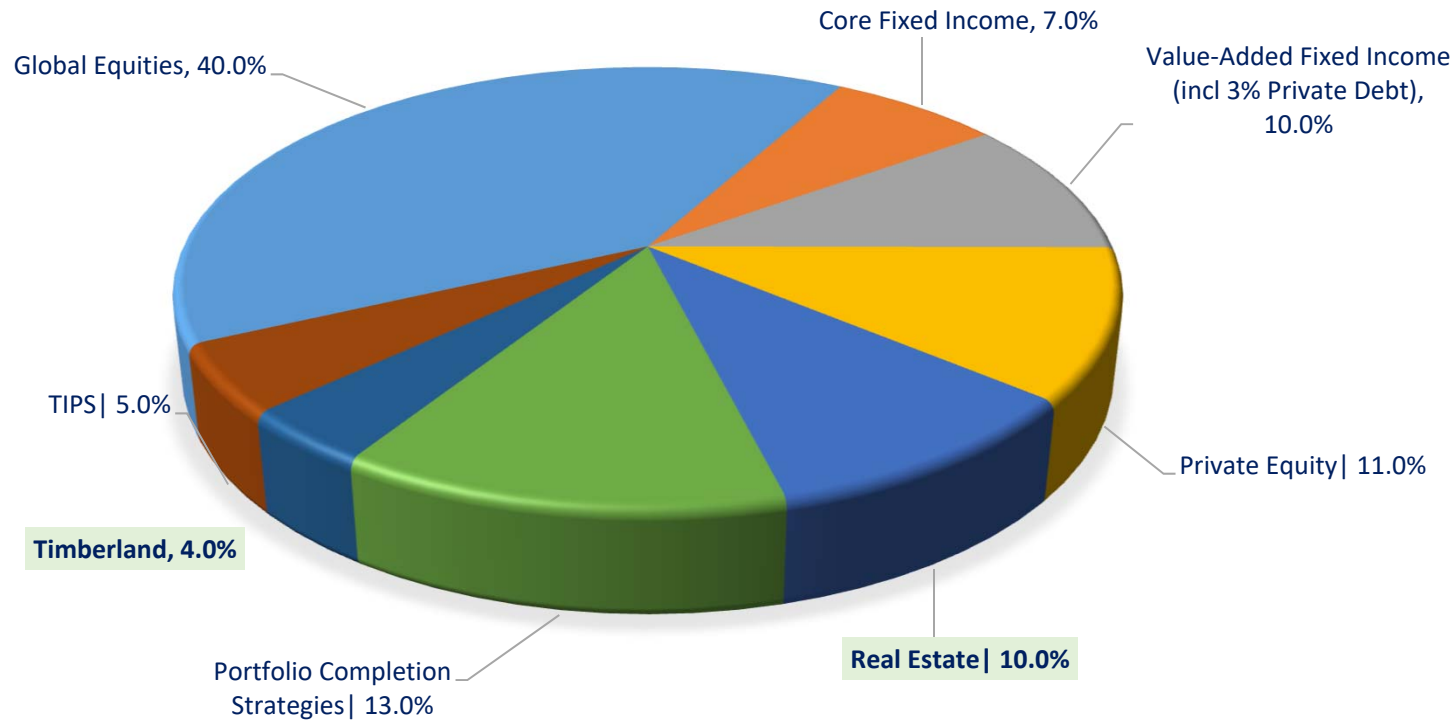
❑ Status

- Invested \$60 million in six companies since 2015
- Investment performance meeting expectations



Real Estate and Timberland Portfolios

PRIT FUND TARGET ASSET ALLOCATION



Real Estate and Timberland Portfolios

Key Initiatives:

☐ Capital Allocation

- \$200 million – Direct Real Estate Investments
- Continue to develop direct investing infrastructure and investment process
- Evaluating REIT Portfolio and managers

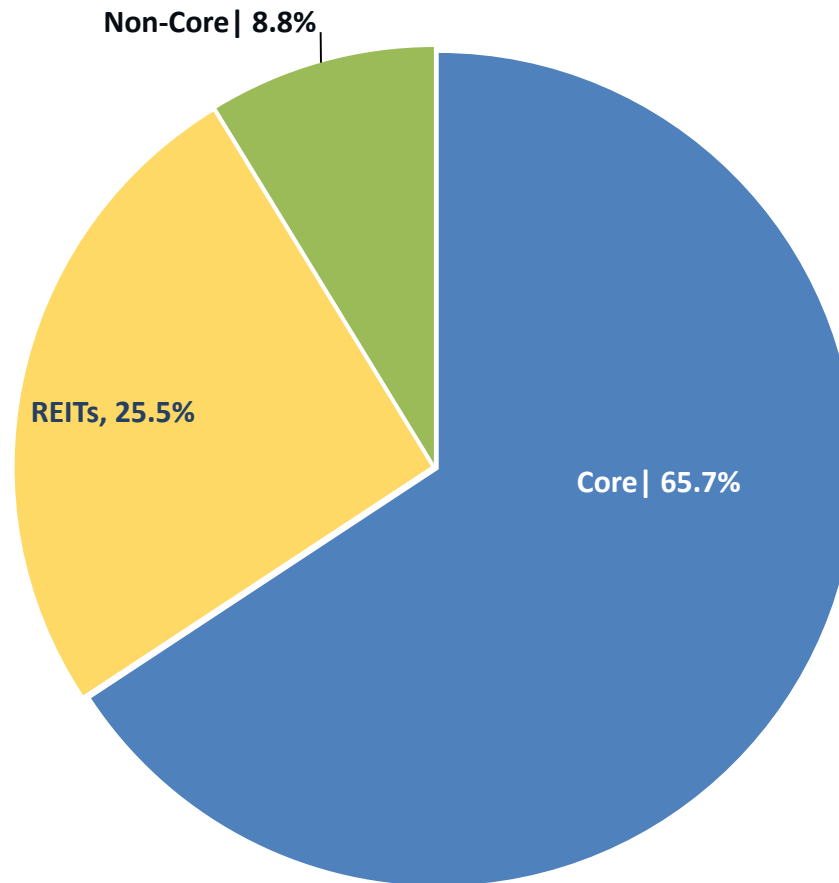
☐ Research and Recommendations

- Formally evaluate Core Real Estate and Timberland manager market
- Evaluate office sector strategy



Real Estate Asset Allocation

Targets	
Core	70%
Non-Core	10%
REITs	20%



Co-investment – One Kendall Square (Sold)



Investment Manager: DivcoWest

Location:

- Cambridge, MA
- Less than ½ mile from the Massachusetts Institute of Technology (MIT)

Investment:

- 11 building campus, 670,000 square feet of office, retail, and lab space
- Asset strategy involving office leasing, retail repositioning and physical upgrades

Return:

- Bought for \$395 million in 2014. Sold for \$725 million in 2016.
- 50.5% (Annualized)

Fee Savings: \$5.5 million (Realized)



Direct Investment – Santa Clara Gateway



Investment Manager: PRIM (internal management)

Location:

- Santa Clara, CA
- Central location – Adjacent to San Francisco 49ers stadium. Five miles from Apple headquarters.

Investment:

- 21 acres of land leased to the largest real estate developer in California
- Low risk investment supported by high credit tenant and contractual rent increases serving as an inflation hedge.

Expected Fee Savings: \$11 million (20 years)



Development Project – Mass + Main



Investment Manager: LaSalle Investment Management

Developer: Twining Properties

Location: Cambridge, MA (Central Square)

Investment:

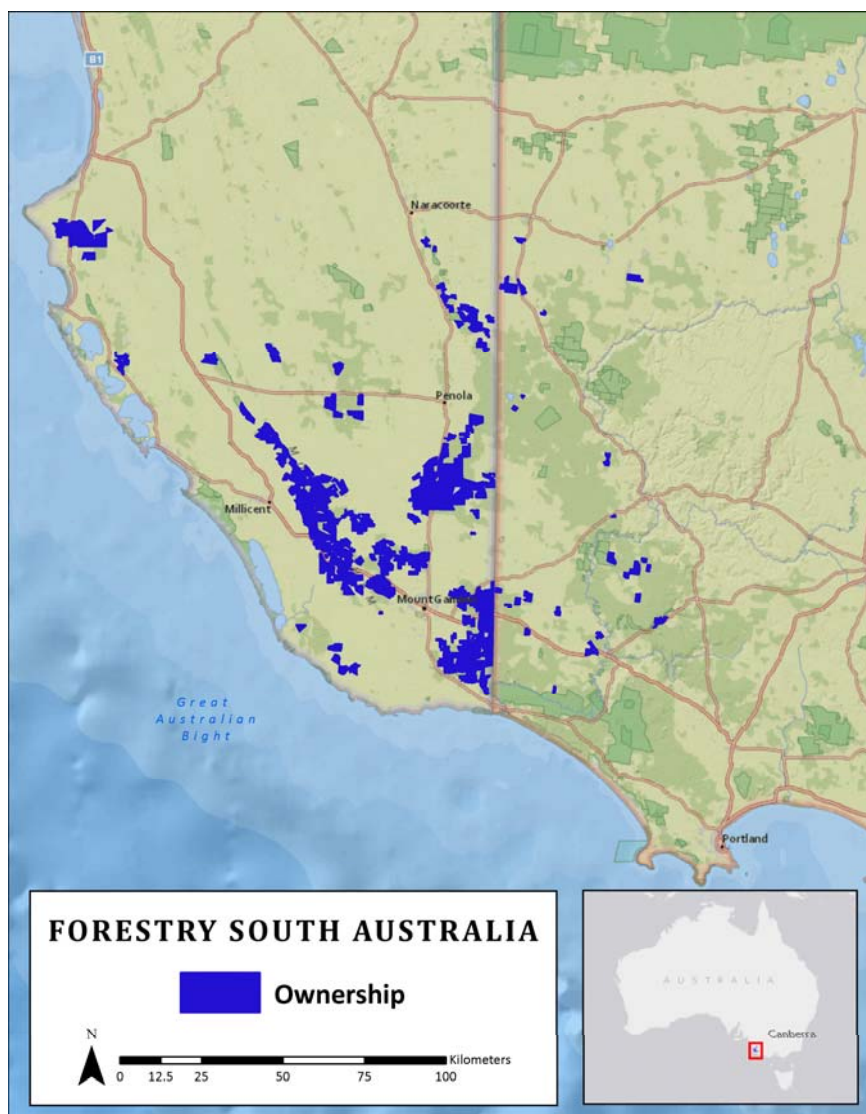
- \$194 million construction project
- 308 units, including 61 affordable
- 17,000 square feet of retail to be filled by local retailers

Return:

- Lease-up to start in June 2019. Construction completion in 2020.
- 11.1% expected return (annualized)



One Forty One Plantations - Australia



Property

- 94,000 hectares (232,300 acres) purchased in November 2012 from the South Australian Government.
- Acreage is located in the Green Triangle, one of the deepest domestic and export timber markets in Australia.

Joint Venture

- Future Fund (Australian Sovereign).
- Danica Pension (Denmark).
- PRIM / Campbell Global

Strategy

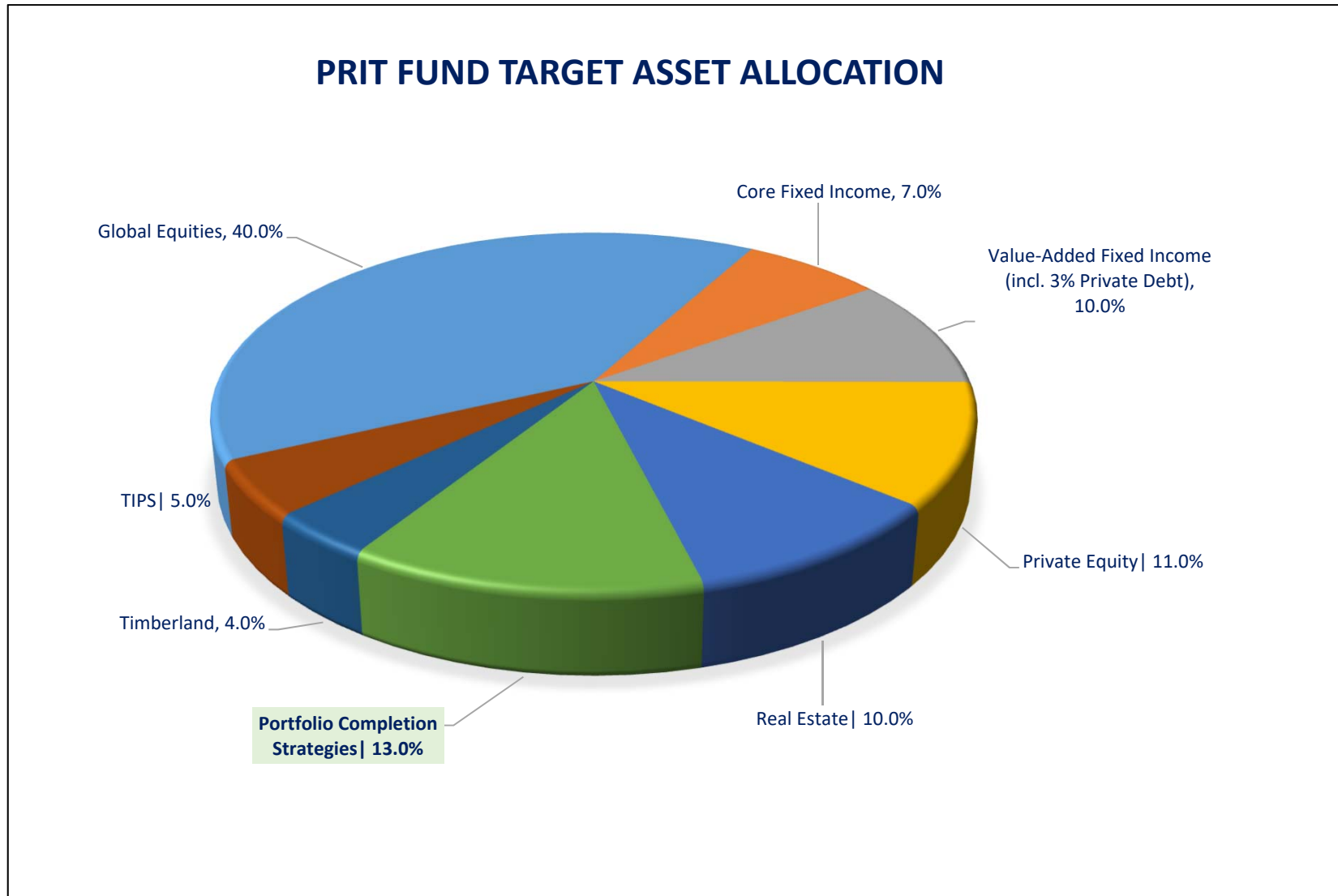
- Develop domestic and export log marketing and sales.
- Optimize forest and cost management.

Returns

- Underwritten – Real return 7%, levered at 20% real return 9% (AUS)
- Actual to date – 23.9% (June 30)



Portfolio Completion Strategies



Portfolio Completion Strategies

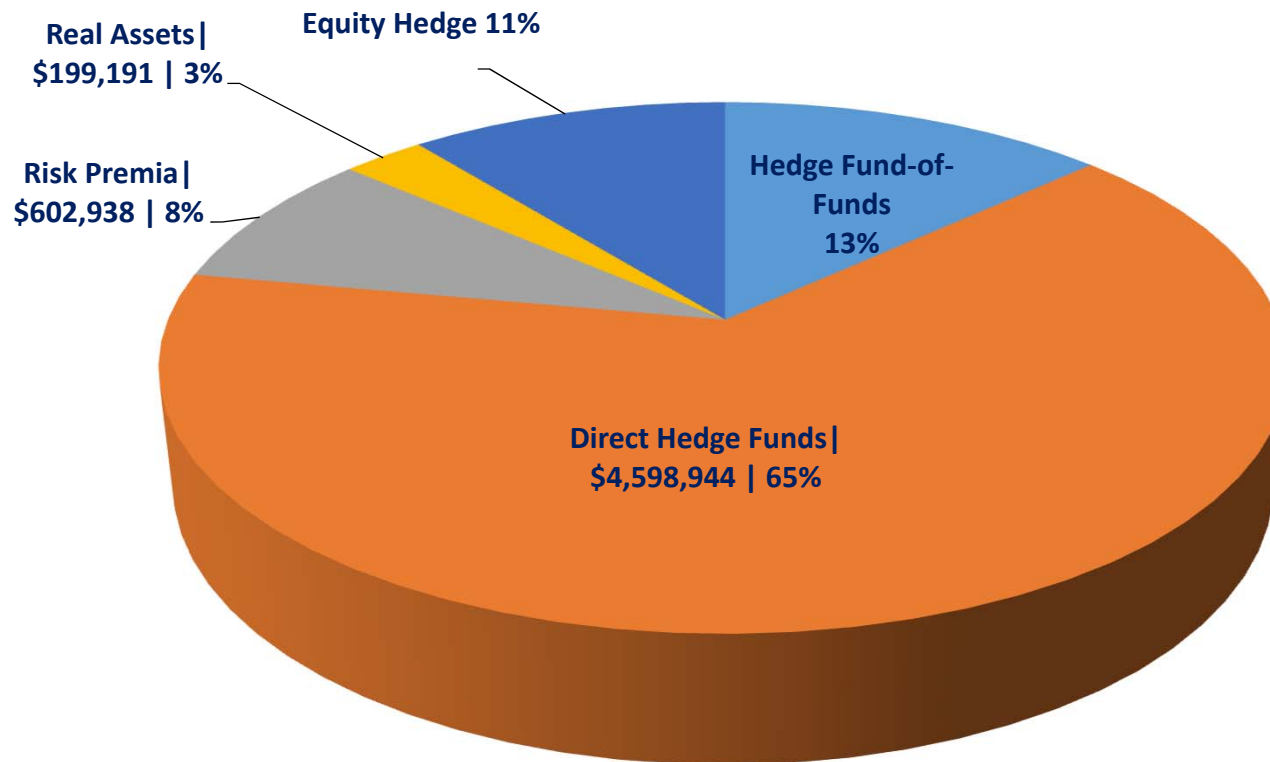
Key Initiatives:

- ❑ PRIM managed account platform
- ❑ Alternative beta analysis framework
- ❑ Position-based portfolio risk monitoring
- ❑ Alternative risk premia
- ❑ Agriculture investing



Portfolio Completion Strategies: Total Assets \$7.1 Billion

(Target Allocation: 13.0%)



* \$ in 000's



Risk Management Process



Risk Management Process – Manager Evaluation





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PRIM Portfolio Strategy

***Presented by
Eric R. Nierenberg, Ph.D.,
Chief Strategy Officer***

***Deborah B. Goldberg, Treasurer and Receiver-General, Chair
Michael G. Trotsky, CFA, Executive Director and Chief Investment Officer***



PRIM Strategy Update

- ☐ Asset Allocation
- ☐ Investment Strategy
- ☐ Staff and Operations Strategy



Asset Allocation

❑ Organic Asset Allocation

- PRIT's current portfolio is dominated by **economic growth factor** exposure, the most reliable driver of long-term asset returns.
- **Orthogonal** return sources can maintain or increase expected return without increasing risk or downside capture.
- We need to **dynamically source managers** and **evaluate alpha**.

