

# HEDGEYE

## GLOBAL DEMOGRAPHIC ANALYSIS

**DARIUS DALE: MACRO TEAM**

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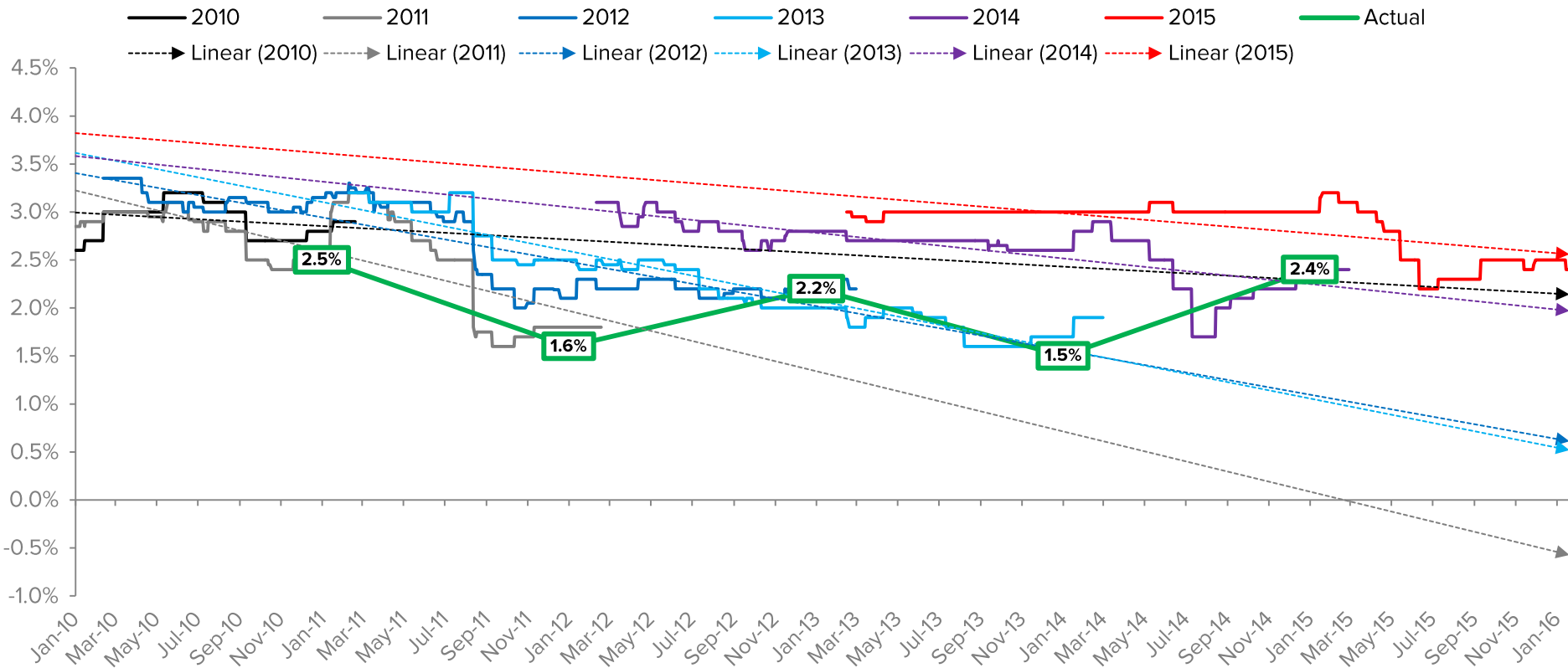
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# CONSISTENTLY TOO HIGH ON GDP GROWTH

EVERY SINGLE YEAR OF THE POST-CRISIS ERA HAS SEEN A DOWNWARD REVISION BIAS TO BLOOMBERG CONSENSUS U.S. REAL GDP GROWTH FORECASTS THROUGHOUT THE YEAR.



