マクロモデルの特徴と 日本の国債市場金利の推移

吉野直行／アジア開発銀行研究所・所長／慶応義塾大学名誉教授

Cobb Douglas型の生産関数

$Y = AL^{\alpha}K^{\beta}$
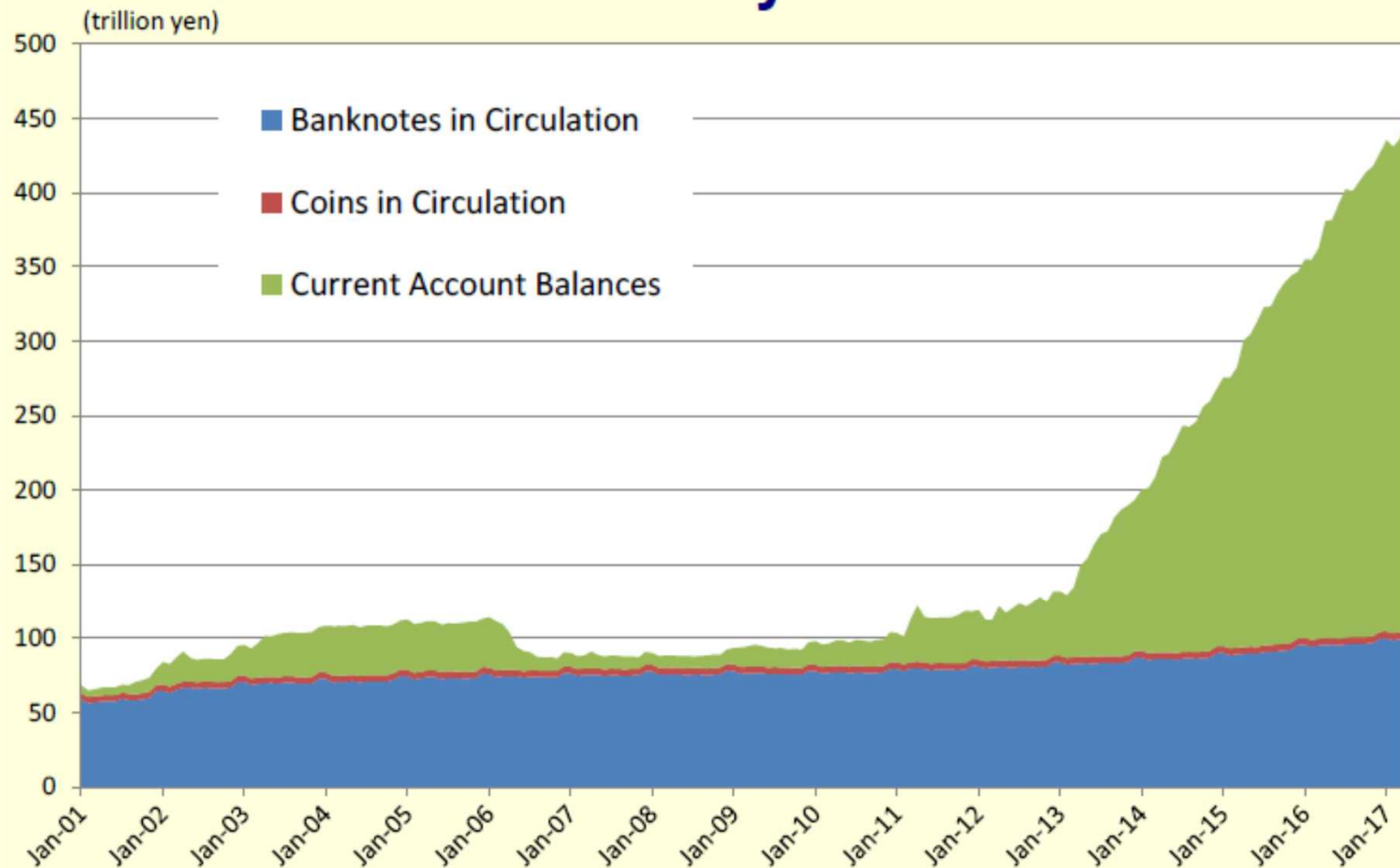
$\Delta Y/Y = \Delta A/A + \alpha(\Delta L/L) + \beta(\Delta K/K)$