❑ Factor-based Modeling

- Factor-based framework approaches **portfolio management** from an alternative lens
- Factor addresses the **cause** rather than the effect of returns.
- Continuous **refinement** of factor modelling helps with sourcing and evaluation.



Investment Strategy

❑ Alpha Evaluation Framework

- Manager's performance and fees should be scrutinized with **higher bar**

❑ Unconstrained Investing

- Unconstrained approach could **enable capable managers** to maximize alpha through freely expressing views, as long as risk is in check

❑ Internal Management

- We will continue exploring, where possible, to bring investing in house, saving cost and avoiding agency issues.

❑ Risk-adjusted Performance Measurement, Reporting, and Communication

- Return numbers are more meaningful when **taking into consideration how much risk** is associated.
- We will continue communicating performance on a risk-adjusted basis.

❑ Dynamic Risk Modeling

- We should keep risk, especially drawdown risk, in check.
- Dynamic stress testing and scenario analysis helps **identify and manage vulnerability** to drawdown risk.



Staff and Operations Strategy

❑ PRIM Learning Curriculum

- Continuing education helps staff **stay competitive** in the ever-changing investing world.
- We have started interactive seminars, '**PRIM University**', in a case study format.

❑ Investment/Operations staff collaboration

- Operation grows even more important, as investing structures become **more complex**.
- Internal and lower-cost investing calls for **close and smooth collaboration** among investment and operation staff.





PENSION RESERVES
INVESTMENT
MANAGEMENT BOARD

Legal Update

Presented by

Christopher J. Supple

Deputy Executive Director and General Counsel

Deborah B. Goldberg, Treasurer and Receiver-General, Chair

Michael G. Trotsky, CFA, Executive Director and Chief Investment Officer



Legal Update

- Contract Negotiation, Drafting and Review
- Litigation
- Public Law aka Government Law
- Legislation and Legislative Initiatives
- Organization Law
- Fiduciary Law
- Legal Support of PRIM Initiatives



Contract Negotiation, Drafting and Review

- Public Markets
 - Global Equities
 - Fixed Income
- Portfolio Completion Strategies
- Real Estate and Timberland
- Private Equity
- Co-Investments
- Direct Investments



Litigation

- Defensive
 - Individual
 - Group
- Offensive
 - Individual
 - Group
 - Securities Litigation
 - Domestic
 - Foreign
 - Australia, Belgium, Brazil, France, Germany, Italy, Japan, the Netherlands, and the United Kingdom
 - Claims Filing
 - Market Manipulation Cases



Public Law aka Government Law

- Conflicts-of-Interest/Ethics/268A
- Open Meeting Law (OML)
- Public Records Act (PRA)
- Investment-Specific Exemptions to OML and PRA
- Procurement



Legislation and Legislative Initiatives

- Divestment
- MBTA Retirement Fund



Organization Law

- Provider Contracts for Goods and Services
- HR/Employment
- RFPs/RFQs (Q&As, etc.)
- NDAs (Non-Disclosure Agreements), CAs (Confidentially Agreements)
- PRIM Governance Documents
 - Enabling Legislation and Related Statutes, Operating Trust Agreement, ByLaws, Governance Manual (aka Charters – 14 total), Investment Policy, Employee Handbook, etc.



Fiduciary Law

- Exclusive Purpose Rule
- Tax Status
- ESGs/ETIs
- Proxy Voting





PENSION RESERVES
INVESTMENT
MANAGEMENT BOARD

Keynote Address

***Presented by
Laura Alfaro, Ph.D
Harvard Business School***

***Deborah B. Goldberg, Treasurer and Receiver-General, Chair
Michael G. Trotsky, CFA, Executive Director and Chief Investment Officer***





From the Global Financial Crisis to Global Growth with Emerging and Developed Markets

Laura Alfaro
Harvard Business School



The Aftermath of First Global Crisis of the 21st Century...

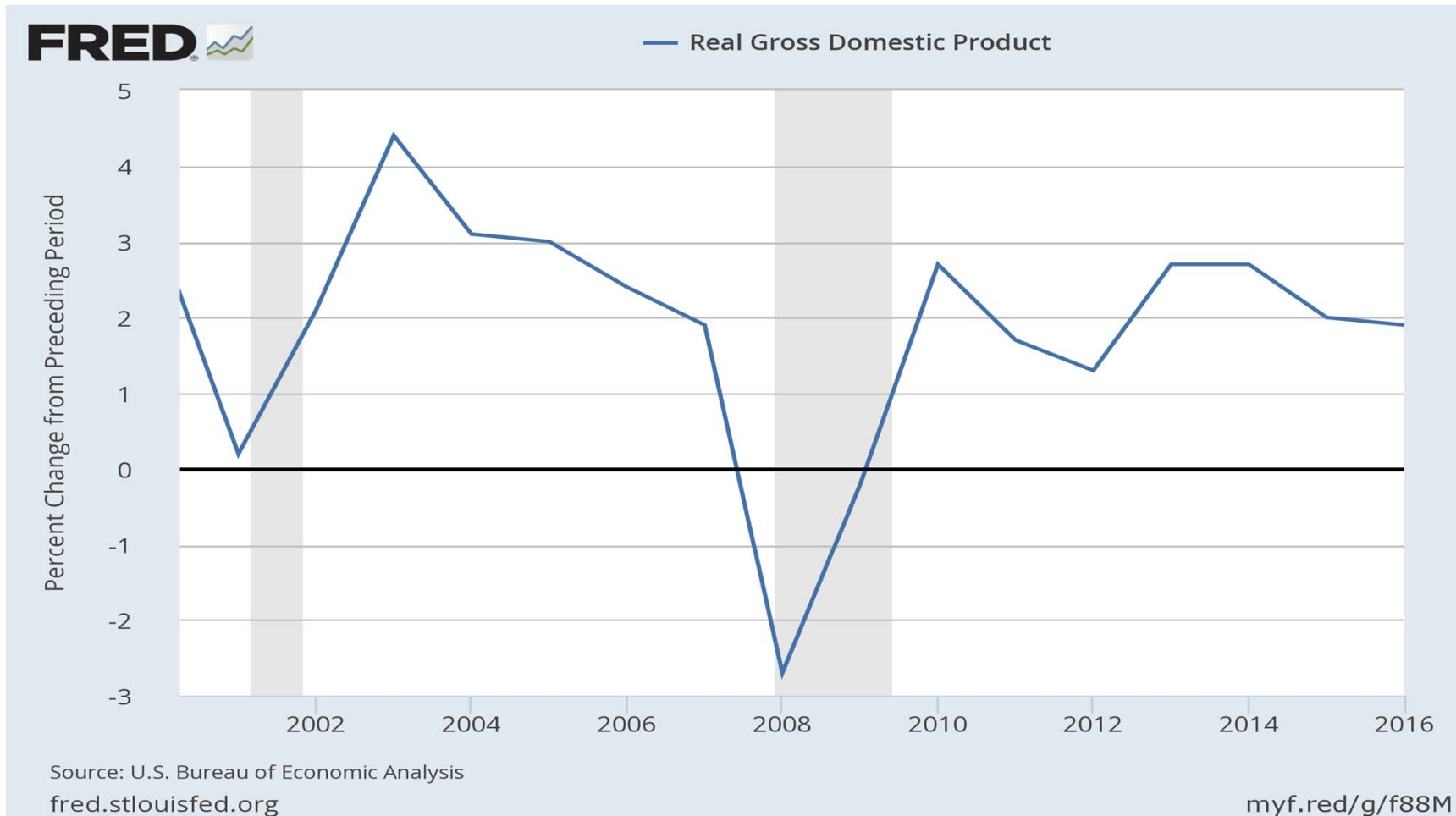


Source: IMF, WEO.

- World
- Advanced economies
- Emerging market and developing economies



U.S. Real GDP Growth



Fred. Fed. St. Louis.



IMF Overview of World Economic Projections – July 2017

Table 1. Overview of the World Economic Outlook Projections
(Percent change unless noted otherwise)

	Year over Year						Q4 over Q4 2/		
	Estimate		Projections		Difference from April 2017 WEO Projections 1/		Estimate		Projections
	2015	2016	2017	2018	2017	2018	2016	2017	2018
World Output	3.4	3.2	3.5	3.6	0.0	0.0	3.2	3.5	3.7
Advanced Economies	2.1	1.7	2.0	1.9	0.0	-0.1	2.0	1.9	1.9
United States	2.6	1.6	2.1	2.1	-0.2	-0.4	2.0	2.0	2.3
Euro Area	2.0	1.8	1.9	1.7	0.2	0.1	1.8	1.9	1.7
Germany	1.5	1.8	1.8	1.6	0.2	0.1	1.8	1.9	1.5
France	1.1	1.2	1.5	1.7	0.1	0.1	1.2	1.7	1.5
Italy	0.8	0.9	1.3	1.0	0.5	0.2	1.1	1.1	1.0
Spain	3.2	3.2	3.1	2.4	0.5	0.3	3.0	3.0	2.1
Japan	1.1	1.0	1.3	0.6	0.1	0.0	1.6	1.2	0.5
United Kingdom	2.2	1.8	1.7	1.5	-0.3	0.0	1.9	1.4	1.4
Canada	0.9	1.5	2.5	1.9	0.6	-0.1	2.0	2.3	2.0
Other Advanced Economies 3/	2.0	2.2	2.3	2.4	0.0	0.0	2.5	2.1	2.7
Emerging Market and Developing Economies	4.3	4.3	4.6	4.8	0.1	0.0	4.2	4.9	5.2
Commonwealth of Independent States	-2.2	0.4	1.7	2.1	0.0	0.0	0.6	1.5	2.0
Russia	-2.8	-0.2	1.4	1.4	0.0	0.0	0.3	1.5	1.8
Excluding Russia	-0.5	1.8	2.5	3.5	0.0	0.0	...	...	...
Emerging and Developing Asia	6.8	6.4	6.5	6.5	0.1	0.1	6.3	6.6	6.5
China	6.9	6.7	6.7	6.4	0.1	0.2	6.8	6.4	6.4
India 4/	8.0	7.1	7.2	7.7	0.0	0.0	6.0	8.0	7.6
ASEAN-5 5/	4.9	4.9	5.1	5.2	0.1	0.0	4.8	5.2	5.2
Emerging and Developing Europe	4.7	3.0	3.5	3.2	0.5	-0.1	3.3	2.0	4.2
Latin America and the Caribbean	0.1	-1.0	1.0	1.9	-0.1	-0.1	-1.3	1.6	2.1
Brazil	-3.8	-3.6	0.3	1.3	0.1	-0.4	-2.5	1.5	1.7
Mexico	2.6	2.3	1.9	2.0	0.2	0.0	2.3	0.9	3.2
Middle East, North Africa, Afghanistan, and Pakistan	2.7	5.0	2.6	3.3	0.0	-0.1	...	...	...
Saudi Arabia	4.1	1.7	0.1	1.1	-0.3	-0.2	2.2	0.6	1.4
Sub-Saharan Africa	3.4	1.3	2.7	3.5	0.1	0.0	...	...	...
Nigeria	2.7	-1.6	0.8	1.9	0.0	0.0	...	...	...
South Africa	1.3	0.3	1.0	1.2	0.2	-0.4	0.4	1.3	1.1
Memorandum									
Low-income Developing Countries	4.6	3.6	4.6	5.2	-0.1	-0.1	...	...	...
World Growth Based on Market Exchange Rates	2.7	2.5	2.9	3.0	0.0	0.0	2.6	2.8	3.0
World Trade Volume (goods and services) 6/	2.6	2.3	4.0	3.9	0.2	0.0	...	...	...
Advanced Economies	4.0	2.3	3.9	3.5	0.2	-0.1	...	...	...
Emerging Market and Developing Economies	0.3	2.2	4.1	4.6	0.1	0.3	...	...	...
Commodity Prices (U.S. dollars)									
Oil 7/	-47.2	-15.7	21.2	0.1	-7.7	0.4	16.2	6.2	-0.8
Nonfuel (average based on world commodity export weights)	-17.5	-1.8	5.4	-1.4	-3.1	-0.1	9.9	0.1	0.1



Trends: IMF Outlook

❑ Advanced economies

- The growth forecast in the United States has been revised down from 2.3% to 2.1% in 2017 and from 2.5% to 2.1% in 2018.
 - ... the major factor behind the growth revision, especially for 2018, is the assumption that fiscal policy will be less expansionary than previously assumed, given the uncertainty about the timing and nature of U.S. fiscal policy changes.
- By contrast, growth projections for 2017 have been revised up for many euro area countries, including France, Germany, Italy, and Spain, where growth for the first quarter of 2017 was generally above expectations.
 - The growth forecast has also been revised down for the United Kingdom for 2017 on weaker-than-expected activity

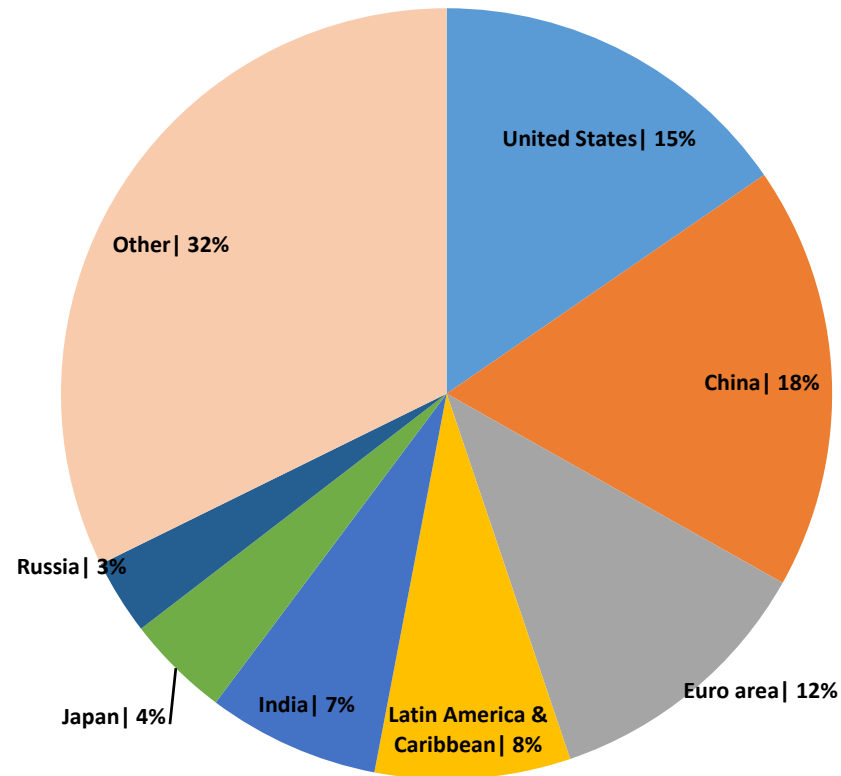
❑ Emerging and developing economies

- Emerging and developing economies are projected to see a sustained pickup in activity, with growth rising from 4.3% in 2016 to 4.6% in 2017 and 4.8% in 2018..
 - pickup reflects to an important extent gradually improving domestic conditions.



SHARE OF THE WORLD GDP

Purchasing power parity adjusted



* Adjusted for Purchasing Power Parity
Source: IMF, 2016



Overview: Trends

- ❑ The U.S. Consumer is Back! (Policy Uncertainty)
- ❑ China: Rebalancing 馬馬虎虎 / mǎmahūhū
- ❑ Europe: A New Hope?
- ❑ Emerging Markets: Recovering and Emerging from the Commodities Super Cycle
- ❑ Recent Trends: Policy Reactions / Global Implications





The U.S. Consumer is Back (Policy Uncertainty)



Digression

Subprime Meltdown: What Caused It? Micro Perspective

□ Subprime Meltdown

- Mortgages (lenders, borrowers, intermediaries); securitization; sophisticated financial products; rating agencies; excess leveraging; failed risk management, regulation, etc.
- Complicated micro story: complexity U.S. financial system.



What Caused It?

International Macro Perspective

- ❑ U.S. current account deficit 6% of GDP
 - Simple story: credit boom and unreg. finan. markets
 - In many ways like others (Asia, etc.)
 - ❑ But ... U.S. current account deficit = $\frac{3}{4}$ World Savings; U.S. world's financial center.
 - Complicated story:
 - Global imbalances
- World Trends: Interaction U.S.-Rest of the World.



International Macro Perspective Framework:

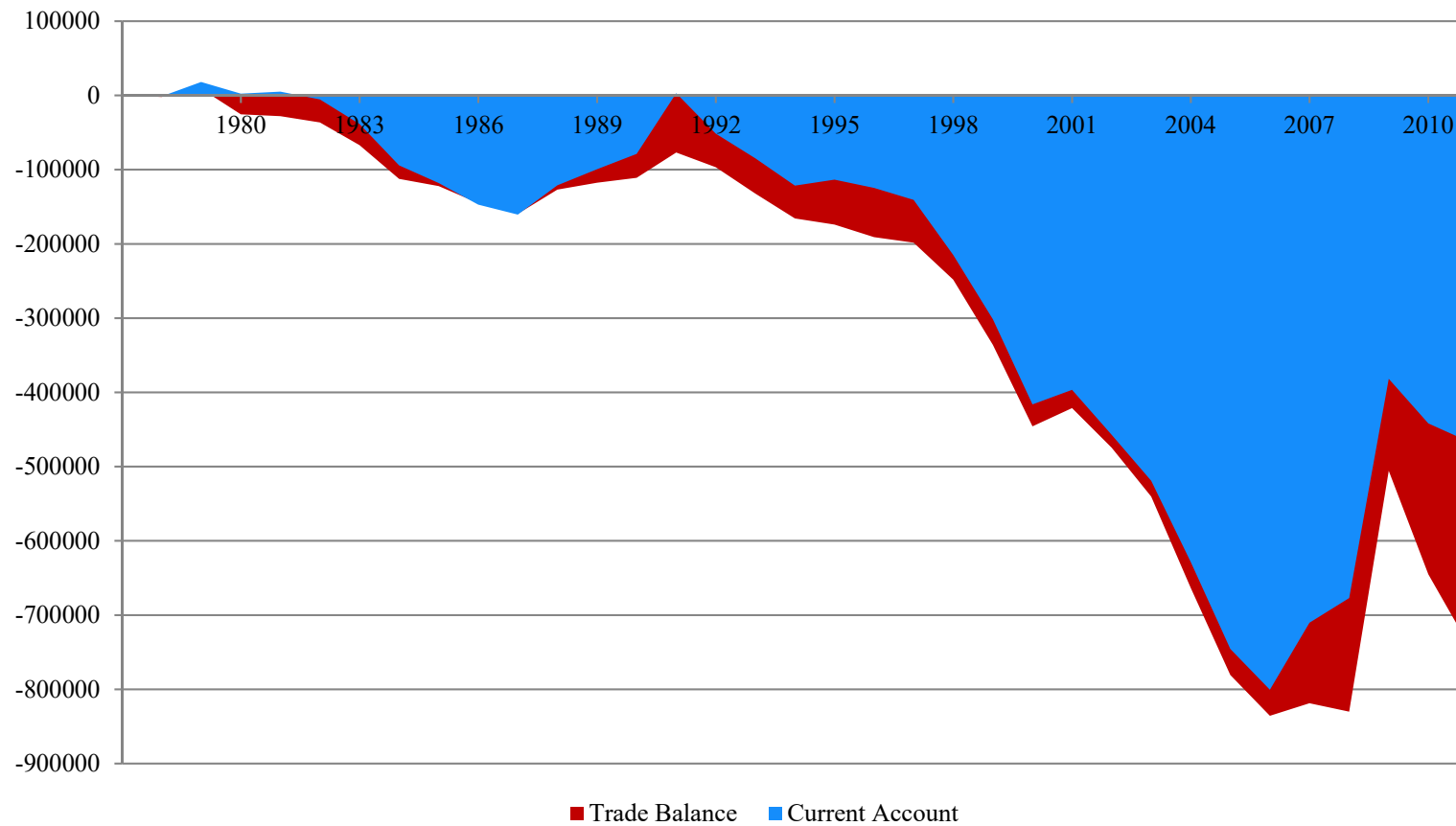
World Trends

- ❑ Balance of Payments + National Income Accounts
 - Organize “views”
 - US / World Trends
 - Effect of the policies
 - Short Term/Long Term
- ❑ Trends/correlations



US Balance of Trade and Current Account

Billions \$



U.S. Current Account Deficit

- ❑ Why so large?
- ❑ Transformation of the U.S. economy / Rest of the World.
 - Link with national income accounts



High Current Account Deficit

- ❑ High investment opportunities in the U.S.
 - Innovation; flexible economy; superior productivity; housing.
- ❑ Government deficits (borrow)
- ❑ High consumption and low Savings (borrow)
 - Wealth effects (housing boom)
 - Income Inequality (keeping up ...)
- ❑ Etc.