# WHY? BECAUSE AGEING SLOWS GROWTH

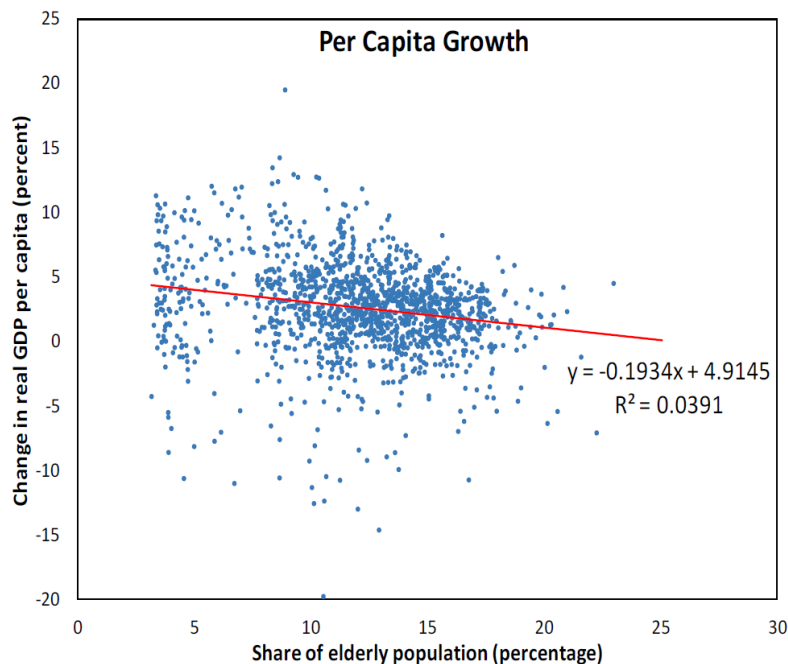


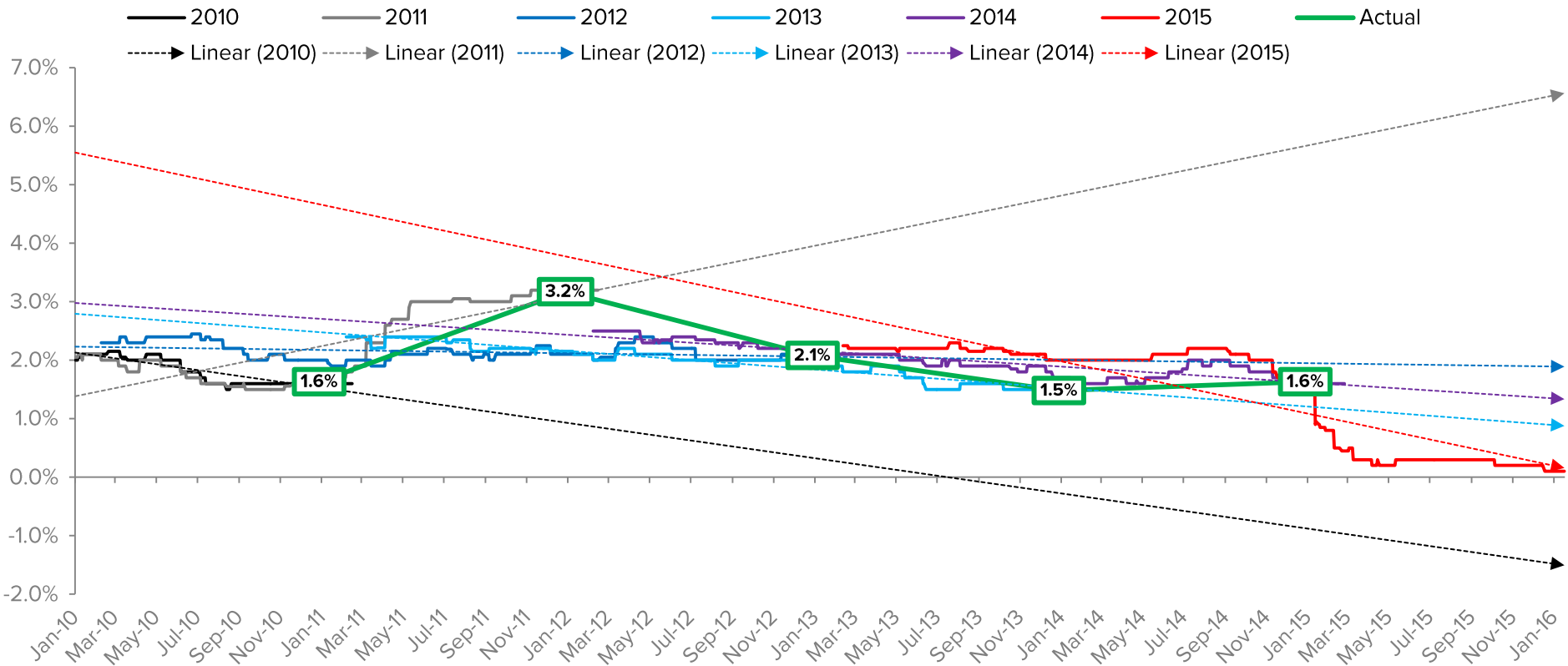
Table 1. Demographic Impact on Growth of Real GDP per capita (PPP-based)