$\alpha = (WL)/Y = $ 労働分配率　　$\beta = (rK)/Y = $ 資本分配率

$\Delta A/A = $ 全要素生産性（TFP）上昇率

外生変数＝労働投入量、投資、資本分配率、TFP上昇率

Monetary Base

(trillion yen)

- Banknotes in Circulation
- Coins in Circulation
- Current Account Balances

Source: Bank of Japan "Monetary Base"

3

Monetary Base / Gross Domestic Product Ratio for Japan, United States, and Eurozone (%)

|	*Dec 2000*	*Dec 2012*		*July 2016*	
	Monetary Base / GDP	*Monthly QE Volume / GDP*	*Monetary Base / GDP*	*Monthly QE Volume / GDP*	*Monetary Base / GDP*
Japan	15	0.2	29	1.3	80
US	6	0.5	16	–	21
Eurozone	7	–	17	0.8	20

GDP = gross domestic product, QE = quantitative easing, US = United States.

Source: International Monetary Fund, International Financial Statistics (2016).

Monetary Base and Japanese Government Bond Purchase Data
(Comparison of April 2013 with May 2016)
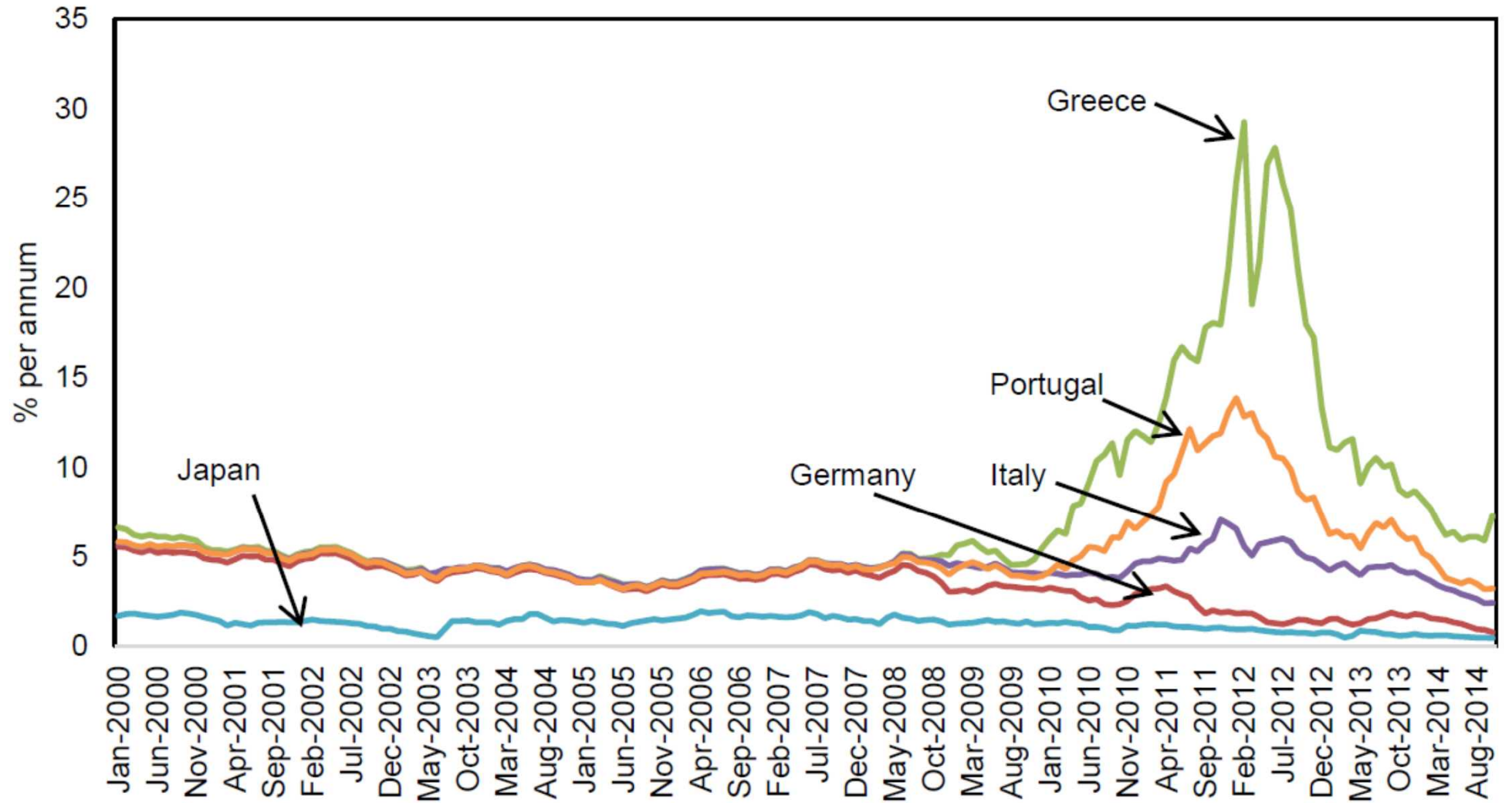### (¥ Trillion)