U.S. National Income Accounts (% GDP)

<i>% GDP, except where noted</i>	1980	1992	2000	2001	2002	2005	2007	2009	2013	2015
GDP (current trillion dollars)	2.9	6.5	10.3	10.6	11.0	13.1	14.5	14.4	16.7	18.0
<u>Household Consumption:^a</u>	<u>61%</u>	<u>64%</u>	<u>66%</u>	<u>67%</u>	<u>67%</u>	<u>67%</u>	<u>67%</u>	<u>68%</u>	<u>68%</u>	<u>68%</u>
Durable goods	8%	8%	9%	9%	9%	9%	8%	7%	7%	8%
Nondurable goods	20%	16%	15%	15%	15%	15%	15%	15%	16%	15%
Services	33%	41%	42%	43%	44%	44%	44%	46%	45%	46%
<u>Government Consumption:</u>	<u>21%</u>	<u>21%</u>	<u>18%</u>	<u>18%</u>	<u>19%</u>	<u>19%</u>	<u>19%</u>	<u>21%</u>	<u>19%</u>	<u>18%</u>
Federal Nondefense	3%	3%	2%	2%	3%	3%	3%	3%	3%	3%
Federal defense	6%	6%	4%	4%	4%	5%	5%	5%	5%	4%
State and local	11%	12%	12%	12%	12%	12%	12%	13%	11%	11%
<u>Investment:</u>	<u>19%</u>	<u>15%</u>	<u>20%</u>	<u>18%</u>	<u>18%</u>	<u>19%</u>	<u>18%</u>	<u>13%</u>	<u>16%</u>	<u>17%</u>
Nonresidential	14%	11%	15%	14%	12%	12%	13%	11%	13%	13%
Residential	5%	4%	5%	5%	5%	7%	5%	3%	3%	4%
Change in private inventories	0%	0%	1%	0%	0%	0%	0%	-1%	1%	1%
<u>Exports</u>	<u>10%</u>	<u>10%</u>	<u>11%</u>	<u>10%</u>	<u>9%</u>	<u>10%</u>	<u>11%</u>	<u>11%</u>	<u>14%</u>	<u>13%</u>
<u>Imports</u>	<u>10%</u>	<u>10%</u>	<u>14%</u>	<u>13%</u>	<u>13%</u>	<u>16%</u>	<u>16%</u>	<u>14%</u>	<u>17%</u>	<u>15%</u>
Addendum: Real GDP (bns 2005 \$)	6.5	9.3	12.6	12.7	12.9	14.2	14.9	14.4	15.6	16.4

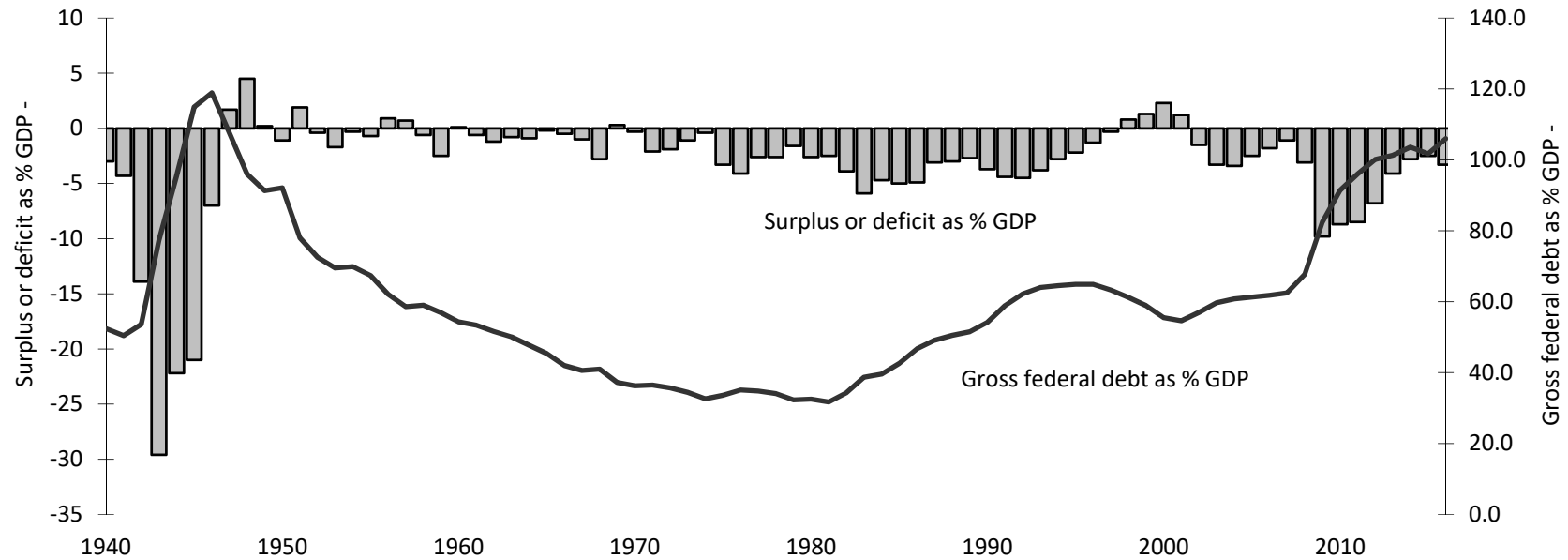


2000: The Dot Com Bubble Burst

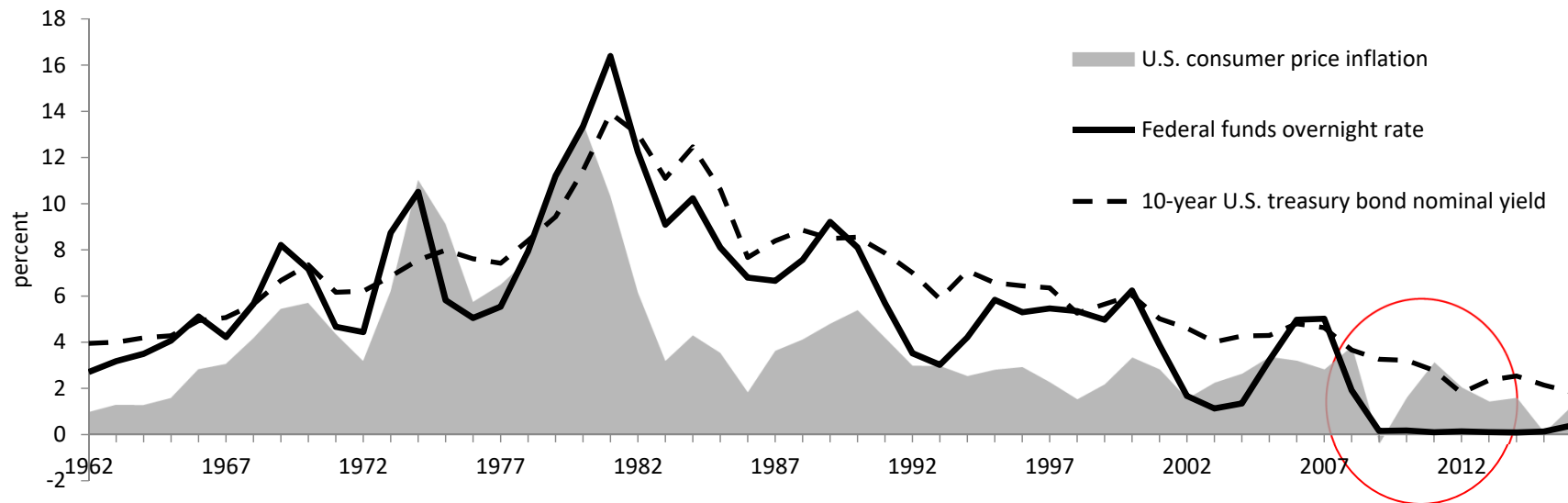
- ☐ The government responded with a fiscal stimulus in the form of a tax cut;
- ☐ The Federal Reserve responded with a monetary stimulus in the form of record-low interest rates.



Fiscal Deficits: U.S Federal Fiscal Balance as % GDP



U.S. Monetary Policy: Interest Rates and Consumer Price Inflation



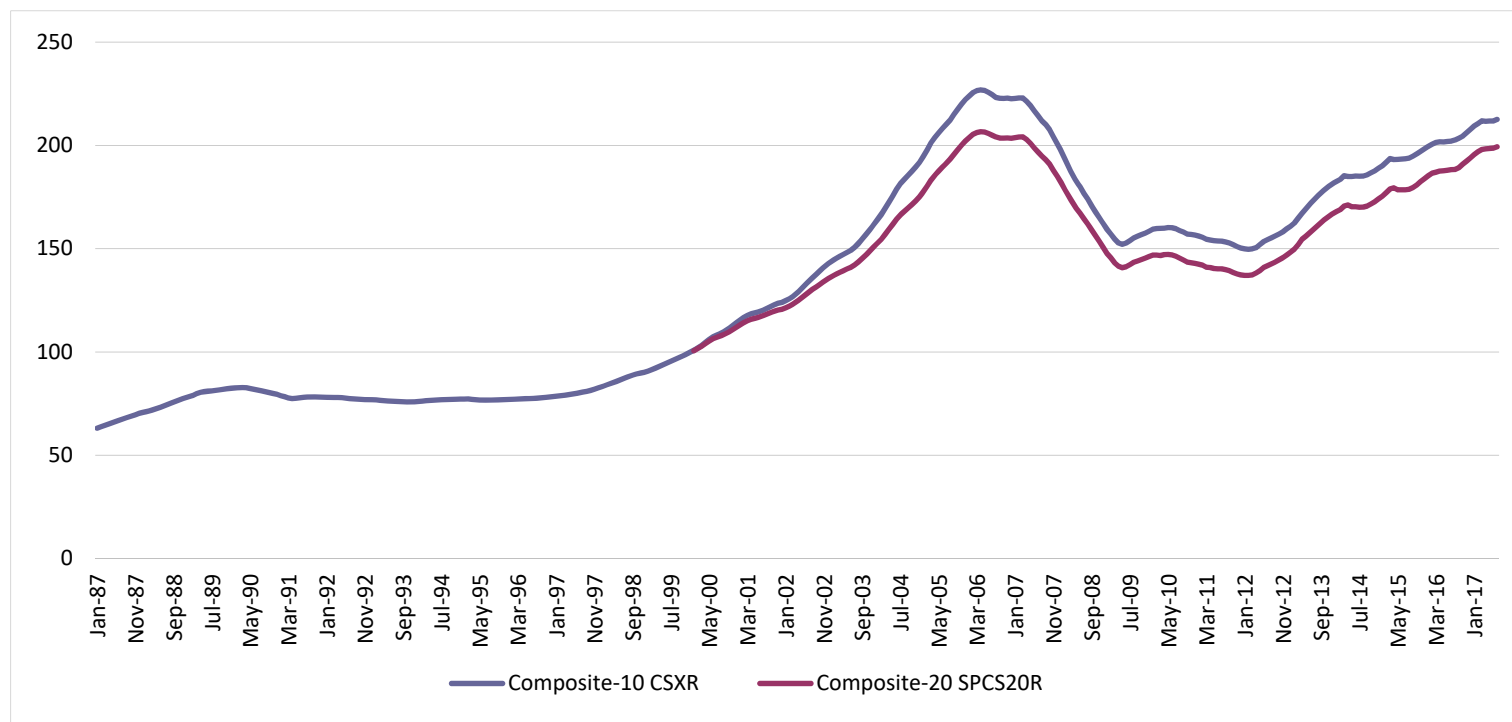
Low Interest Rates and Consumption

- ❑ Low U.S. interest rates: increased the value of a wide range of assets, particularly in the non-traded goods sector.
 - Residential real estate (many chose to borrow against their assets; let asset price appreciation substitute for savings)
 - High levels of household debt.



High Consumption: Wealth Effect?

S&P/Case Shiller Home Index



S&P/Case-Shiller U.S. National index tracks the value of single-family housing. The 10-City Composite Index is a value-weighted average of ten metro areas including: Boston, Chicago, Denver, Las Vegas, Los Angeles, Miami, New York, San Diego, San Francisco, and Washington D.C. The 20-City Composite index includes those in the 10-City Index and: Atlanta, Charlotte, Cleveland, Dallas, Detroit, Minneapolis, Phoenix, Portland, Seattle, and Tampa

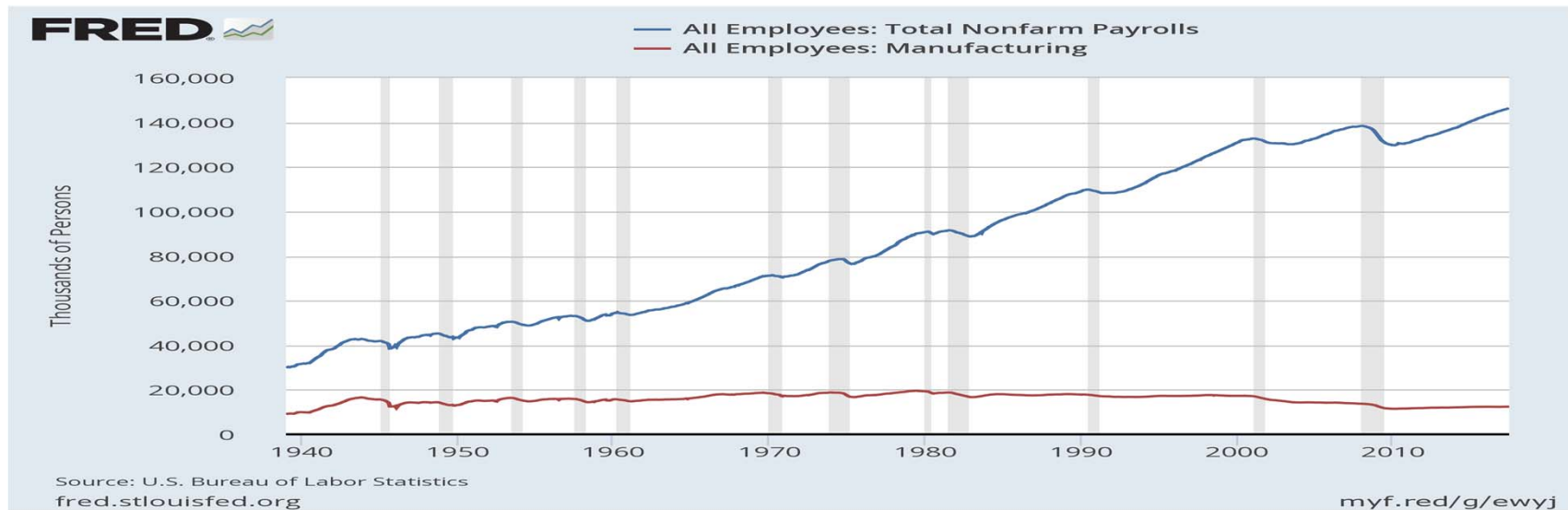


Industry Breakdown, as a % of GDP

	1975	1985	1995	2000	2005	2009	2013	2015	2016
Total Private Industries	84.9	86.2	86.6	87.1	86.8	85.7	86.7	87.0	87.1
Agriculture and Mining:	5.2	4.3	2.3	2.0	2.7	3.0	4.0	2.8	2.3
Agriculture, forestry, fishing, and hunting	3.1	1.8	1.2	1.0	1.0	1.0	1.3	1.0	0.9
Mining	2.1	2.5	1.0	1.1	1.7	2.0	2.7	1.8	1.4
Construction	4.5	4.2	4.0	4.5	5.0	4.0	3.7	4.1	4.2
Manufacturing:	20.6	17.8	15.9	15.1	13.0	12.0	12.2	12.0	11.7
Durable goods	12.2	10.9	9.1	9.0	7.3	6.1	6.5	6.5	6.4
Nondurable goods	8.4	6.9	6.8	6.1	5.7	5.9	5.7	5.5	5.3
Private services:	54.6	59.8	64.4	65.4	66.1	66.7	66.7	68.2	68.9
Utilities	2.4	2.7	2.4	1.8	1.5	1.7	1.6	1.6	1.6
Trade (Wholesale and Retail)	14.7	13.7	13.3	12.8	12.3	11.5	11.8	11.9	11.8
Transportation & warehousing	3.7	3.3	3.1	3.0	2.9	2.8	2.9	3.0	3.0
Information	3.7	4.2	4.2	4.6	4.9	4.9	4.7	4.7	4.8
Finance, insurance, and real estate ^a	15.2	17.5	19.0	19.4	20.2	19.9	19.7	20.3	20.6
Professional and business services	5.3	7.5	9.3	10.8	11.0	11.5	11.8	12.2	12.4
Ed. Services, health care, and social assistance	4.5	5.3	7.1	6.6	7.3	8.4	8.2	8.3	8.5
Accommodation, food, entertainment ^b	2.8	3.1	3.4	3.8	3.7	3.6	3.8	3.9	4.0
Other services, except govt	2.4	2.5	2.7	2.7	2.4	2.3	2.2	2.2	2.3
Government	15.1	13.8	13.4	12.9	13.2	14.3	13.3	13.0	12.9
Addendum: GDP in current trillion dollars	1.6	4.2	7.4	10.3	13.1	14.4	16.7	18.0	18.6