	OECD FE				OECD FE IV 2/			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Population Growth	-0.686 [0.270]		-1.194 [0.018]**	-1.130 [0.031]**	0.075 [0.807]		-0.621 [0.053]*	-0.504 [0.118]
Share of 65 and over		-0.211 [0.002]***	-0.261 [0.000]***	-0.122 [0.349]		-0.590 [0.000]***	-0.614 [0.000]***	-0.365 [0.000]***
Share of 15-64		-0.132 [0.159]	-0.201 [0.037]**	-0.090 [0.372]		-0.159 [0.009]***	-0.192 [0.002]***	0.010 [0.901]
Life expectancy				-0.198 [0.189]				-0.363 [0.000]***
Openness	0.008 [0.276]	0.013 [0.188]	0.019 [0.041]**	0.025 [0.006]***	0.007 [0.331]	0.018 [0.011]**	0.022 [0.004]***	0.033 [0.000]***
Secondary school enrollment	-0.018 [0.116]	0.005 [0.571]	0.006 [0.485]	0.014 [0.132]	-0.040 [0.000]***	-0.002 [0.862]	-0.002 [0.882]	0.015 [0.185]
Budget Balance/GDP	0.091 [0.100]	0.083 [0.135]	0.100 [0.081]*	0.100 [0.070]*	-0.003 [0.956]	0.028 [0.549]	0.044 [0.347]	0.053 [0.258]
Inflation	-0.090 [0.000]***	-0.101 [0.000]***	-0.103 [0.000]***	-0.100 [0.000]***	-0.087 [0.000]***	-0.112 [0.000]***	-0.113 [0.000]***	-0.105 [0.000]***
Investment / GDP	0.272 [0.000]***	0.244 [0.000]***	0.248 [0.000]***	0.244 [0.000]***	-0.105 [0.014]**	-0.179 [0.000]***	-0.178 [0.000]***	-0.188 [0.000]***
Constant	-1.670 [0.309]	7.407 [0.208]	12.862 [0.035]**	17.557 [0.041]**	8.548 [0.000]***	24.193 [0.000]***	26.897 [0.000]***	35.604 [0.000]***
Observations	1104	1104	1104	1104	1072	1072	1072	1072
Number of ifscode	30	30	30	30	30	30	30	30
R-squared	0.177	0.185	0.199	0.203				

“The **demographic impact on aggregate real GDP is somewhat straightforward** when the population is growing, declining or ageing given the direct implication on the size of labor inputs, while its impact on per capita real GDP is less so, attracting attention for analysis. For example, Chapter 3 of the 2004 World Economic Outlook by Callen et al. (2004) found that **per capita GDP growth is positively correlated with changes in the working age population share, but is negatively correlated with changes in the elderly share.**”

# CONSISTENTLY TOO HIGH ON INFLATION

WITH THE EXCEPTION OF 2011 (DURING WHICH QE2 PERPETUATED ALL-TIME LOWS IN THE USD AND ALL-TIME HIGHS IN COMMODITY PRICES), EACH YEAR OF THE POST-CRISIS ERA HAS SEEN A DOWNWARD REVISION BIAS TO CONSENSUS U.S. CPI FORECASTS THROUGHOUT THE YEAR.



# BECAUSE AGEING SLOWS INFLATION TOO

**Table 4. Demographic Impact on Inflation**

	OECD					Japan				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Population Growth	0.339 [0.715]	0.524 [0.577]		0.549 [0.570]	0.317 [0.764]	6.689 [0.005]***	6.363 [0.003]***		6.708 [0.001]***	6.725 [0.001]***
Share of 65 and over		-0.176 [0.009]***	-0.125 [0.013]**	-0.137 [0.006]***	-0.416 [0.008]***		-0.101 [0.394]	-0.321 [0.082]*	-0.300 [0.060]*	-0.242 [0.227]
Share of 15-64			-0.101 [0.226]	-0.103 [0.233]	-0.330 [0.037]**			-0.476 [0.030]**	-0.544 [0.008]***	-0.499 [0.026]**
Life Expectancy					0.304 [0.043]**					-0.092 [0.748]
TOT change	-0.145 [0.005]***	-0.144 [0.005]***	-0.145 [0.005]***	-0.144 [0.005]***	-0.143 [0.005]***	-0.169 [0.016]**	-0.174 [0.014]**	-0.178 [0.013]**	-0.148 [0.016]**	-0.147 [0.016]**
GDP growth	-0.750 [0.000]***	-0.795 [0.000]***	-0.799 [0.000]***	-0.802 [0.000]***	-0.784 [0.000]***	-0.246 [0.015]**	-0.319 [0.033]**	-0.517 [0.008]***	-0.431 [0.008]***	-0.452 [0.022]**
M2 growth	0.192 [0.000]***	0.183 [0.000]***	0.180 [0.001]***	0.180 [0.001]***	0.176 [0.000]***	0.059 [0.118]	0.034 [0.379]	0.007 [0.869]	-0.009 [0.826]	-0.015 [0.751]
Budget Balance Chg.	0.129 [0.051]*	0.153 [0.022]**	0.153 [0.033]**	0.158 [0.018]**	0.150 [0.022]**	-0.105 [0.540]	-0.086 [0.563]	0.006 [0.971]	0.040 [0.776]	0.059 [0.690]
Constant	-0.053 [0.910]	2.418 [0.060]*	8.443 [0.149]	8.739 [0.151]	4.132 [0.255]	0.074 [0.821]	1.870 [0.399]	37.962 [0.031]**	42.051 [0.010]**	45.446 [0.038]**
Observations	1167	1167	1167	1167	1167	53	53	53	53	53
Number of ifscodes	30	30	30	30	30					
R-squared	0.212	0.216	0.217	0.217	0.222	0.530	0.545	0.462	0.602	0.603
RMSE	5.235	5.227	5.223	5.223	5.209	2.077	2.066	2.246	1.954	1.973