	April 2013 (actual)	May 2016 (actual)	Average Annual Increase
Monetary Base	155	387	About 80 trillion
JGB	98	319	About 80 trillion
CP	1.4	2.3	Outstanding balance maintained
Corporate Bonds	2.9	3.2	Outstanding balance maintained
ETFs	1.7	8.0	About 3 trillion
J-REITs	0.13	0.31	About 90 billion
Total Assets of the BOJ	175	426	–

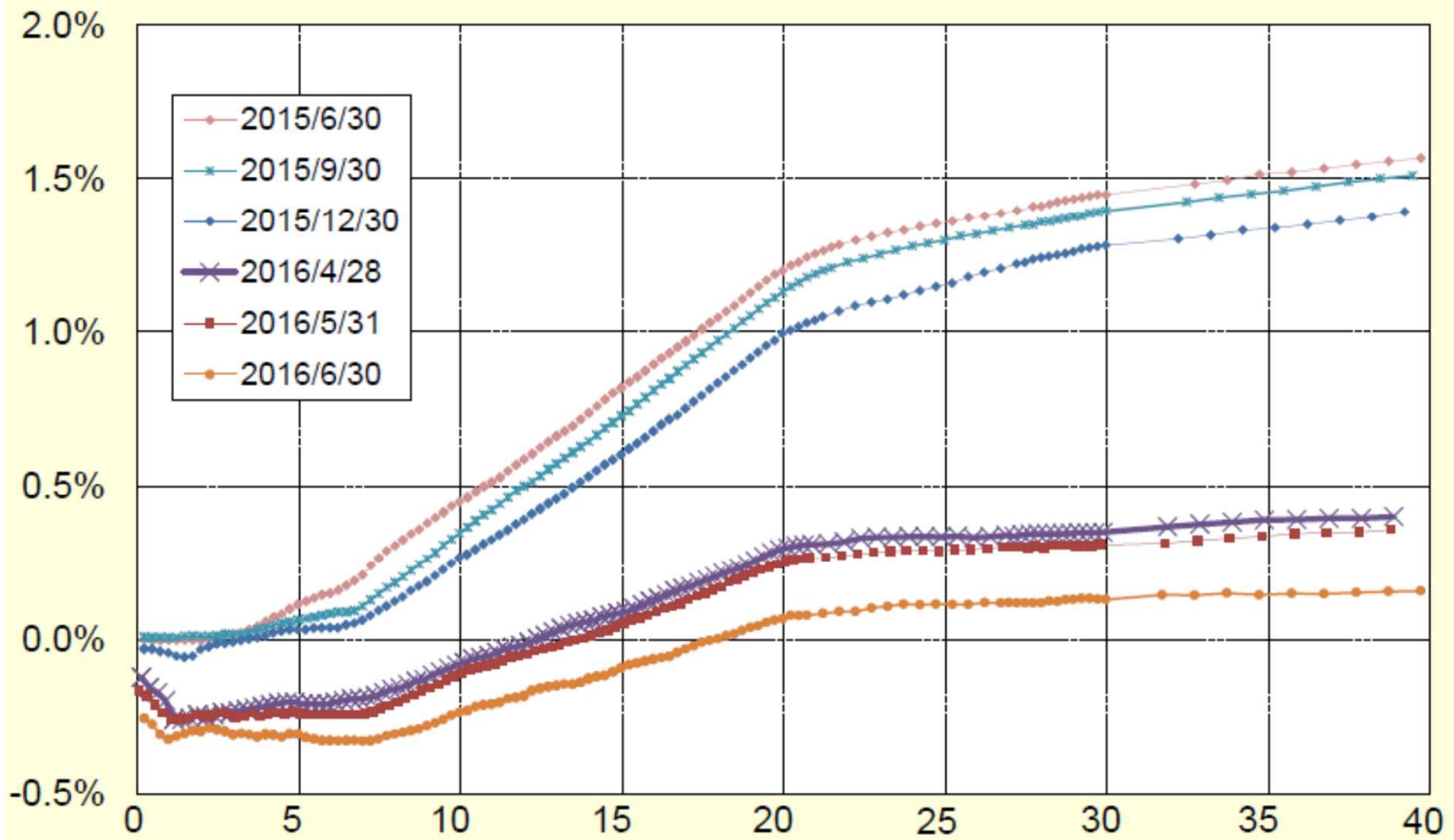# Figure 2: Government Bond Markets of Japan and Greece
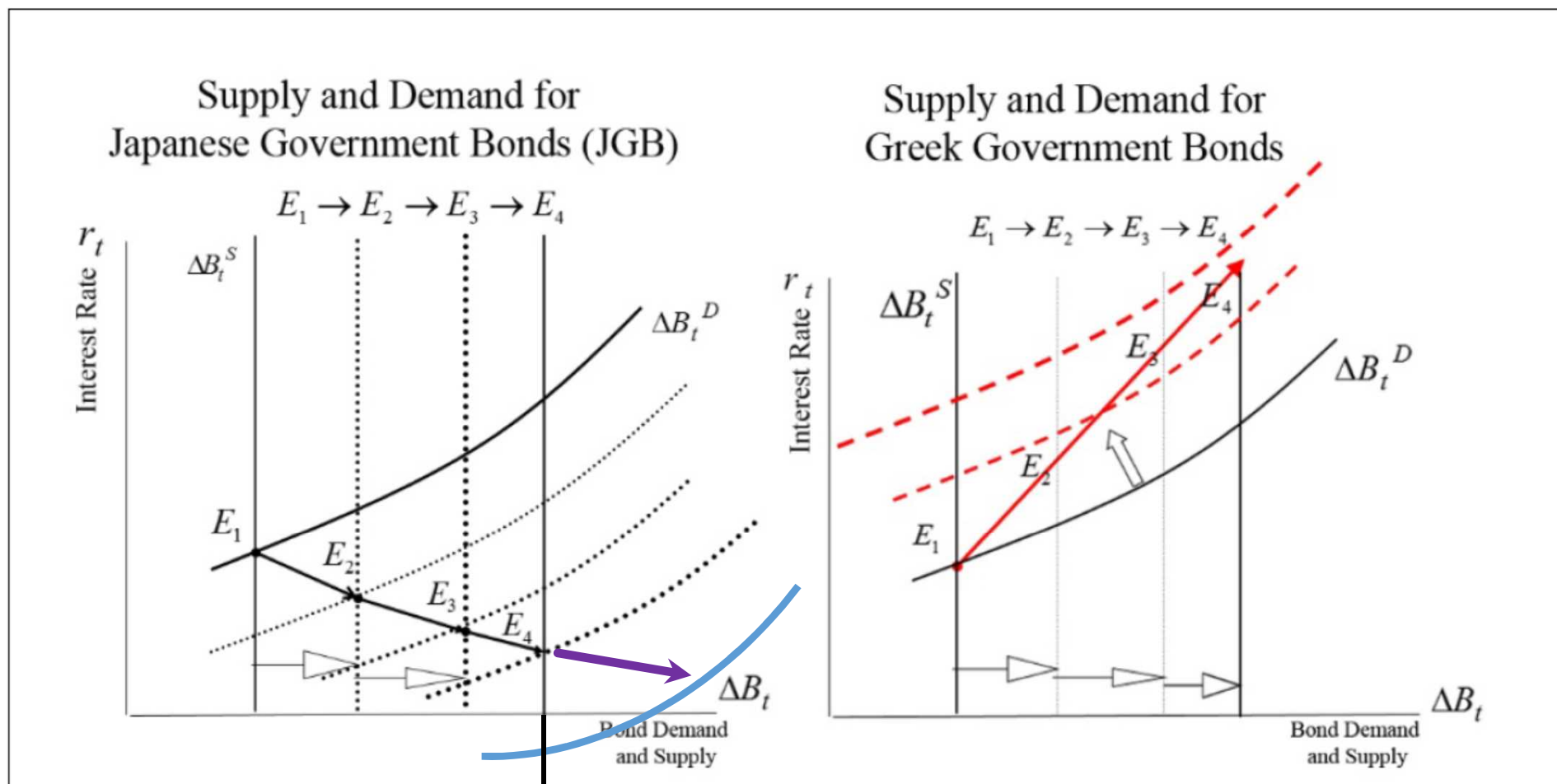
Source: Yoshino and Taghizadeh-Hesary (2014a).