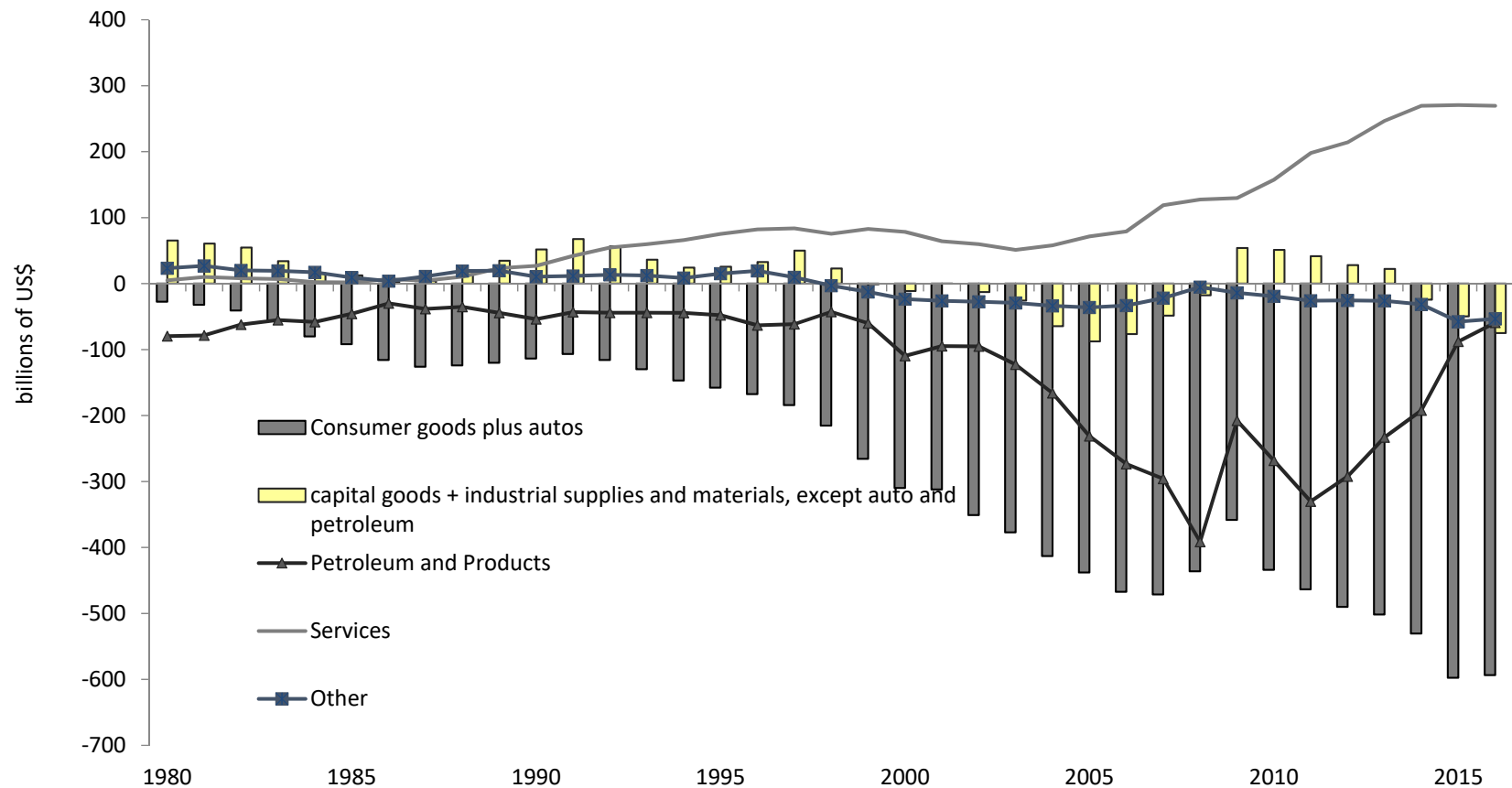


U.S. Employment



Transformation of U.S. Economy:

Trade Balance by Sector

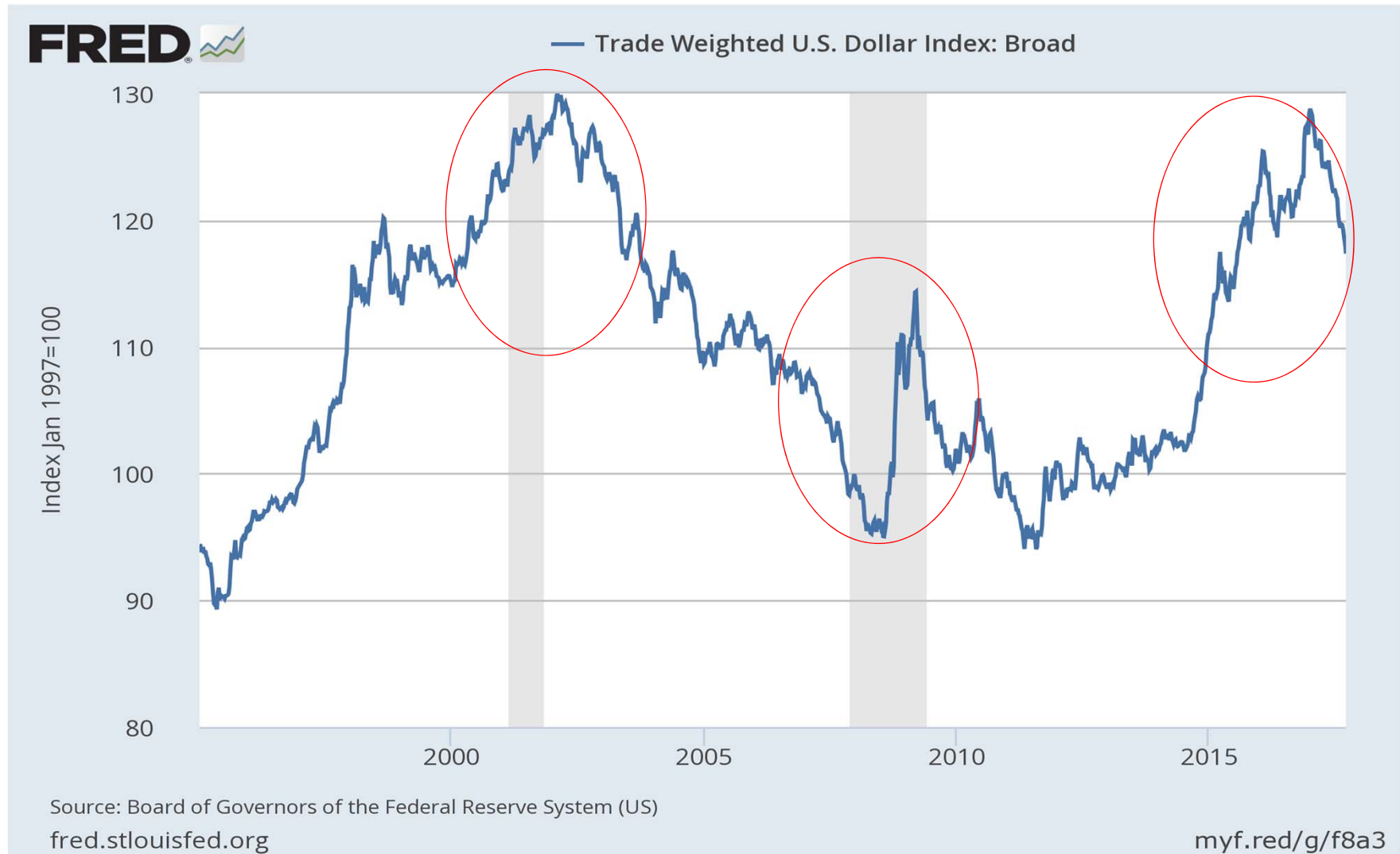


U.S. Bilateral Trade Patterns

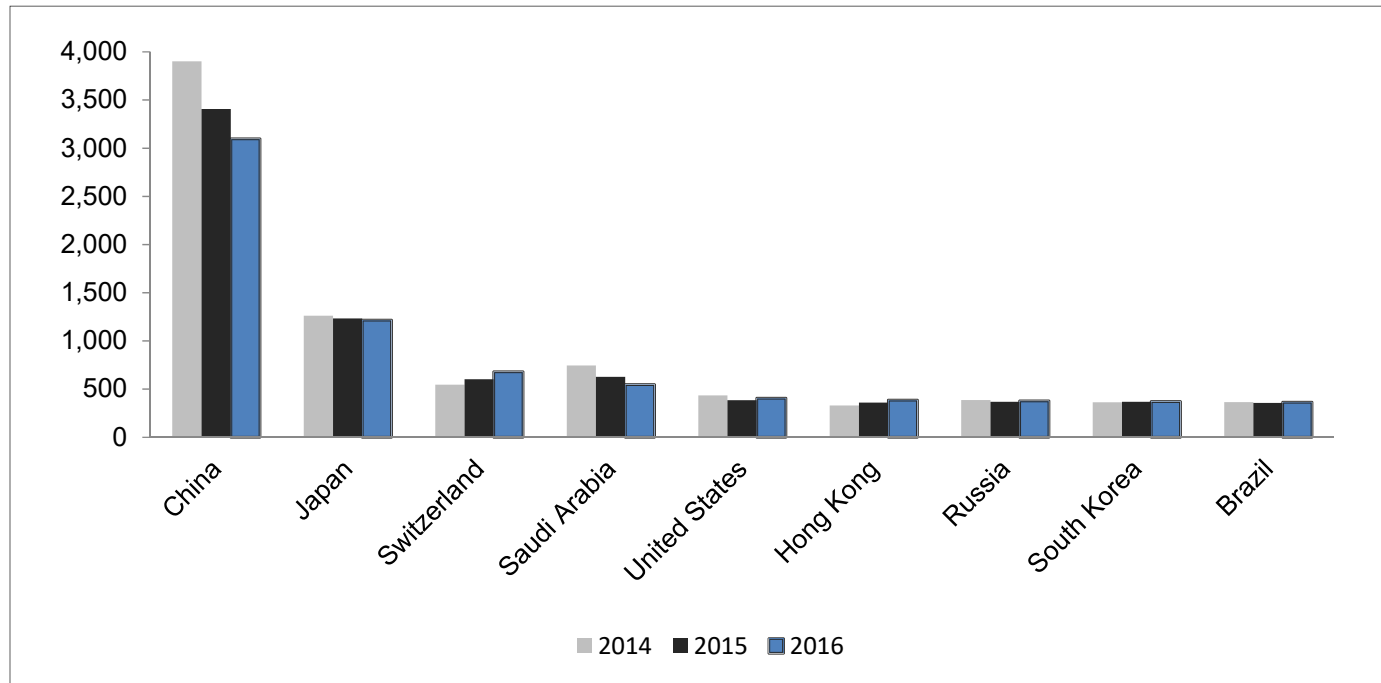
	1978	1986	1998	2008	2012	2014	2016
Exports of Goods, bn USD	142	223	670	1,309	1,563	1,634	1,456
as % exports							
European Union	22%	23%	22%	21%	17%	17%	19%
Canada	22%	25%	23%	20%	19%	19%	18%
Mexico + L.A.	16%	14%	21%	22%	26%	26%	25%
China	1%	1%	2%	5%	7%	8%	8%
Japan	9%	12%	8%	5%	5%	4%	4%
Other Asia ^a	14%	15%	17%	15%	16%	15%	16%
Remainder	16%	10%	6%	11%	11%	10%	10%
Imports of Goods, bn USD	176	368	917	2,141	2,304	2,385	2,208
as % imports							
European Union	16%	20%	19%	17%	17%	18%	19%
Canada	19%	19%	19%	16%	14%	15%	13%
Mexico + L.A.	13%	11%	16%	18%	20%	19%	18%
China	0%	1%	8%	16%	19%	20%	21%
Japan	14%	22%	13%	7%	6%	6%	6%
Other Asia ^a	21%	18%	19%	12%	13%	14%	16%
Remainder	16%	8%	5%	14%	11%	9%	7%



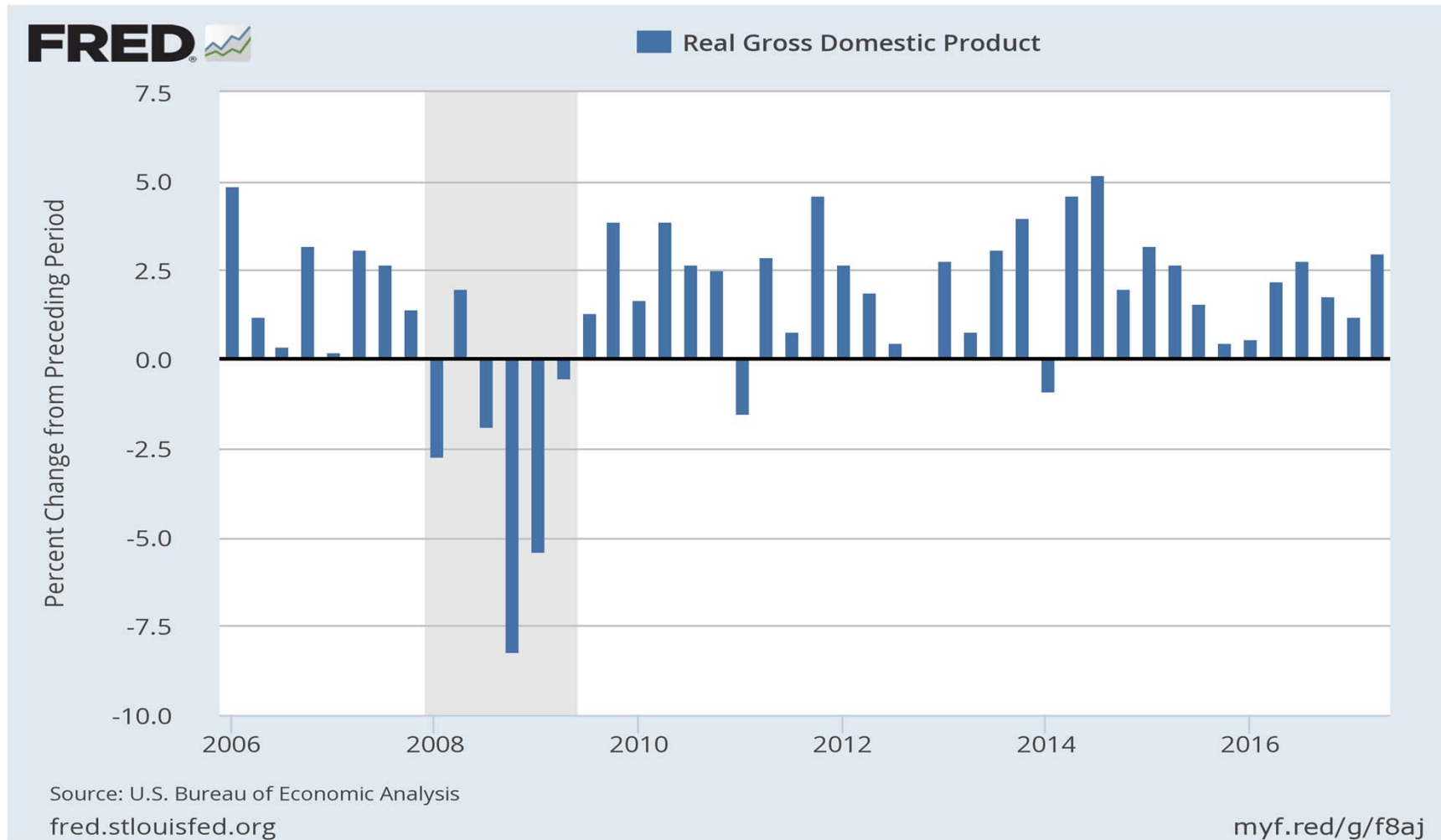
Recovery and The Dollar



Foreign Exchange Reserves (billion U.S.\$)



Recovery: Real GDP Growth



Policy Reactions

☐ Solving Panic = Solving Imbalances?

- Are trends sustainable? Desirable?

☐ Does Saving need to increase in the US?

- Depends on views/whether trends sustainable-desirable.

☐ Will measures make it worse?

- R? Tax Cuts? Spending?

- One view is that lax monetary policy kept imbalances going

- Fiscal: Spending/ Tax cut (Trade-off ST/LT)

- Protectionism: Global Value Chains

☐ Role Rest of the World

- China-rebalancing?



China Rebalancing?



China: 1979—A Greater Challenge

- ❑ \$153 per capita income.
- ❑ Closed, communist economy
- ❑ Inefficient collective agriculture
- ❑ State-owned enterprise
- ❑ 987 million people
- ❑ “Cultural Revolution”



Deng's Pragmatic Liberalization

- Rural Reform:
 - Agriculture: household responsibility system
 - Township & village enterprises
- Trade and FDI
 - Special economic zones
 - WTO – 2001
- State Owned Enterprises (SOEs)
 - Management responsibility system; privatization
- Institutional Reforms
 - Gradual price decontrol
 - Tax reform (1994)
 - Currency reform (1994)
 - One-child policy



China: Control + Gradual Transition

❑ Reforms bubbled up from bottom + Experimental + Incremental:

- Most of the initial reforms did not result from central government mandate;
- Experimental in nature and were later endorsed by the central government (only after they had proven successful);
- At margin (economically and geographically).

❑ Each step created pressure for the next :

Agriculture → TVE → Trade → SOE → Institutional Reforms → Next Phase?