1/ Inflation and population growth are detrended using quadratic filter.

2/ Fixed-effect estimation for OECD and OLS for individual country regressions using annual data.

3/ P-values based on robust t-statistics in brackets. \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

*“As displayed in Column (1), population growth affects inflation positively, since a greater population implies more aggregate demand. This might be due to the fact that the aggregate supply adjustment could be slower than aggregate demand adjustment in responding to demographic shocks in the short or medium run. When the share of elderly is added as an independent variable (Column 2), population growth continues to affect inflation positively and **the influence of the elderly share is significantly negative.***

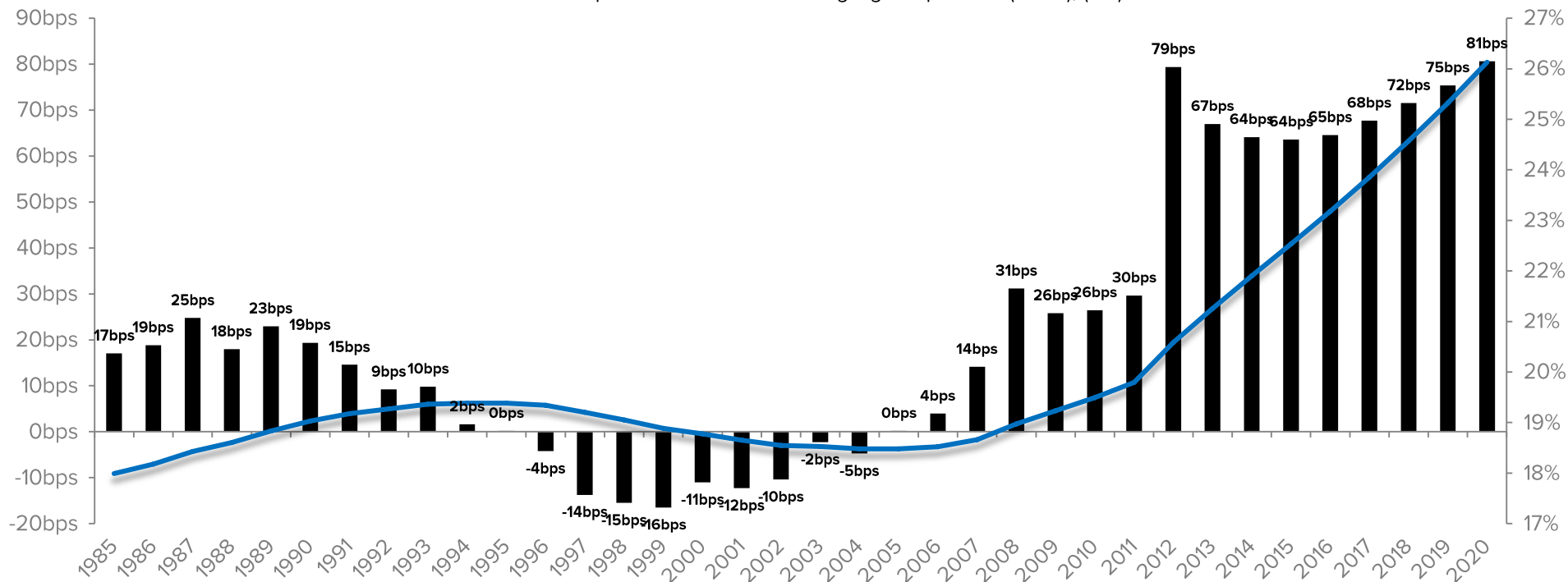
*Conditional on a given population growth, **the ageing process will suppress inflation significantly.** This is true when the share of 15-64 is coupled with the elderly share (Columns 3 and 4) and when life expectancy is added as well (Column 5).”*