Figure 2: Interest Rates in Selected OECD Countries
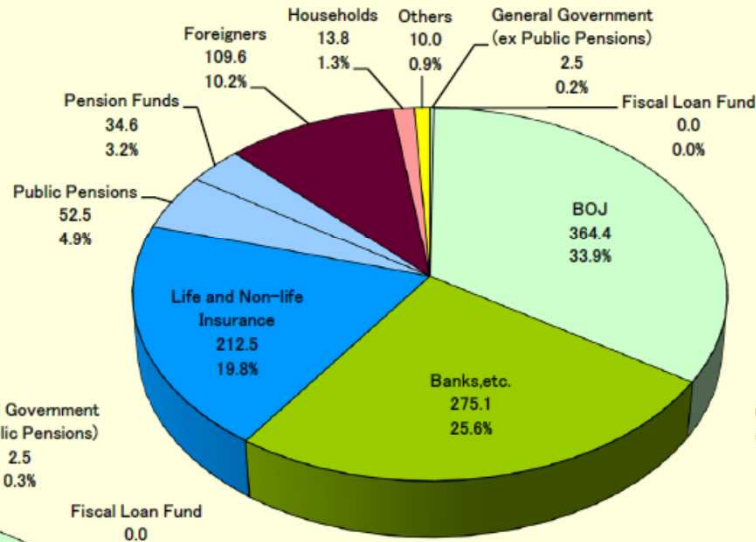
JGB Yield Curves

Source: Japan Bond Trading Co.,Ltd.
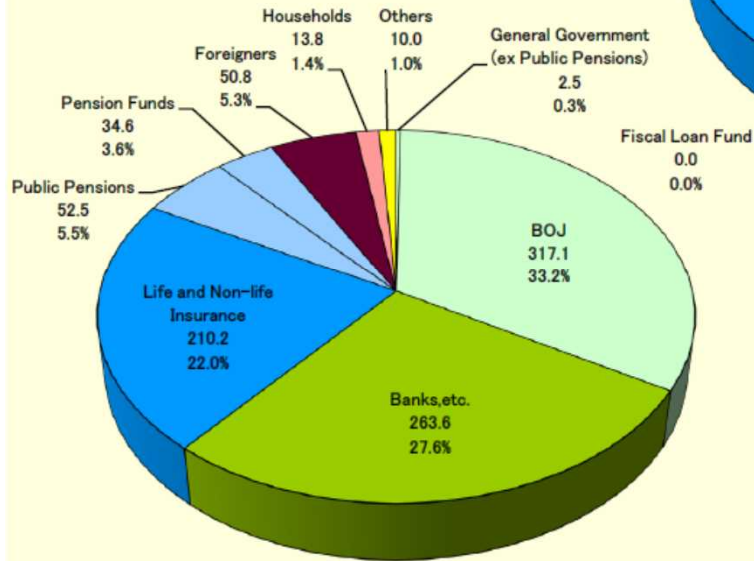
Breakdown by JGB and T-Bill Holders (Mar. 2016)