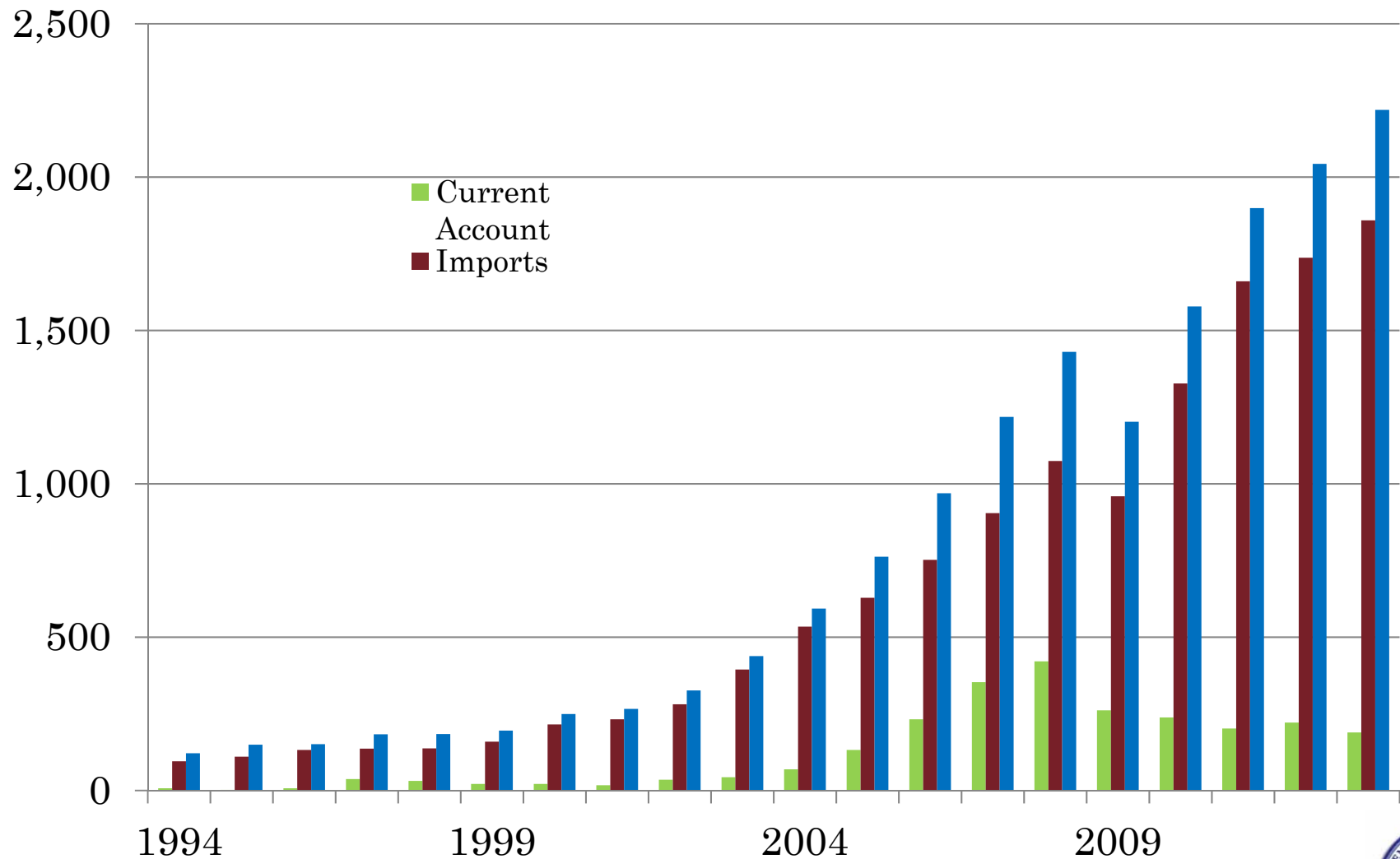
China: Results

- ❑ 10% real GDP growth → 67.5%
- ❑ Savings 51%; Investment 42% ('07) → 48%
- ❑ Consumption 36%
- ❑ Exports 14% → +38% ('08) → 33% GDP
- ❑ Imports 17% → 29%
- ❑ Current account: from deficit to +10% GDP ('08) → 3% GDP
- ❑ Reserves: \$ 3 Trillion/\$ 4 Trillion



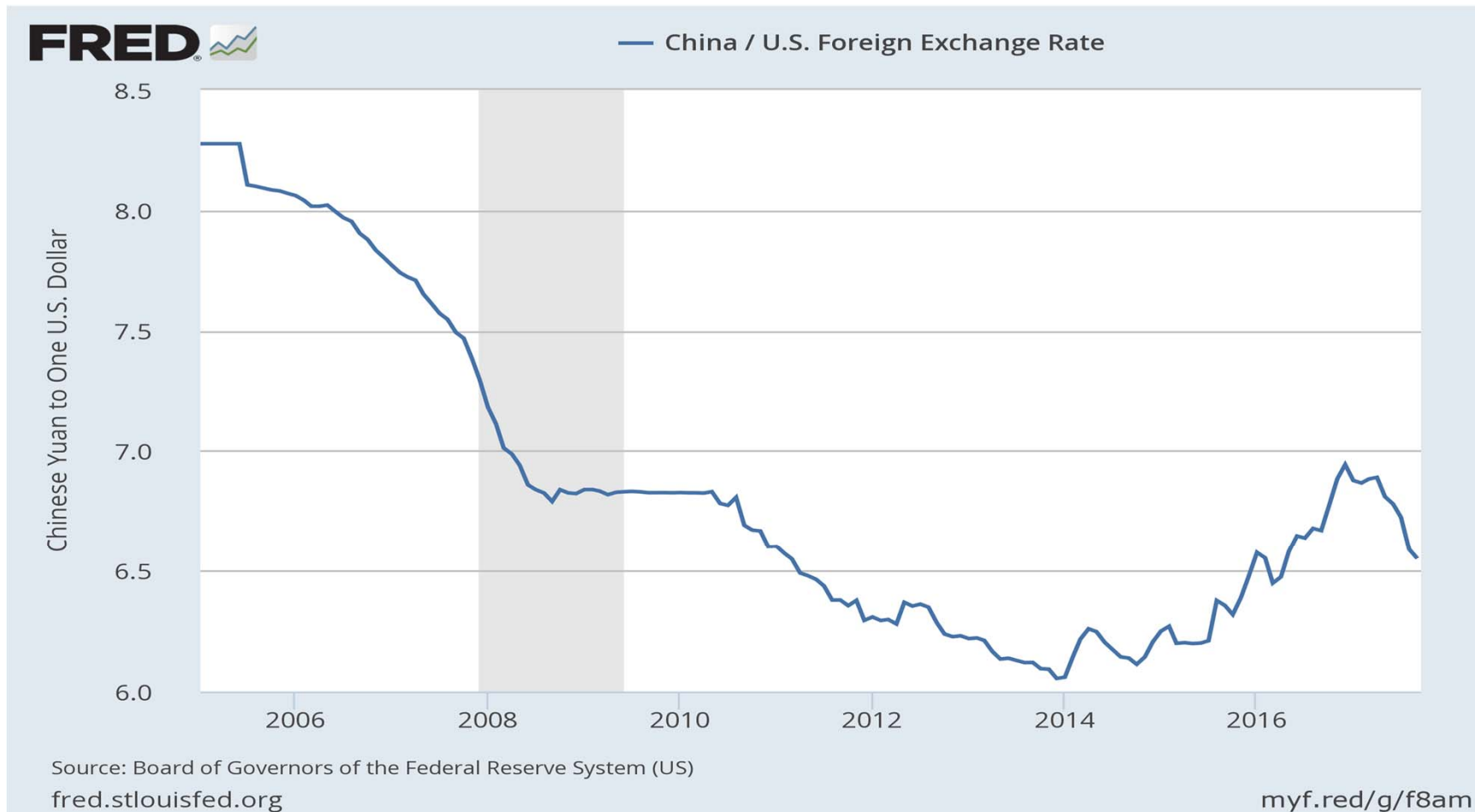
China's Trade

Exports, Imports, Current Account (billions \$\$)

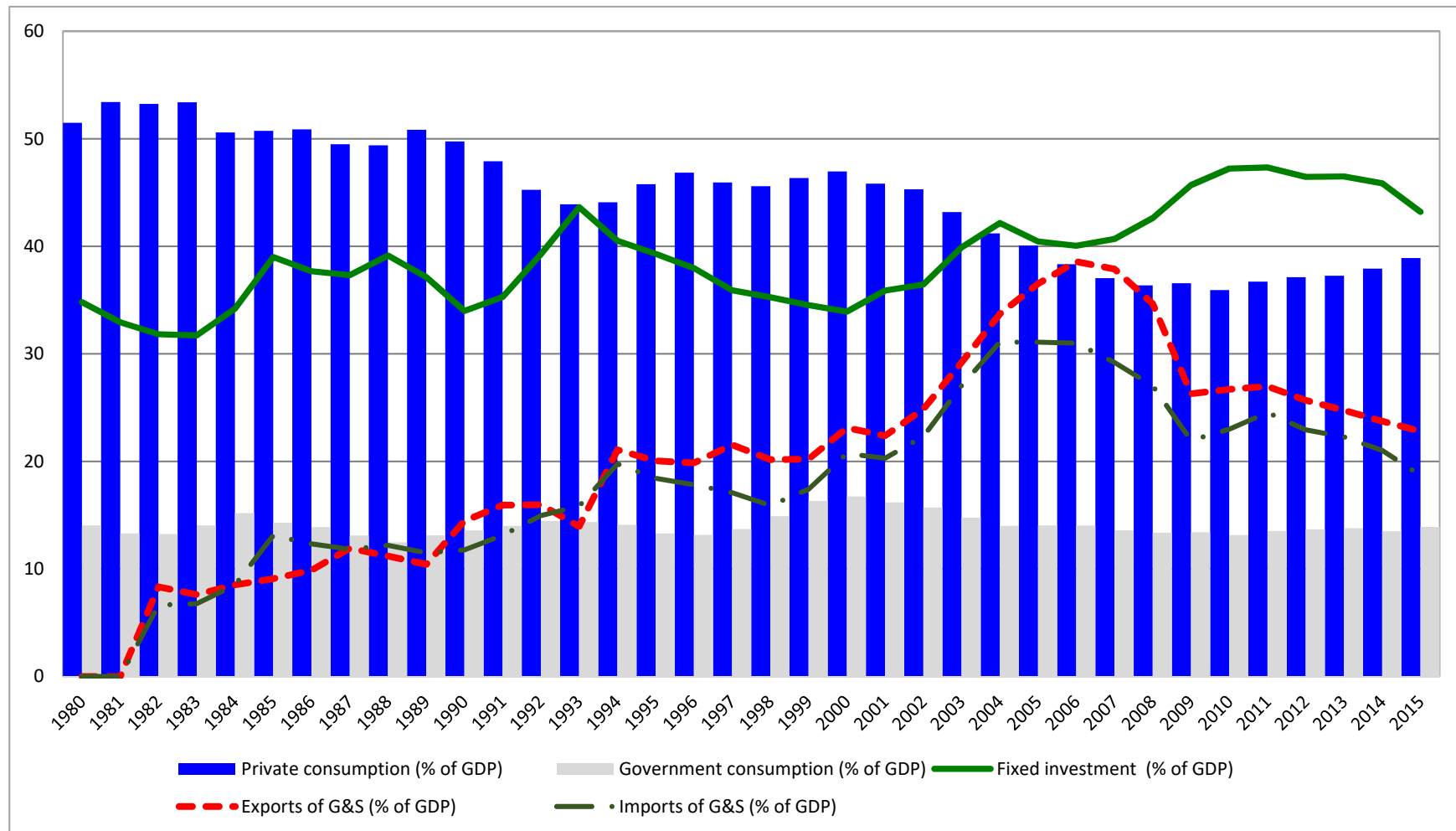


China:

Renminbi/US\$ Exchange Rate



China: National Income Accounts (Composition % GDP)



Policy Trends: Reacting to the Global Financial Crisis/Rebalancing

- ❑ After crisis, increased share of investment/lower exports:
Fiscal, investment packages/other policies.
Growth close to 6-7% (new expectations set)
- ❑ New round of reforms...
 - Regional/income disparities: redistribution policies.
 - Changes in demographic structure: change in one policy.
 - Reforms: household registration (further relaxed), restructuring state-owned enterprises and banks, liberalization capital account.



Key Reforms from the Third Plenum

• Reform	DETAILS
Loosening of the one-child policy	If one parent is an only child, couples will be allowed to have two children.
Greater land rights for farmers	Restrictions will be lifted on the transferring rights of rural land "for construction." Previously, land sales were conducted via the local government. By creating a new market for construction land, rural landowners, rather than local governments, will benefit from increases in land value.
Market Liberalization	The government will allow greater market determination of prices for water, oil, natural gas, electricity, transport, and telecommunications.
Financial Liberalization	Interest rate and capital account liberalization will be accelerated. A deposit insurance system will be created, and private banks will be introduced. The PBOC will continue moving toward a market based exchange rate. The government will "consider" equal treatment of foreign companies in comparison with Chinese counterparts.
Fiscal reform	The government will improve the tax system by introducing property tax legislation. There will also be an increase in the spending and administrative authority of the central government.
Judicial system reform	The government called for greater independence of the judicial system, with less interference from low-level local officials.
Relaxing of the "hukou" household registration system	The government will establish new requirements to make it easier for rural residents to obtain hukou to re-locate to large urban areas. In small cities, the registration restrictions will be eliminated. The government will also increase public services, including affordable housing and social security.
Creation of a new "State Security Committee"	The committee aimed to increase the government's control over internal security.
Targeting pollution	The government will establish a system to monitor and regulate pollution. Heavy polluters will be penalized through fines and criminal sanctions. The government will also enable market-driven resource allocation.



Market and Control

❑ Growth is the magic tonic that has transformed China:

- A declining labor force and limits to investment growth suggest that China will have to rely on faster productivity growth to keep up its GDP growth.

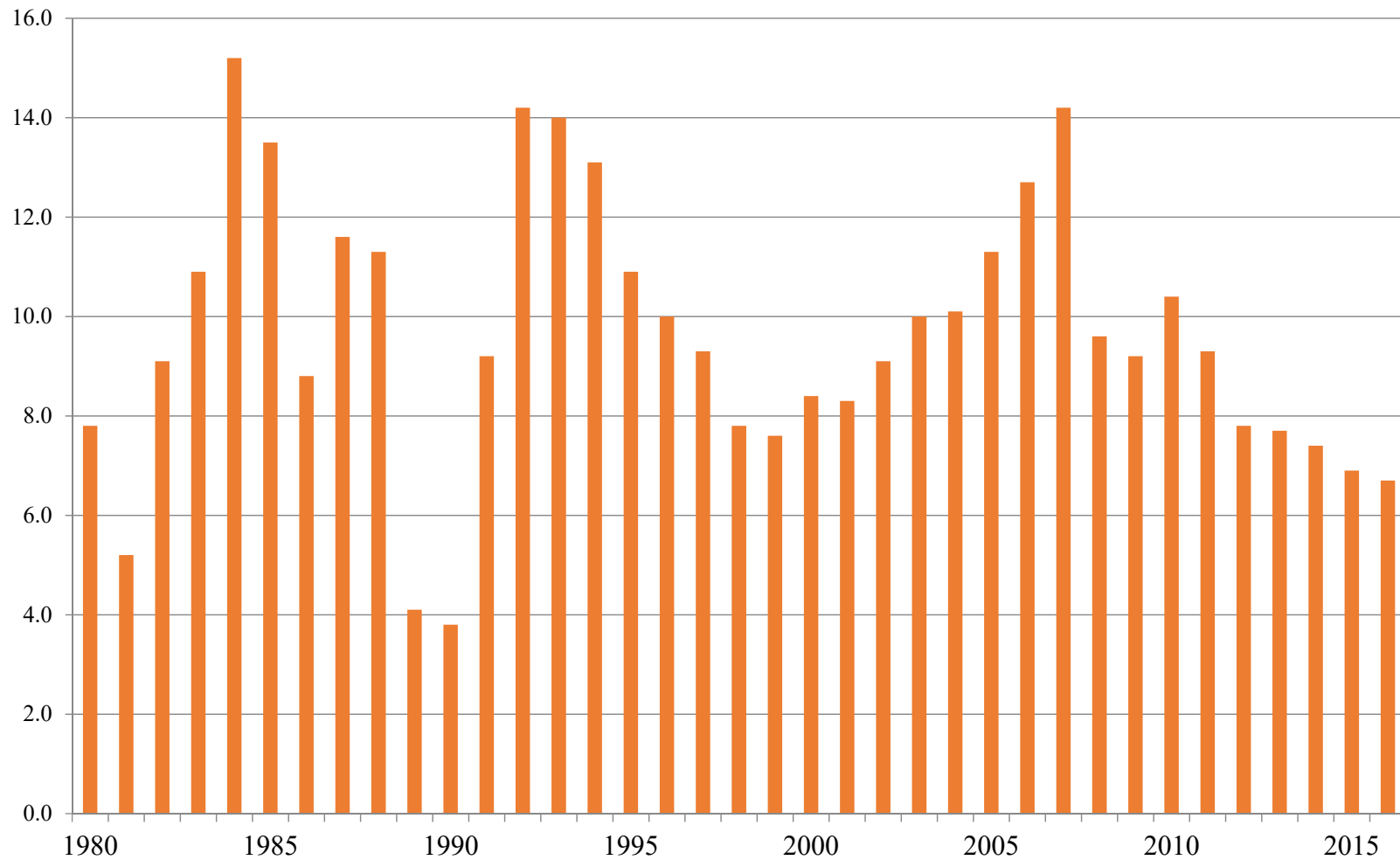
❑ The big challenges include:

- Speeding up reforms needed to improve the quality and efficiency of growth,
- Continue the shift away from capital-intensive production,
- Generate more employment,
- and allow more of the benefits of growth to filter down to the average household.

❑ World Growth (Commodities)



China: Real GDP Growth





The European Union

❑ European Coal and Steel (1951)

- **Belgium, France, West Germany, Italy, the Netherlands and Luxembourg.**

❑ Treaty of Rome (1957): European Economic Community, Atomic Energy Community.