# WHO'S GETTING OLDER?: THE U.S.

THE POST-CRISIS ERA HAS SEEN THE U.S. AGE AT AN UNPRECEDENTED RATE AND PEAK/NEAR-PEAK AGEING (IN RATE-OF-CHANGE TERMS) IS PROJECTED TO CONTINUE THROUGH THE BALANCE OF THE DECADE; IS IT IRONIC THAT BOND YIELDS HIT AN ALL-TIME LOW IN 2012?

■ U.S. 65+ Year-Old Population as a % of Working-Age Population (15-64) YoY bps Change

— U.S. 65+ Year-Old Population as a % of Working-Age Population (15-64); (rhs)

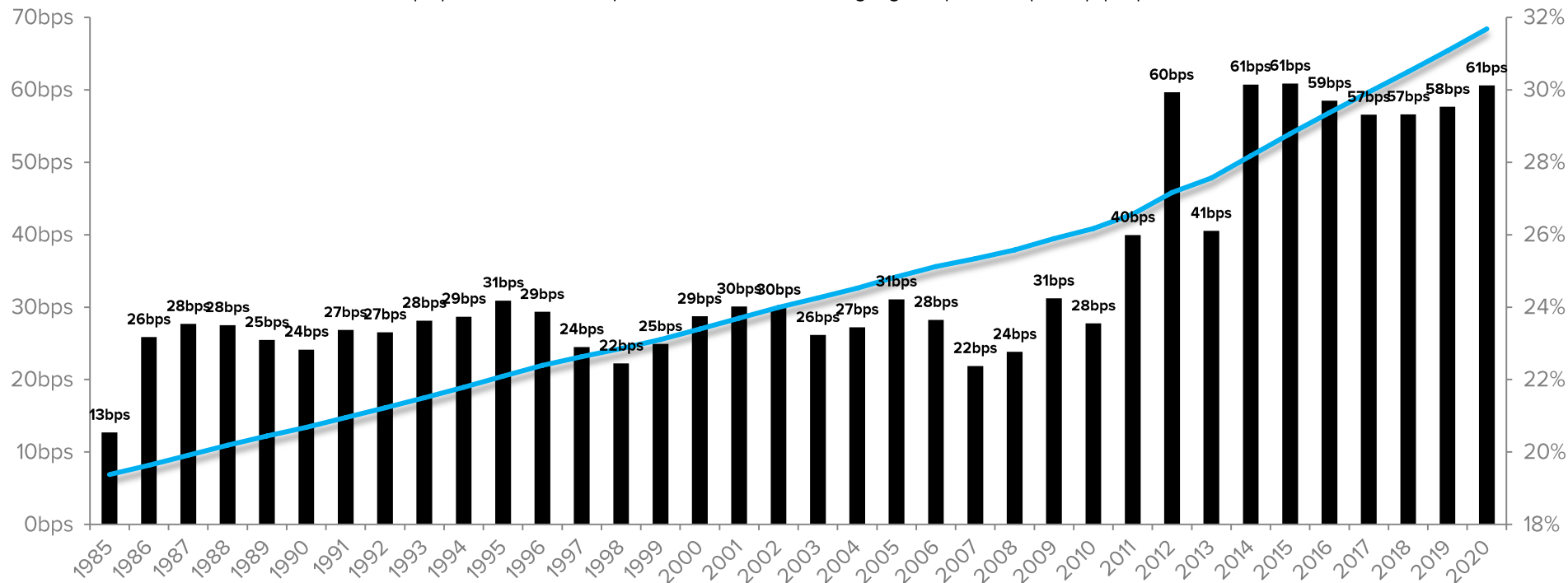


# WHO'S GETTING OLDER?: EUROPE

MUCH LIKE THE U.S., THE POST-CRISIS ERA HAS SEEN EUROPE AGE AT AN UNPRECEDENTED RATE AND PEAK/NEAR-PEAK AGEING (IN RATE-OF-CHANGE TERMS) IS PROJECTED TO CONTINUE THROUGH THE BALANCE OF THE DECADE; EUROPE IS ALSO STARTING FROM AN OLDER BASE.