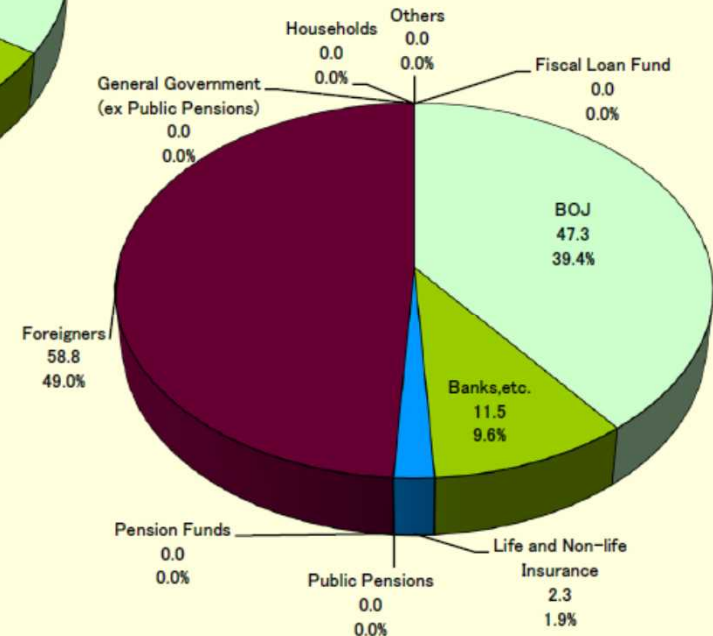## JGB and T-Bill Holders

(trillion yen)

- Foreigners 109.6 10.2%
- Households 13.8 1.3%
- Others 10.0 0.9%
- General Government (ex Public Pensions) 2.5 0.2%
- Fiscal Loan Fund 0.0 0.0%
- Pension Funds 34.6 3.2%
- Public Pensions 52.5 4.9%
- Life and Non-life Insurance 212.5 19.8%
- BOJ 364.4 33.9%
- Banks,etc. 275.1 25.6%

Total 1,075.0 trillion yen

JGB Holders

- Households 13.8 1.4%
- Others 10.0 1.0%
- Foreigners 50.8 5.3%
- Pension Funds 34.6 3.6%
- Public Pensions 52.5 5.5%
- General Government (ex Public Pensions) 2.5 0.3%
- Fiscal Loan Fund 0.0 0.0%
- Life and Non-life Insurance 210.2 22.0%
- BOJ 317.1 33.2%
- Banks,etc. 263.6 27.6%

Total 955.0 trillion yen

T-Bill Holders

- Households 0.0 0.0%
- Others 0.0 0.0%
- General Government (ex Public Pensions) 0.0 0.0%
- Fiscal Loan Fund 0.0 0.0%
- Foreigners 58.8 49.0%
- Pension Funds 0.0 0.0%
- Public Pensions 0.0 0.0%
- Life and Non-life Insurance 2.3 1.9%
- Banks,etc. 11.5 9.6%
- BOJ 47.3 39.4%

Total 119.9 trillion yen

ADB Institute Series on Development Economics

Naoyuki Yoshino
Farhad Taghizadeh-Hesary *Editors*
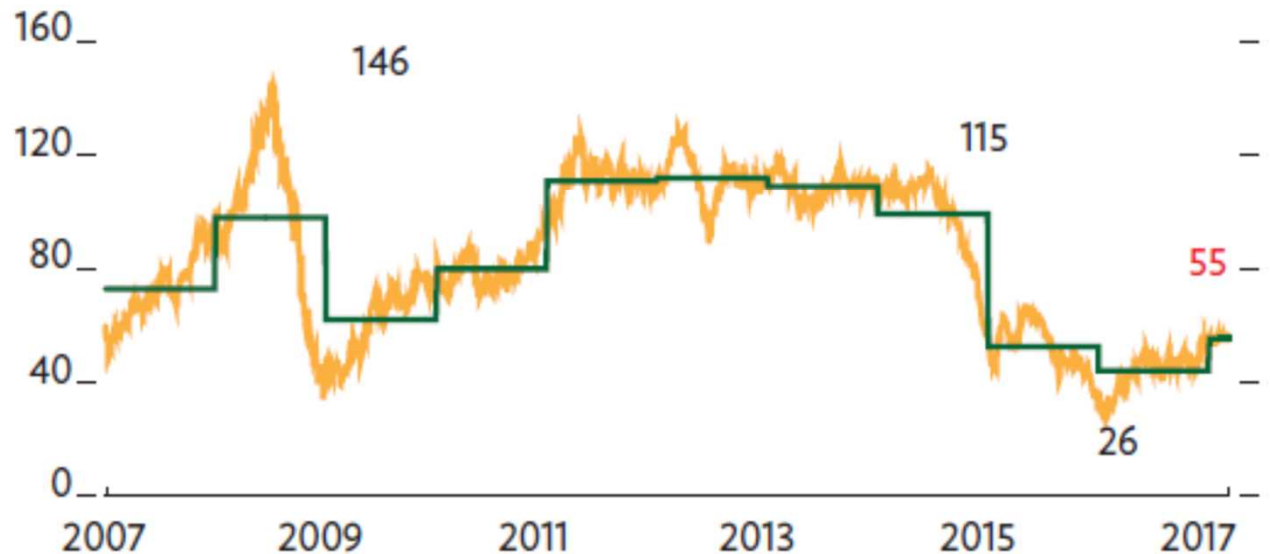
Monetary Policy and the Oil Market