1973: Denmark, **Ireland**, United Kingdom

1981: **Greece**

❑ Single European Act (1986): Single Market

1986: **Spain, Portugal**

❑ Maastricht Treaty (1992): European Union

1995: **Austria, Finland, Sweden**

❑ Treaty of Amsterdam (1997)

❑ Treaty of Nice (2001)

2004: **Czech Republic, Cyprus, Estonia, Hungary, Latvia, Lithuania, Malta,**

Poland, **Slovakia, Slovenia**

❑ Treaty of Lisbon (2007)

2007: Bulgaria, Romania

2013: Croatia



Population, Prosperity, Size of the Economy:

European Countries and Global Peers

Country	Population (millions)	GDP (PPP, in millions USD)*	GDP per Capita (PPP, in USD)
Austria	8.67	\$ 404,295.19	\$ 46,655.46
Belgium	11.32	\$ 494,126.10	\$ 43,635.40
Bulgaria	7.19	\$ 136,854.81	\$ 19,042.28
Croatia	4.46	\$ 91,096.30	\$ 20,403.02
Cyprus	1.09	\$ 28,057.91	\$ 25,800.03
Czech Republic	10.64	\$ 332,421.67	\$ 31,228.43
Denmark	5.58	\$ 258,742.37	\$ 46,357.11
Estonia	1.27	\$ 37,547.63	\$ 29,672.07
Finland	5.48	\$ 225,257.26	\$ 41,128.44
France	66.45	\$ 2,647,404.28	\$ 39,838.25
Germany	80.85	\$ 3,836,055.24	\$ 47,443.98
Greece	10.78	\$ 285,973.34	\$ 26,538.87
Hungary	9.90	\$ 258,445.18	\$ 26,112.06
Ireland	4.89	\$ 257,420.29	\$ 44,724.78
Italy	61.89	\$ 2,170,908.31	\$ 35,078.43
Latvia	1.99	\$ 49,082.28	\$ 24,703.52
Lithuania	2.89	\$ 82,355.55	\$ 28,465.92
Luxembourg	0.57	\$ 55,902.66	\$ 98,031.51
Malta	0.41	\$ 15,453.31	\$ 37,329.99
Netherlands	16.93	\$ 833,135.60	\$ 49,205.84
Poland	38.56	\$ 1,005,069.66	\$ 26,063.60
Portugal	10.83	\$ 289,758.57	\$ 26,766.77
Romania	21.67	\$ 413,904.17	\$ 19,103.55
Slovak Republic	5.45	\$ 160,997.68	\$ 29,567.84
Slovenia	1.98	\$ 63,964.14	\$ 32,249.55
Spain	48.15	\$ 1,615,147.18	\$ 33,546.77
Sweden	9.75	\$ 473,411.18	\$ 48,535.26
U.K.	64.18	\$ 2,681,448.43	\$ 41,779.85
EU-15	406.32	\$ 16,528,985.98	\$ 40,679.81
EU-28	513.82	\$ 19,204,236.29	\$ 37,375.63
Japan	126.92	\$ 4,830,076.59	\$ 38,056.17
U.S.	322.02	\$ 17,947,000.00	\$ 55,731.83

Source: WB



Maastricht Treaty:

Creation of the Euro

- ❑ Debt Limit $< 60\%$
- ❑ Fiscal Deficits $< 3\%$
- ❑ Convergence inflation and interest rates
- ❑ Stability Pact



Europe: History of Deficits (% of GDP)

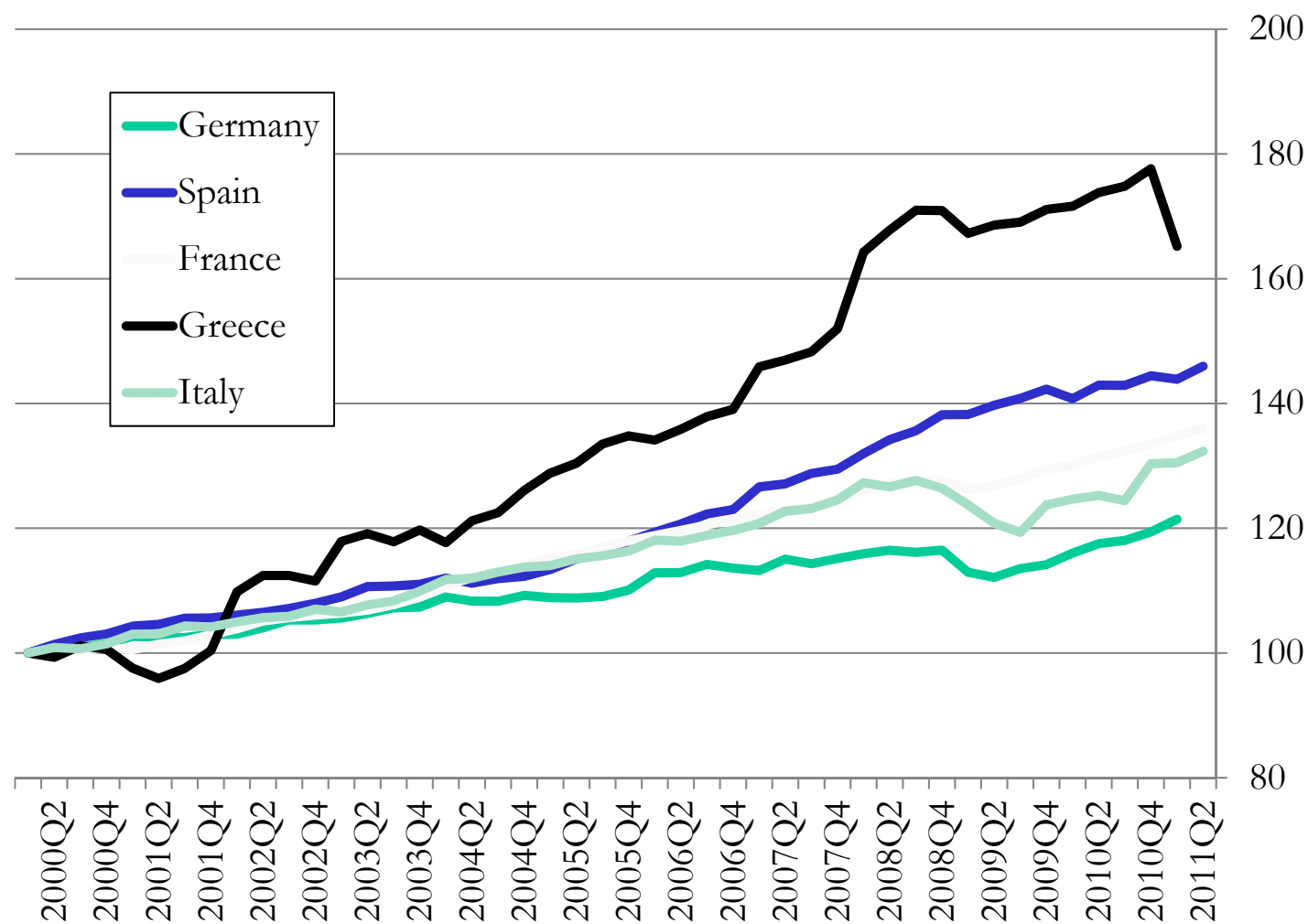
	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Austria	-2.4	-1.9	-0.2	-0.9	-1.7	-4.6	-1.8	-1.7	-1.0	-1.0	-4.1	-4.5	-2.5	-2.6	-2.4
Belgium	-0.6	-0.1	0.4	-0.2	-0.1	-0.3	-2.7	0.3	-0.1	-1.0	-5.6	-3.9	-3.9	-3.0	-2.6
Finland	1.7	7.0	5.1	4.2	2.5	2.3	2.7	4.1	5.3	4.3	-2.5	-2.6	-0.6	-1.9	-1.6
France	-1.8	-1.5	-1.6	-3.2	-4.1	-3.6	-2.9	-2.3	-2.8	-3.3	-7.6	-7.1	-5.2	-4.5	-3.5
Germany	-1.6	1.1	-3.1	-3.8	-4.2	-3.8	-3.3	-1.6	0.2	-0.1	-3.1	-4.1	-0.8	0.1	-0.3
Ireland	2.5	4.8	1.0	-0.3	0.4	1.4	1.7	2.9	0.1	-7.4	-13.9	-30.9	-13.3	-8.3	-8.0
Italy	-1.8	-0.9	-3.1	-3.0	-3.5	-3.5	-4.2	-3.3	-1.5	-2.7	-5.4	-4.6	-3.9	-3.0	-2.0
Luxembourg	3.5	5.4	4.9	2.1	0.4	-1.2	-0.3	0.1	3.9	3.1	-1.5	-1.8	-0.9	-1.1	-1.3
Netherlands	0.4	2.0	-0.3	-2.1	-3.2	-1.8	-0.3	0.5	0.2	0.5	-5.6	-5.0	-4.4	-4.1	-4.0
Portugal	-3.1	-3.3	-4.9	-3.5	-3.8	-4.0	-6.5	-4.6	-3.3	-3.7	-10.2	-9.9	-4.4	-5.1	-5.5
Spain	-1.2	-1.0	-0.6	-0.2	-0.4	-0.1	1.3	2.4	1.9	-4.5	-11.2	-9.7	-9.4	-8.0	-6.7
Greece	-3.3	-3.8	-4.4	-4.8	-5.7	-7.4	-5.6	-6	-6.8	-9.9	-15.6	-10.8	-9.5	-6.6	-5.5

Note: 2013 e

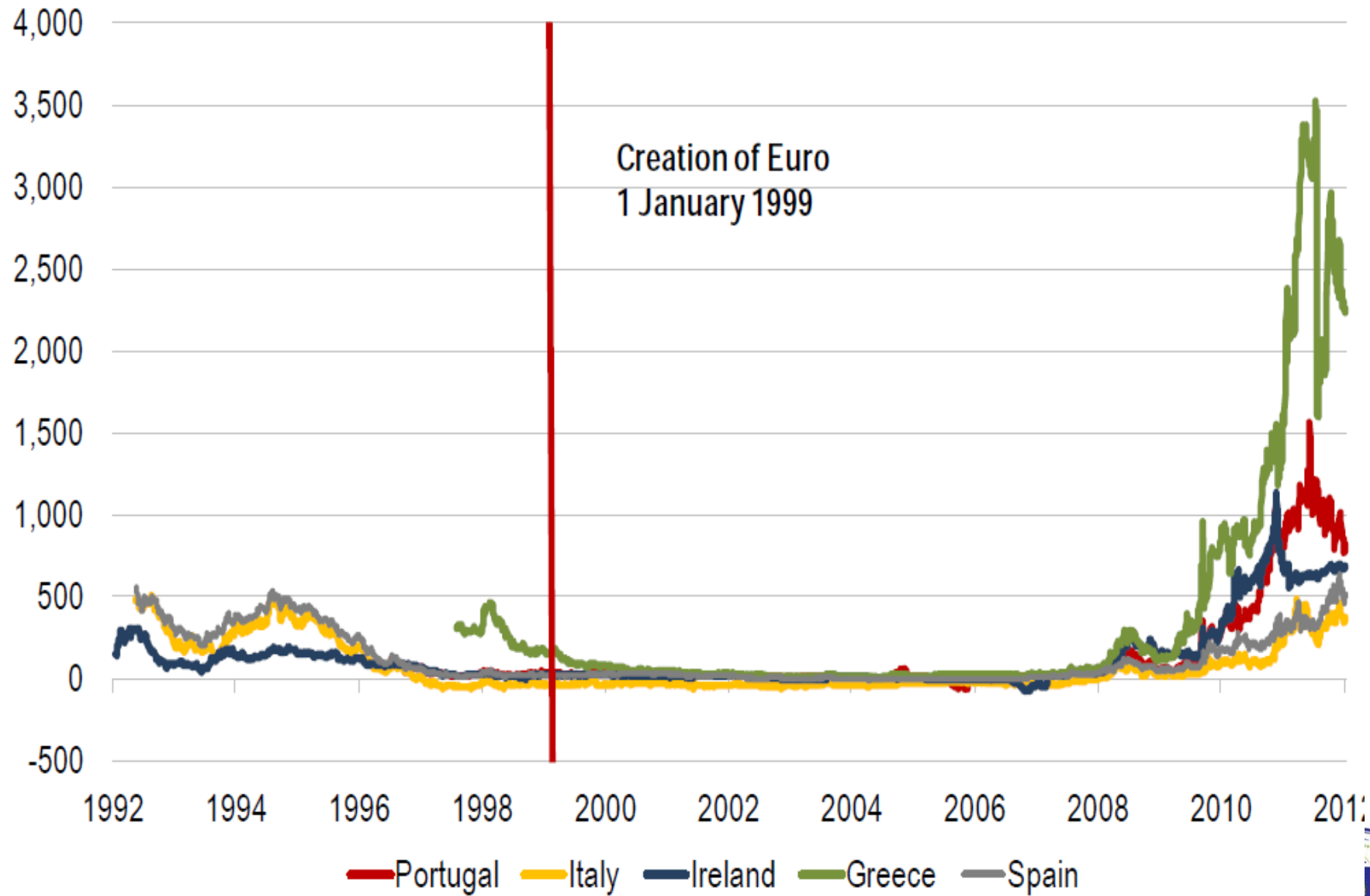
Source: Economist Intelligence Unit



Europe: Wage Growth



European 10-Year Bond Spreads to Bunds



Source: Bloomberg.



The EMU's Trilemma

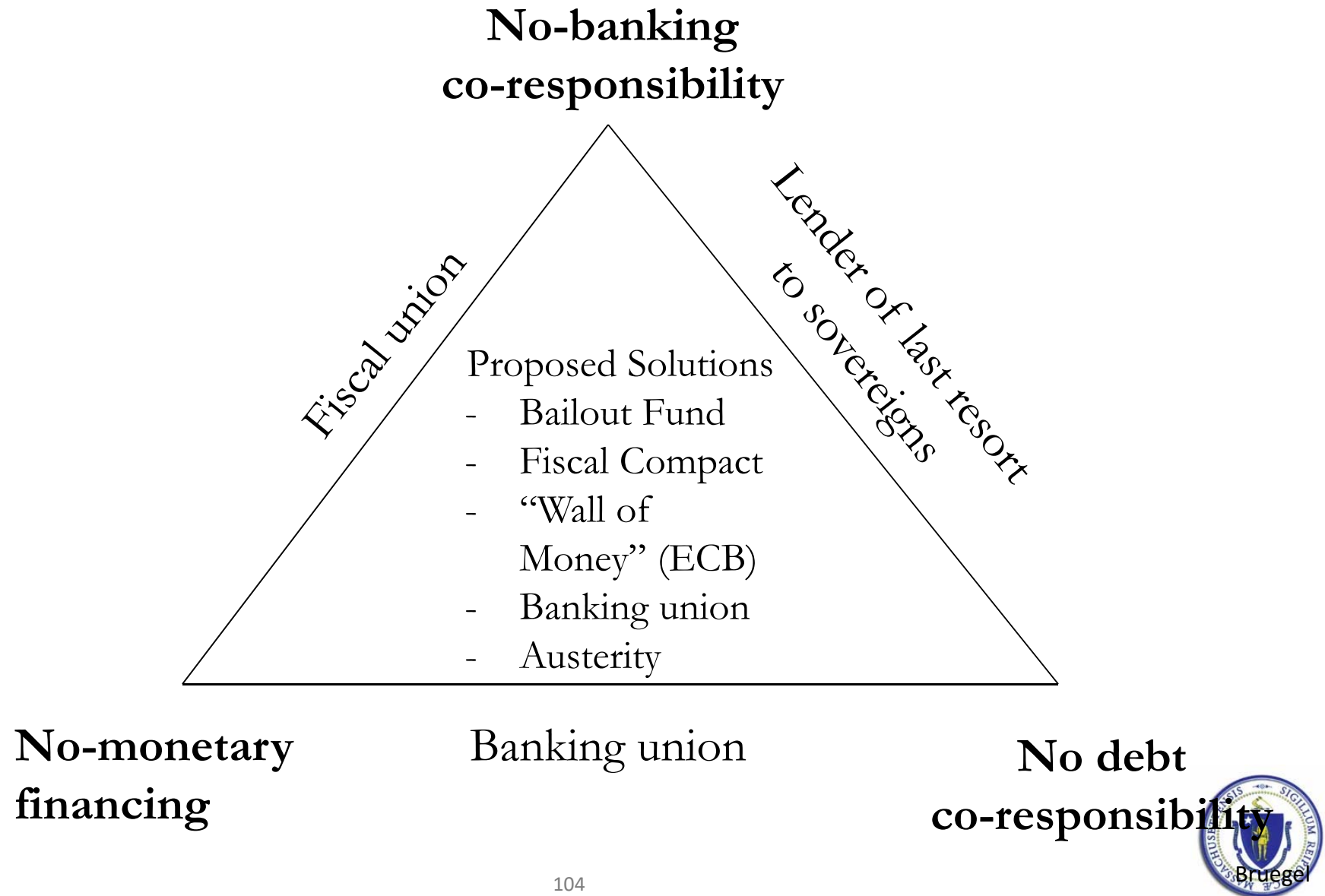
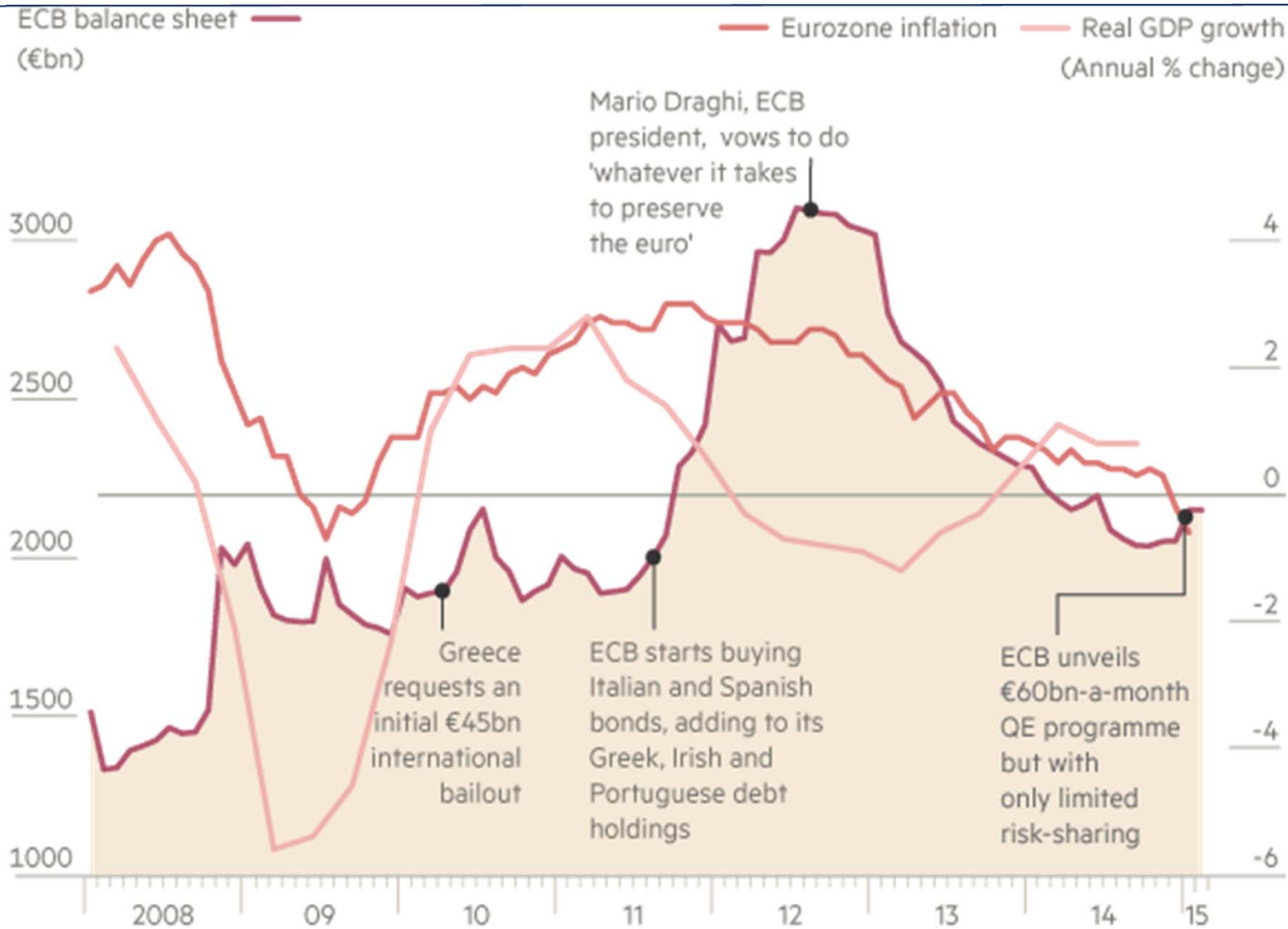