■ E.U. (27) 65+ Year-Old Population as a % of Working-Age Population (15-64) YoY bps Change

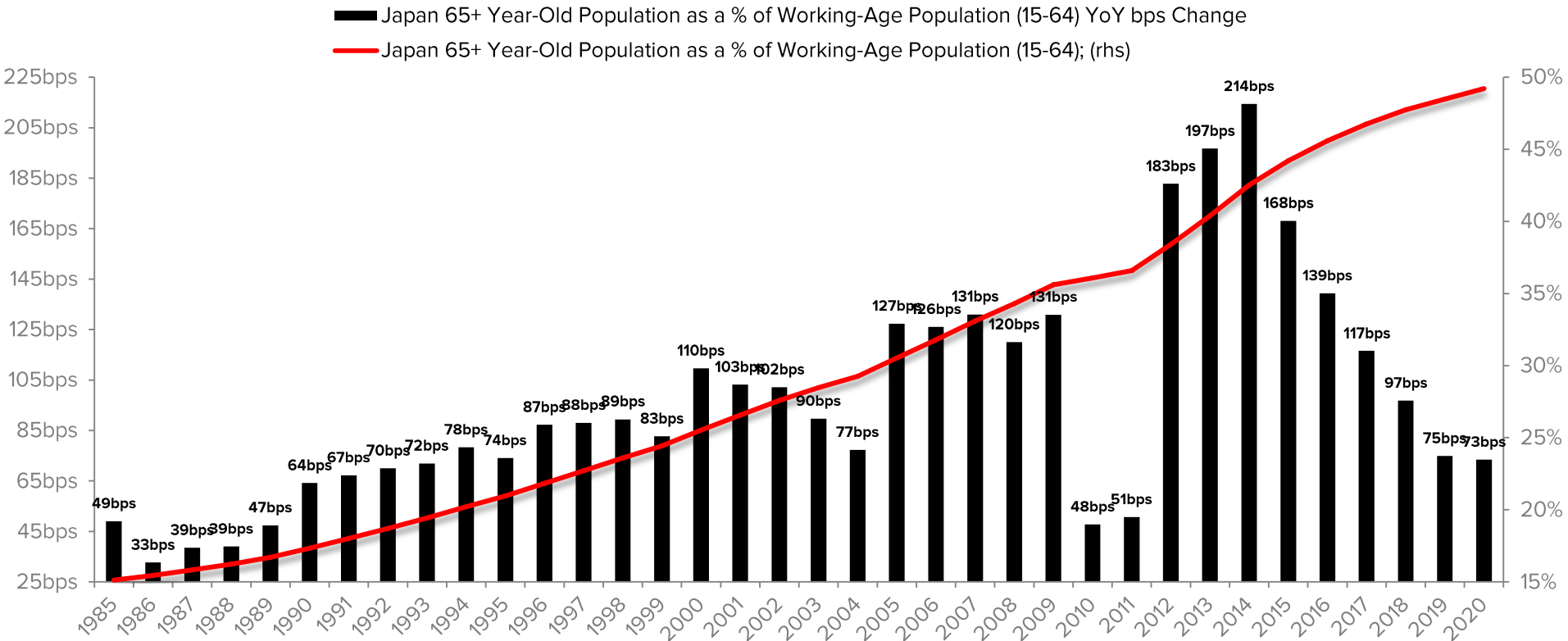
— E.U. (27) 65+ Year-Old Population as a % of Working-Age Population (15-64); (rhs)





# WHO'S GETTING OLDER?: JAPAN

JAPAN IS LIKELY PAST PEAK IN RATE-OF-CHANGE TERMS, BUT A PROJECTION OF ONE ~RETIREES PER EVERY TWO WORKING AGE ADULTS BY 2020 CALLS INTO QUESTION THE EFFICACY AND SUSTAINABILITY OF THE ABENOMICS AGENDA, WHICH ITSELF CALLS FOR "5% MONETARY MATH".