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A1.13 Price of Brent crude

—— Spot
—— Annual average

$/barrel

160
146
120
115
80
55
40
26
0

2007 2009 2011 2013 2015 2017

Sources: Bloomberg; World Bank. Commodity Price Data (Pink Sheet).
http://www.worldbank.org (both accessed 9 March 2017).

Impact of Oil Price Decline to Exporting Countries
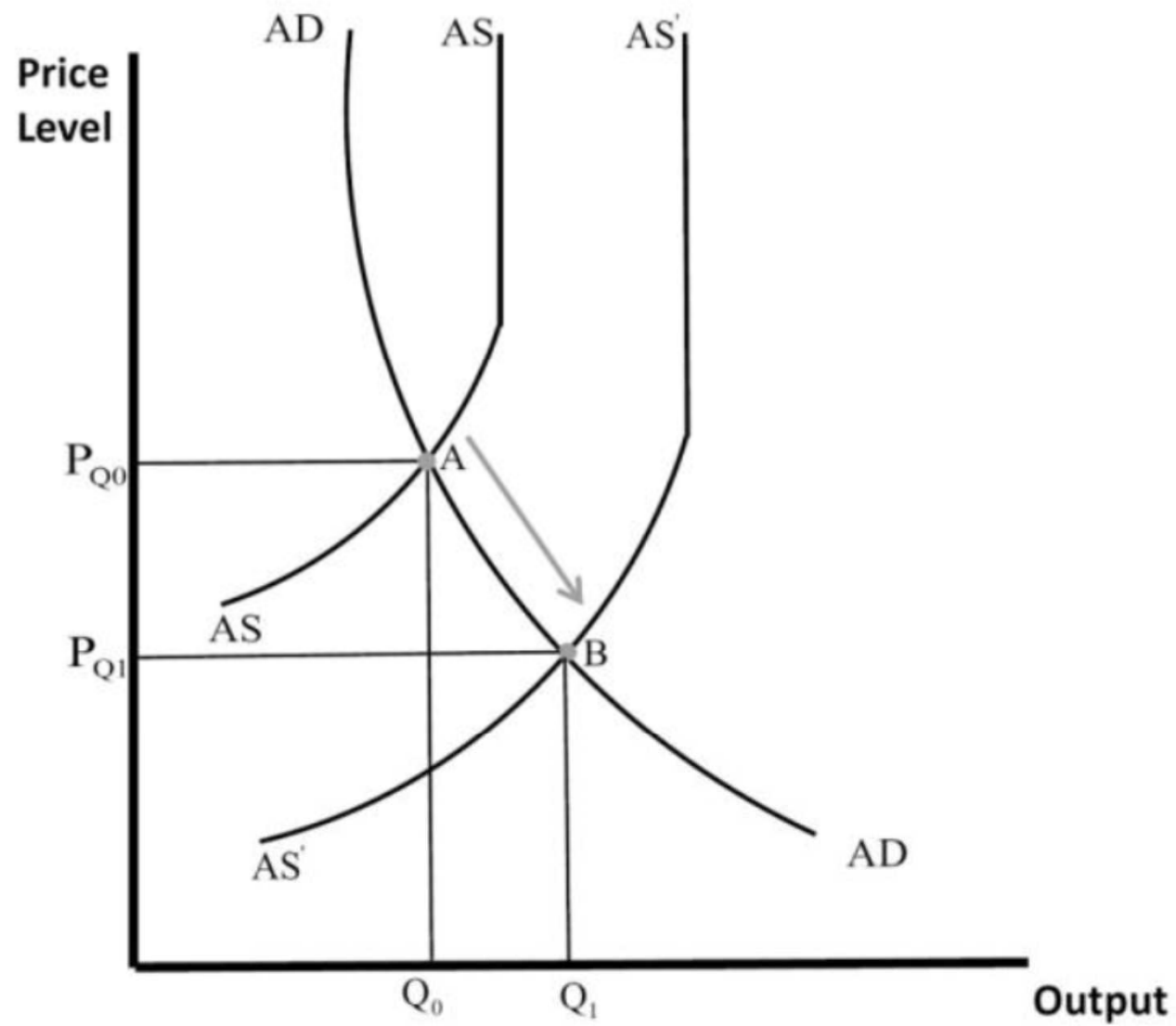
AD = aggregate demand, AS = aggregate supply.