PHOTO: RALPH ORLOWSKI/GETTY IMAGES; PHOTO-ILLUSTRATION: CNNMONEY



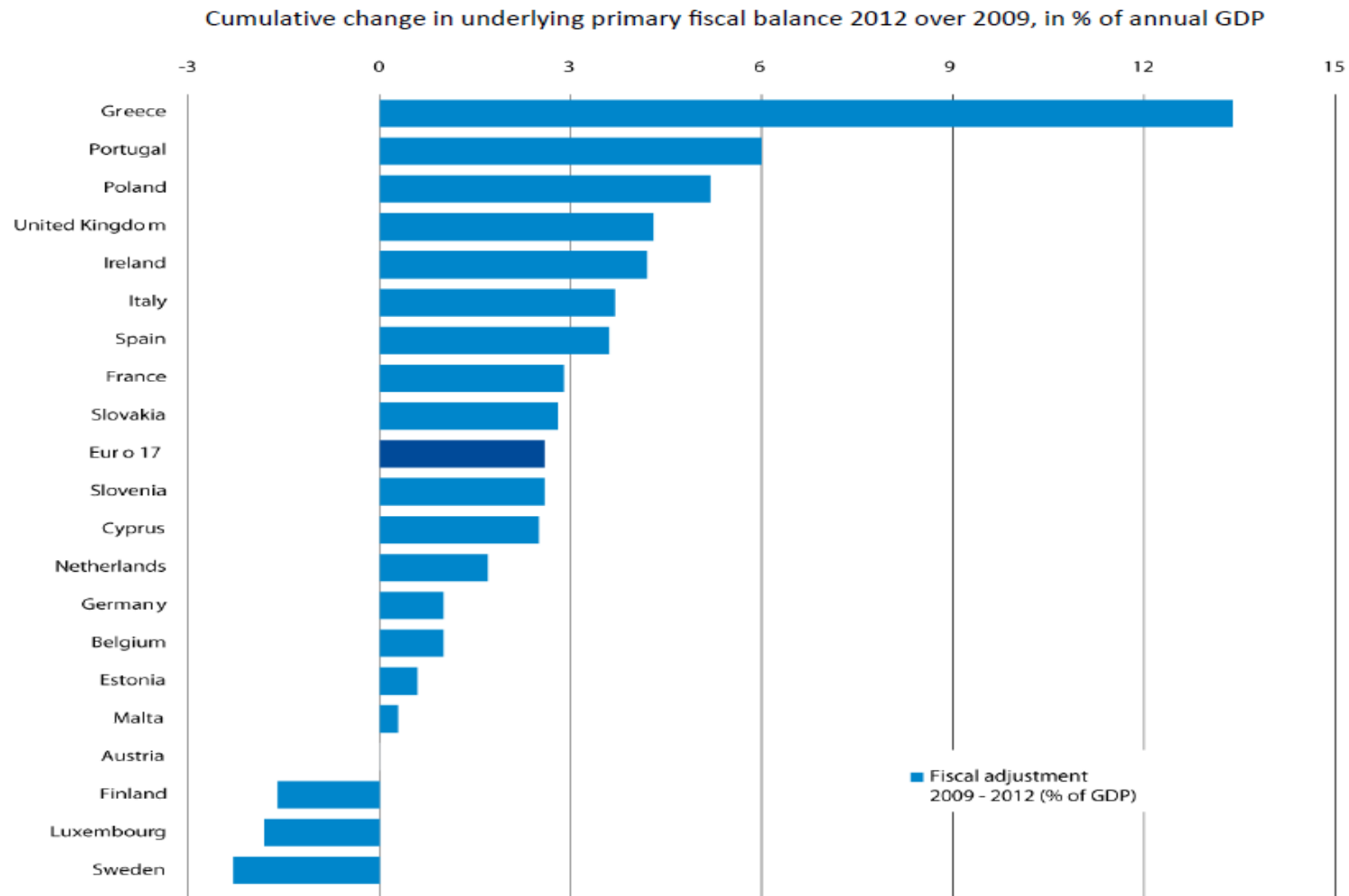
The eurozone's road to QE



Source: Thomson Reuters Datastream



Fiscal adjustments...



Source: The 2012 Euro Plus Monitor, "The Rocky Road to Balanced Growth," Berenberg Bank, Eurostat
European Commission, European Economy, autumn 2012



FRED

— U.S. / Euro Foreign Exchange Rate



Shaded areas indicate U.S. recessions

Source: Board of Governors of the Federal Reserve System (US)

fred.stlouisfed.org



Greece

❑ Crisis (kri'sis), n ; pl. crises (-sēz): from the Greek “κρίσις”, “crisis, decision, judgment”

1. A vitally important or decisive state of things; the point of culmination; a turning-point; the point at which a change must come, either for the better or the worse, or from one state of things to another.

2. In medicine, the change of a disease which indicates the nature of its termination; that change which prognosticates recovery or death.







Alamy



111



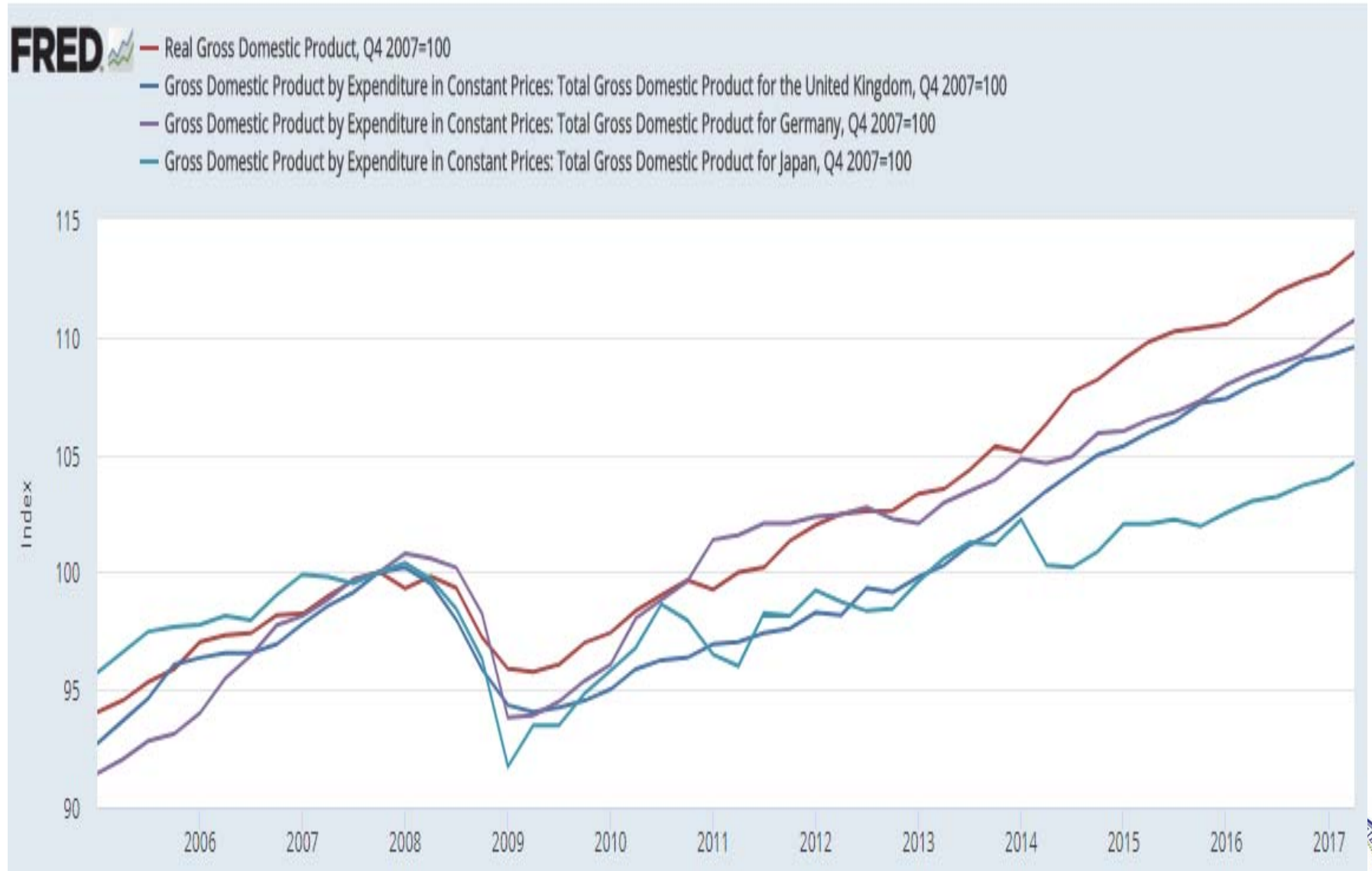
Can the Eurozone Survive?







GDP Growth: Selected Countries

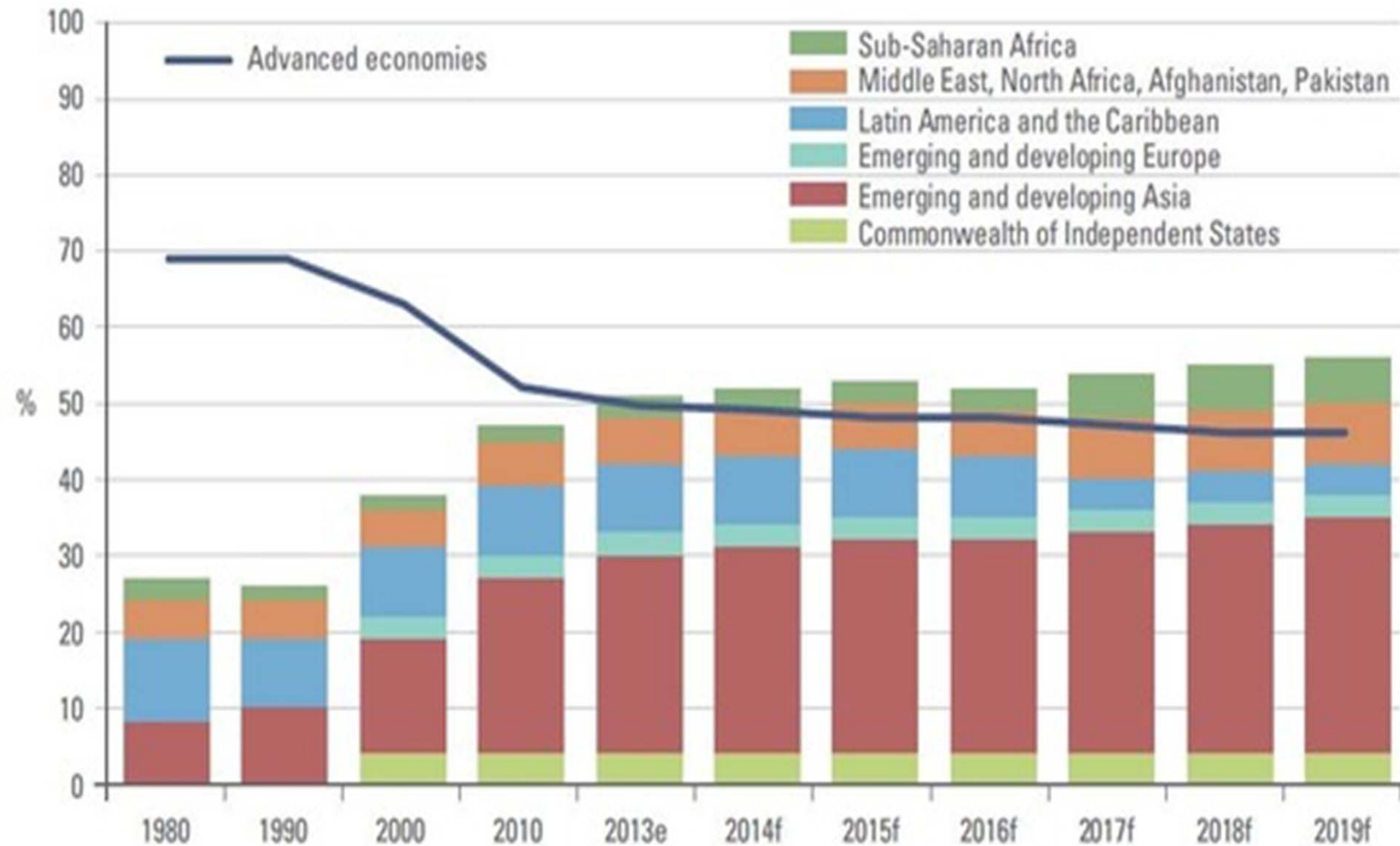




Emerging Markets: Recovering and Emerging from the Commodities Super Cycle



Fig 1: EM's share of global GDP now exceeds that of developed economies



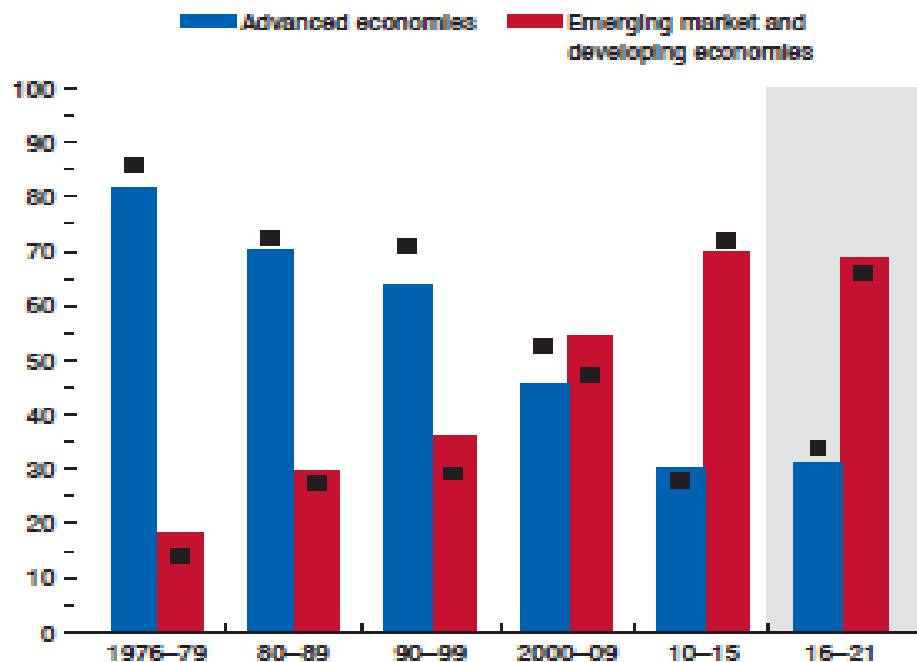
Source: IMF World Economic Outlook April 2014, Ashmore.



Emerging Market: 75% Global Growth and Consumption

**Figure 2.1. Contribution to Global Output and Consumption Growth
(Percent)**

Emerging market and developing economy growth prospects are increasingly relevant for the global economy.



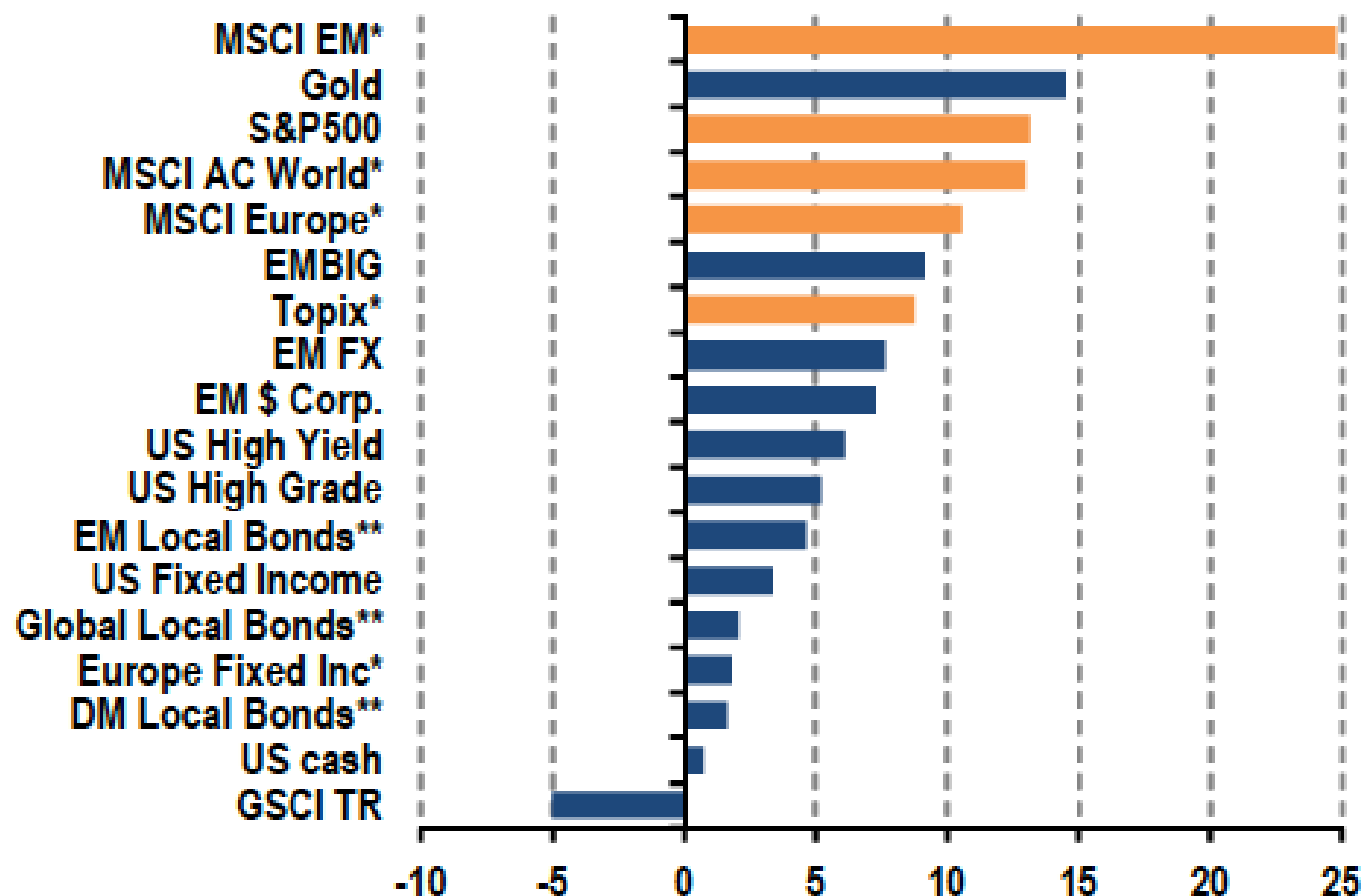
Source: IMF staff calculations.

Note: Weighted averages are calculated using market exchange rates. Colored bars show percentage of contribution to output growth; black squares show percentage of contribution to consumption growth.



Figure 1: YTD returns through Sep 14

%, equities in lighter color. Returns in USD. *Local currency. **Hedged into USD. Euro Fixed Income is iBoxx Overall Index. US HG, HY, EMBIG and EM \$ Corp are JPM indices. EM FX is EMCI in \$.



Source: J.P. Morgan, Bloomberg



Trends: Policy Making

❑ Q.E. Bank of Japan, ECB, Federal Reserve, etc.