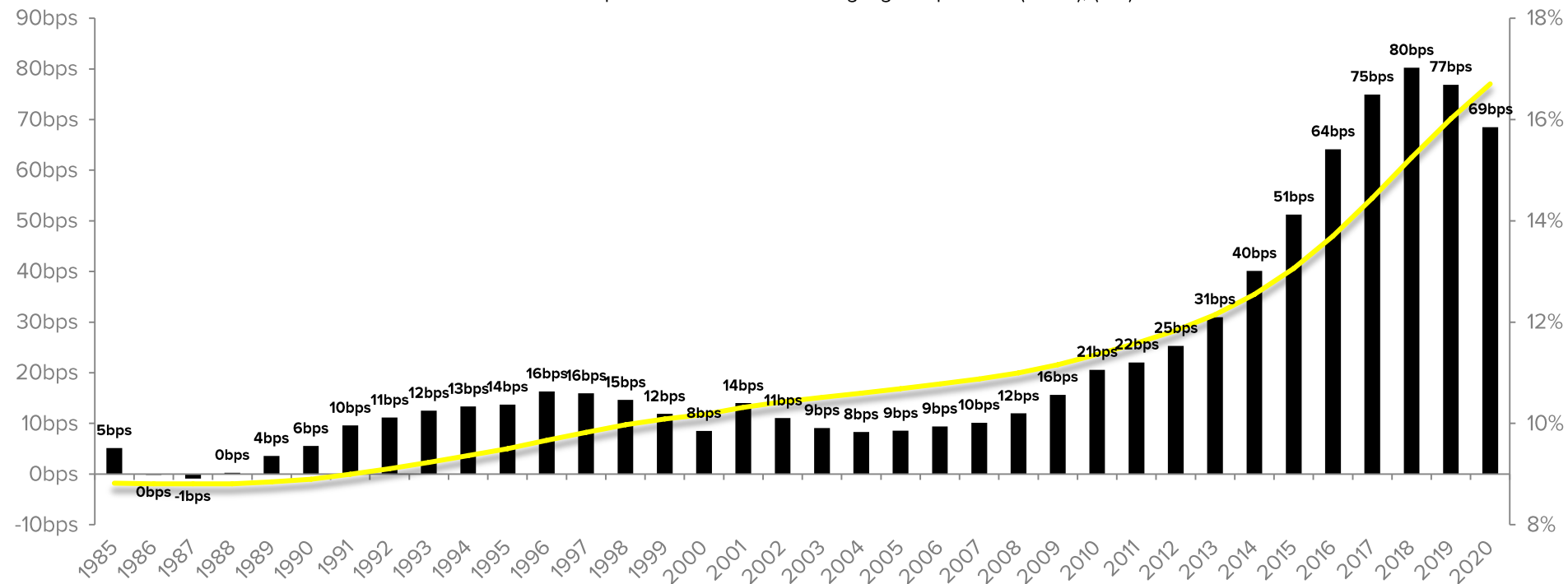


# WHO'S GETTING OLDER?: CHINA

WHILE NOT A MATERIAL SHARE OF THE POPULATION RELATIVE TO OTHER COHORTS, THE LATTER HALF OF THIS DECADE WILL SEE CHINA AGE RAPIDLY – CALLING INTO QUESTION THE EXPEDIENCY (OR LACK THEREOF) IN FORMULATING AN APPROPRIATE SOCIAL SAFETY NET.

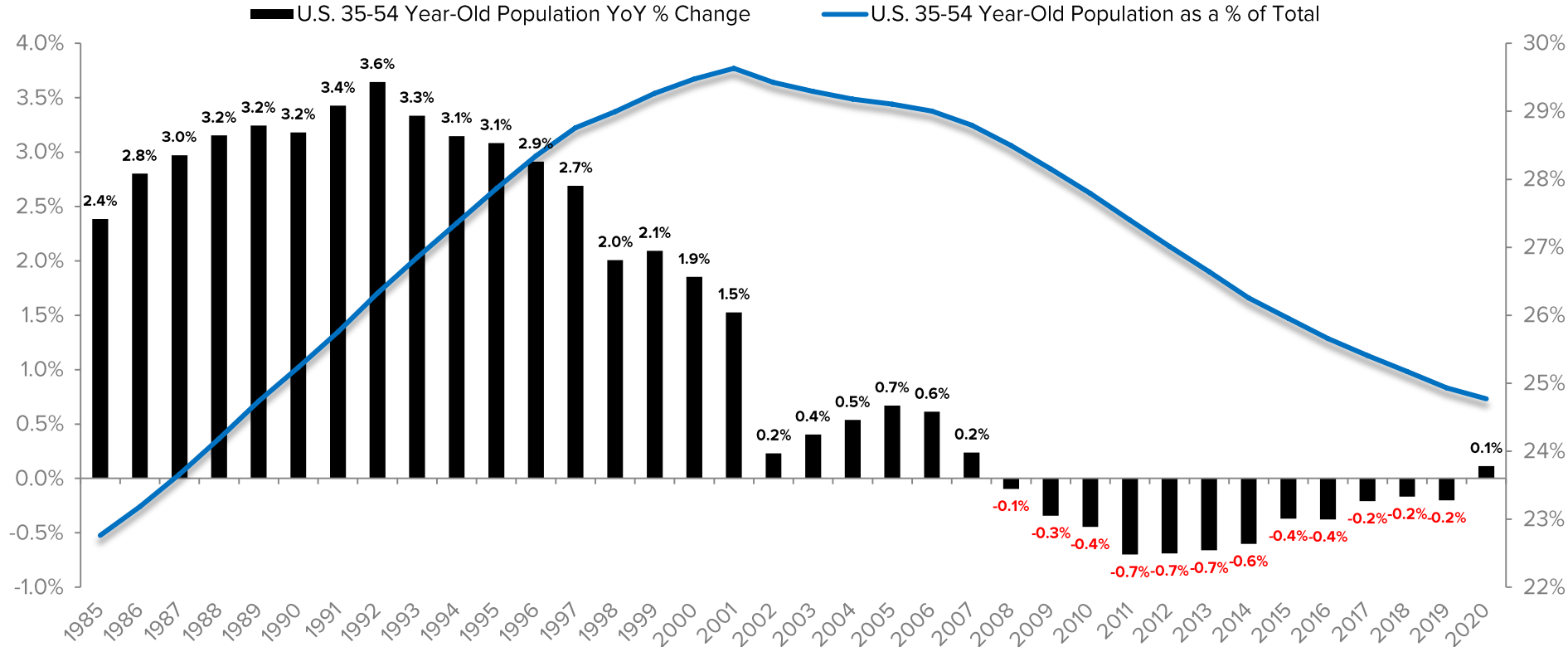
■ China 65+ Year-Old Population as a % of Working-Age Population (15-64) YoY bps Change