Empirical Analysis of AS-AD equations of Japan

	Q2 1994–Q4 2001	Q1 2002–Q2 2014
Phillips curve (Inflation rate)		
Lagged inflation rate	0.89(4.08)**	−0.36(−1.12)
GDP gap	0.69(2.18)*	−0.24(−0.45)
Crude oil price	0.06(3.27)**	0.07(2.59)**
Gas price	0.03 (0.45)	0.05(1.17)
Aggregate Demand (GDP gap)		
Long-term real interest rate	−0.02(−4.71)**	−0.02(−1.09)
Lagged GDP gap	−0.33(−1.66)	0.42(1.52)
Exchange rate	0.09(2.18)*	0.07(1.17)
Taylor Rule (Short-term interest rate)		
Inflation rate	1.21(0.67)	1.94(2.16)*
GDP gap	4.76(2.72)**	3.89(3.01)**

GDP = gross domestic product.
Notes: T-statistics are in parentheses. * indicates significance at 5%. ** indicates significance at 1%.
Source: Yoshino and Taghizadeh-Hesary (2015a).

output is the total of real private gross value added. Factors of production consist of (i) private capital, (ii) labor and (iii) public capital. We use a trans-log production function, which represents flexibility in the production technology structure.

$$\ln Y_t - \ln \bar{Y} = \alpha_K(\ln K_{Pt} - \ln \overline{K_P}) + \alpha_L(\ln L_t - \ln \bar{L}) + \alpha_G(\ln K_{G,t} - \ln \overline{K_G})$$

$$+ \beta_{KL}(\ln K_{P,t} - \ln \overline{K_P})(\ln L_t - \ln \bar{L}) + \beta_{KG}(\ln K_{P,t} - \ln \overline{K_P})(\ln K_{G,t} - \ln \overline{K_G})$$

$$+ \beta_{LG}(\ln L_t - \ln \bar{L})(\ln K_{G,t} - \ln \overline{K_G}) + \frac{1}{2}\beta_{KK}(\ln K_{P,t} - \ln \overline{K_P})^2$$

$$+ \frac{1}{2}\beta_{LL}(\ln L_t - \ln \bar{L})^2 + \frac{1}{2}\beta_{GG}(\ln K_{G,t} - \ln \overline{K_G})^2$$

where the trans-log production function is a log-linear approximation around the average of each variable and the symmetry of second derivatives is assumed. Furthermore, it is assumed that $\beta_{KK} < 0$, $\beta_{LL} < 0$ and $\beta_{GG} < 0$ based on the law of diminishing marginal productivity.

Declined Effectiveness of Fiscal Policy

Table 1: Spillover Effect Estimated from a Macroeconomic Translog Production Function

	1956-60	1961-65	1966-70	1971-75	1976-80	1981-85
Direct effect	0.696	0.737	0.638	0.508	0.359	0.275
Indirect effect(Kp)	0.452	0.557	0.493	0.389	0.270	0.203
Indirect effect(L)	1.071	0.973	0.814	0.639	0.448	0.350
20% returned	0.305	0.306	0.261	0.206	0.144	0.111
increment	0.438	0.415	0.410	0.404	0.400	0.402

	1986-90	1991-95	1996-00	2001-05	2006-10
Direct effect	0.215	0.181	0.135	0.114	0.108
Indirect effect(Kp)	0.174	0.146	0.110	0.091	0.085
Indirect effect(L)	0.247	0.208	0.154	0.132	0.125
20% returned	0.084	0.071	0.053	0.045	0.042
increment	0.392	0.392	0.390	0.390	0.391