- Ending....

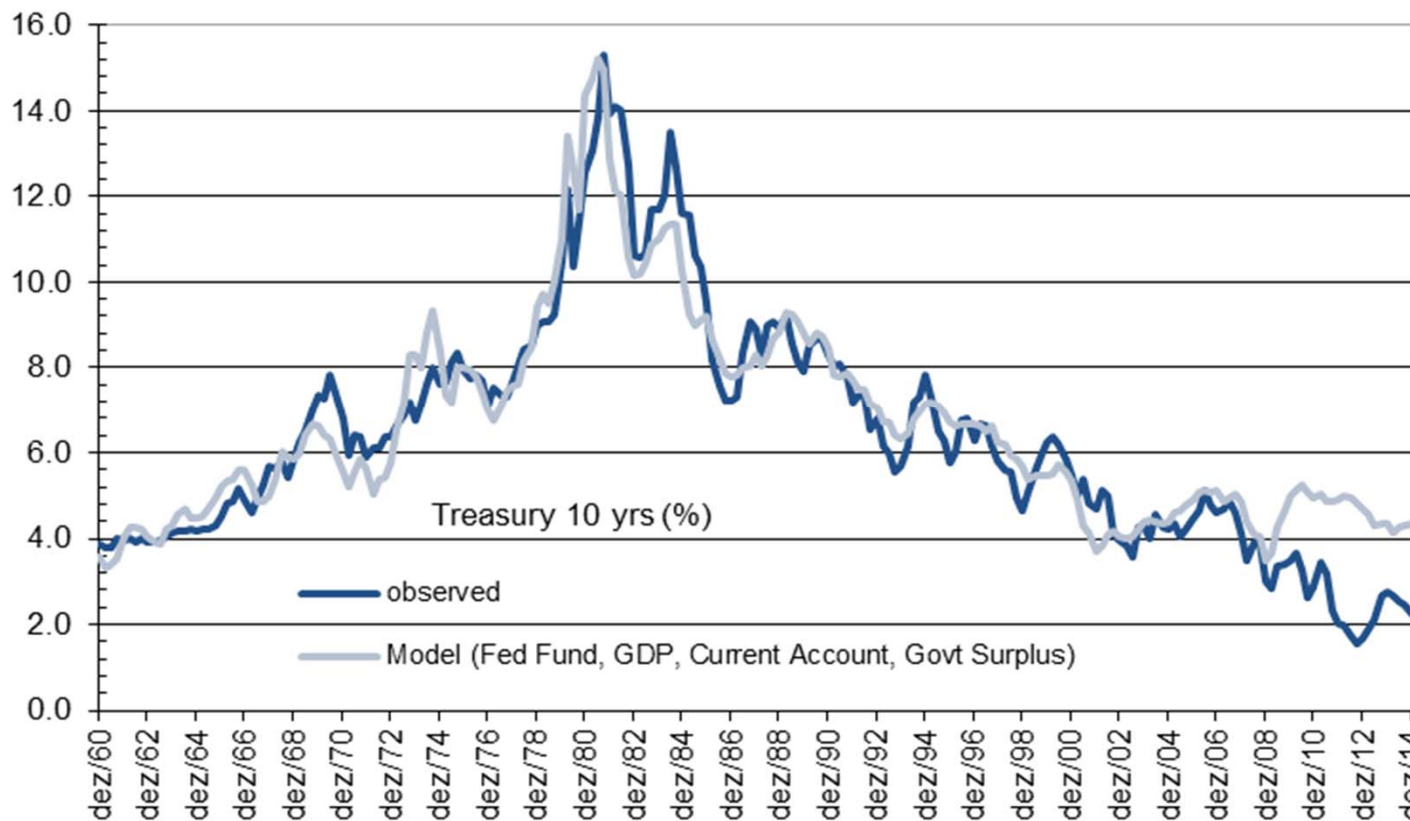
- Rates increasing in U.S. (slow moderate pace).

- Populism/ Protectionism?



US Normalization: How will it Impact RW?

Monetary Policy/Real Activity-Flows



Cycles in Commodity Prices

Figure 1.3. Commodity and Oil Markets

In global oil markets, spot prices declined in late 2015 and early 2016. Resilient supply and the weakening in global growth projections were behind the renewed increases in oil inventories and downward pressures on prices.

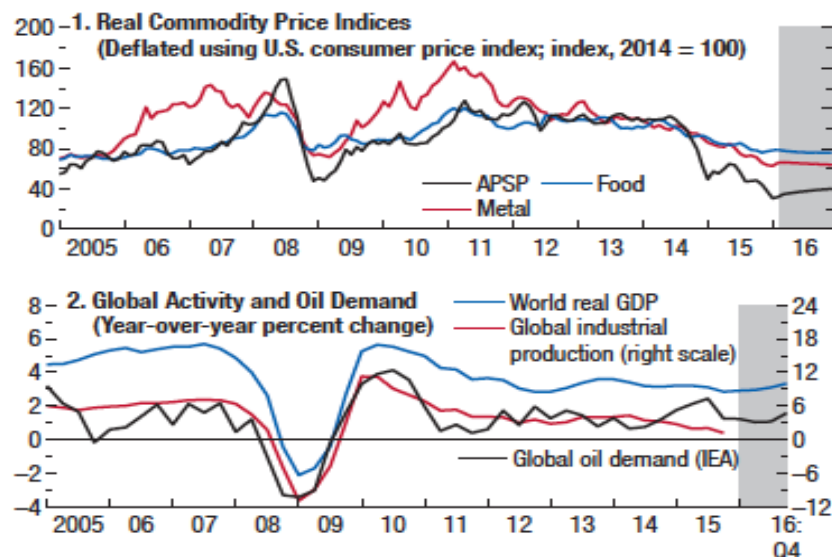
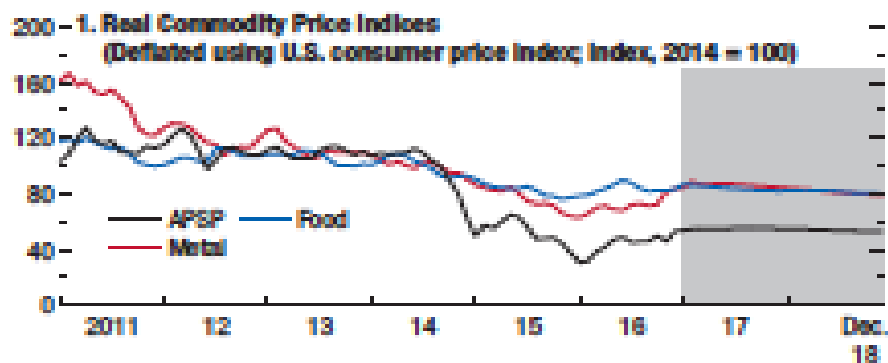
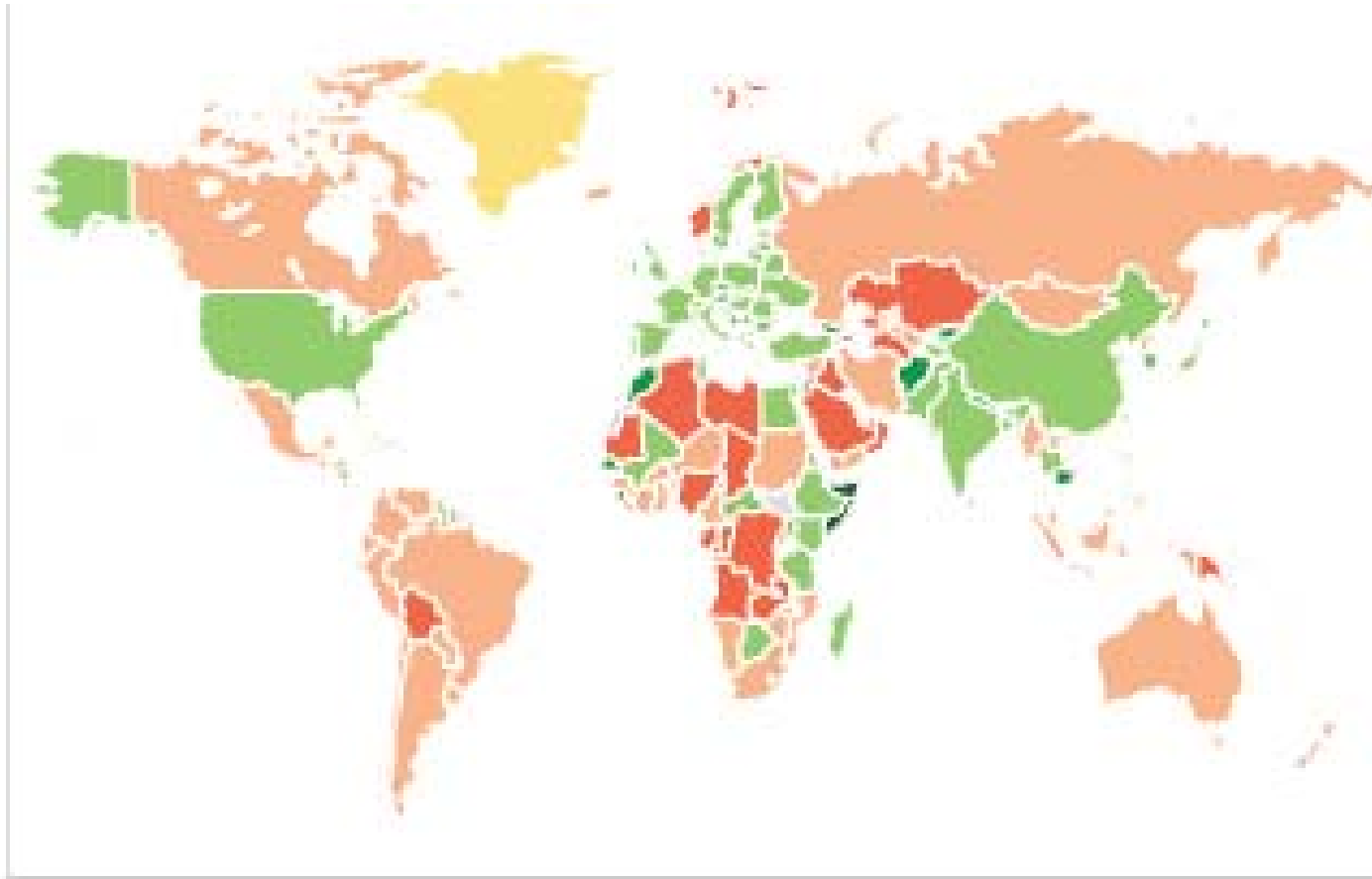


Figure 1.4. Commodity and Oil Markets

Commodity prices have strengthened as global economic activity has gained momentum.



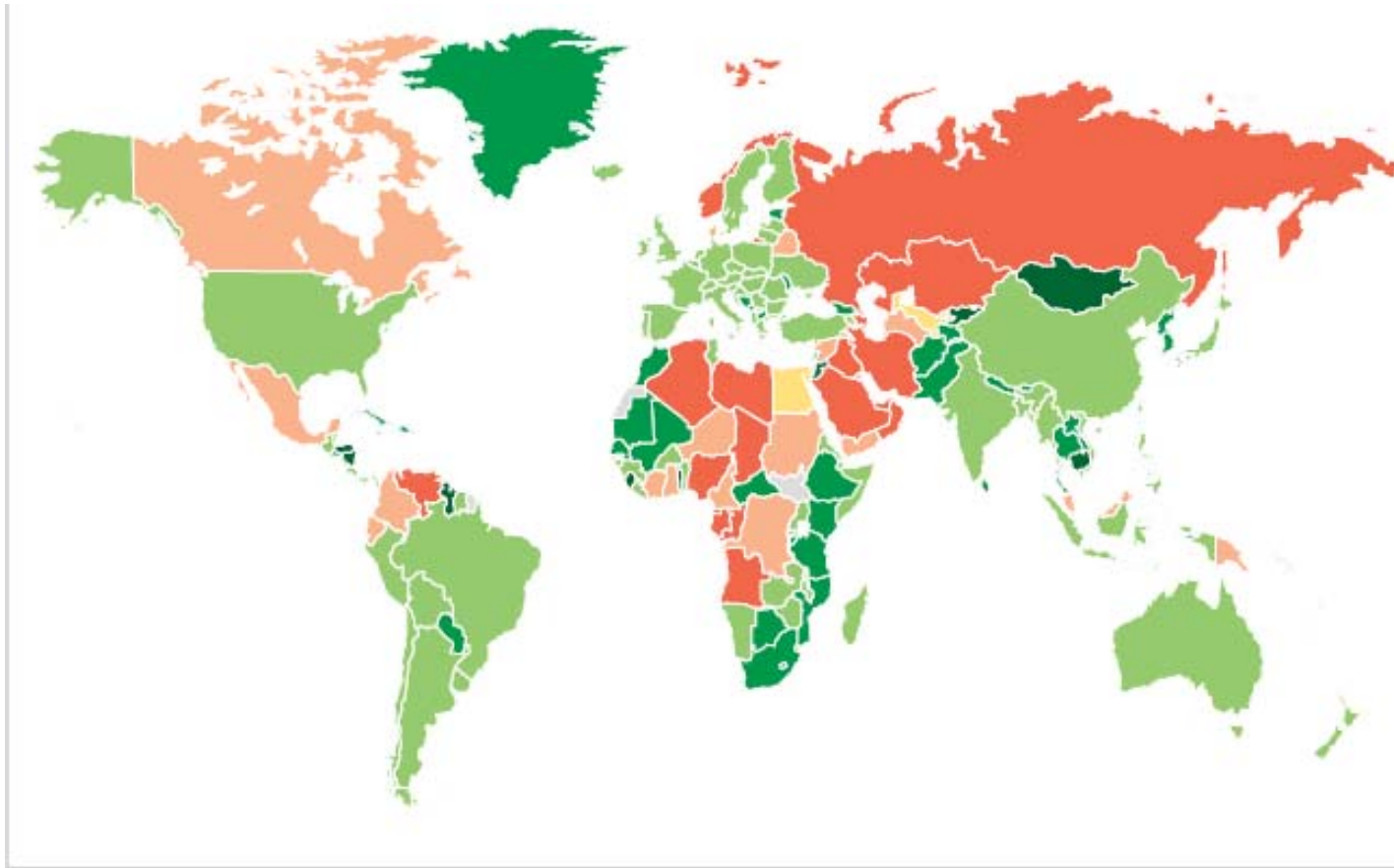
Commodity Dependence, 2010-2014, %GDP: Commodities



Source: UNCTAD, Economics. Net imports > 5 green; Net exports > 5 red



Commodity Dependence, 2010-2014, % GDP: Oil



Source: UNCTAD, Economics. Net imports > 5 green; Net exports > 5 red.





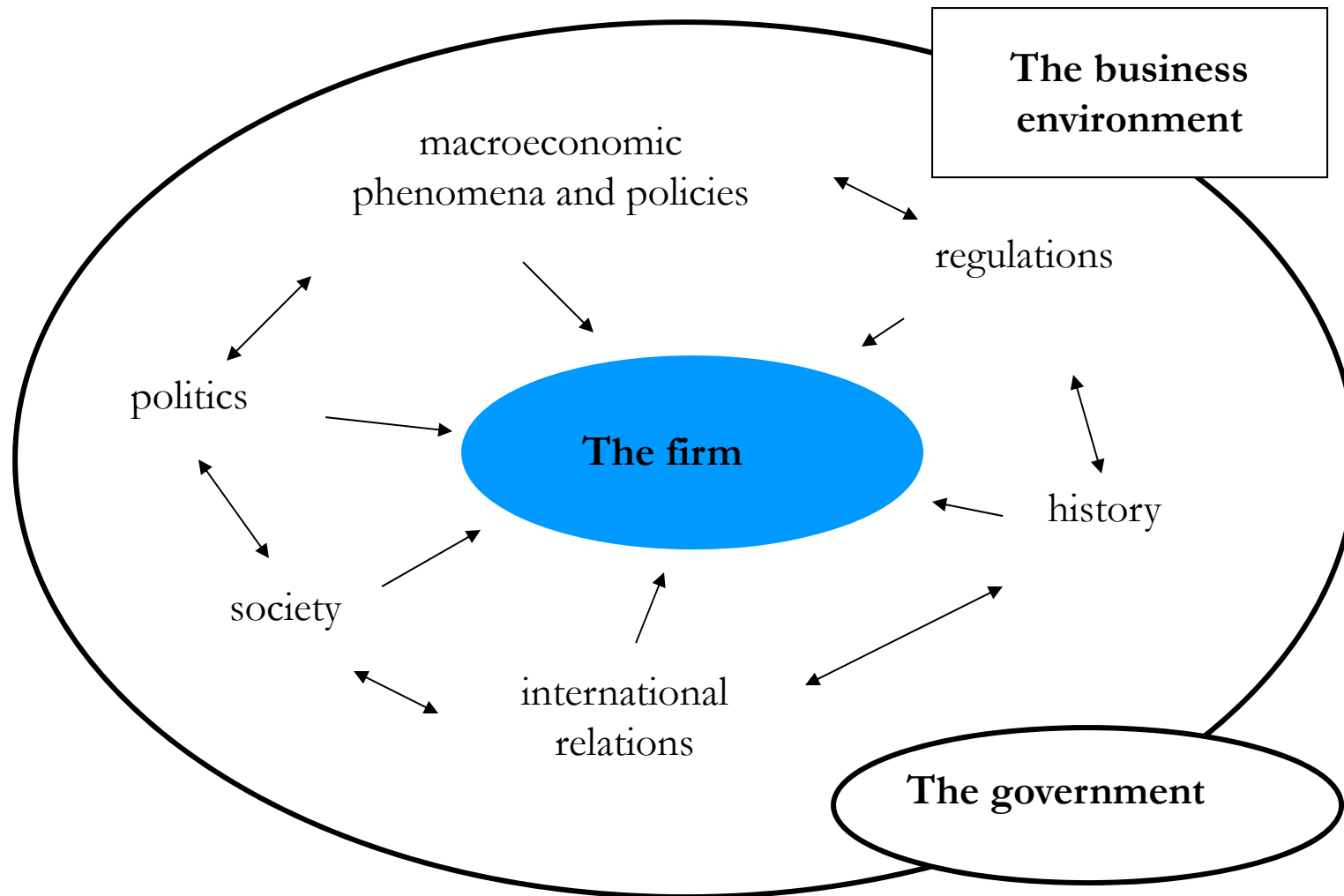
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The Aftermath of First Global Crisis of the 21st Century...



Thanks



Some Sources of Information (Not Exhaustive)

☐ IMF: www.imf.org

- World Economic Outlook
- Data, International Financial Statistics
- Article of Consultation-Report

☐ World Bank: www.worldbank.org

- World Development Report
- World Development Indicators

☐ Economist

- EIU Reports, Data, Book Suggestions.

☐ Financial Times, Wall Street Journal; New York Times

☐ Local Sources

- Central Bank,
- Ministry of Finance,
- Statistical Office.

☐ Others...





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