— China 65+ Year-Old Population as a % of Working-Age Population (15-64); (rhs)



# SECULAR STAGNATION: U.S.

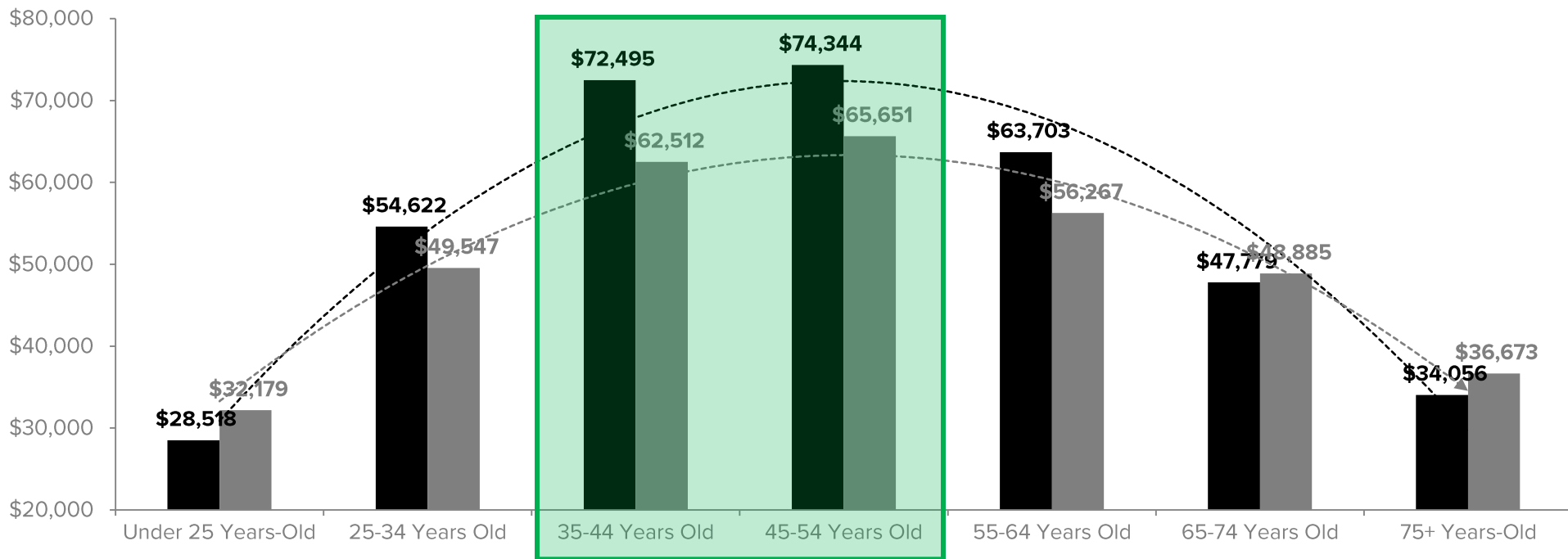
GIVEN THE DISAPPOINTING TREND IN U.S. GROWTH SINCE 2007, IT'S NOT AT ALL IRONIC THAT GROWTH IN THE U.S.'S CORE CONSUMPTION DEMOGRAPHIC WENT NEGATIVE IN 2008 AND IS PROJECTED TO CONTINUE CONTRACTING THOUGH 2019.



# WHY DO 35-54 YEAR-OLDS MATTER?

BECAUSE ACCORDING TO BOTH EMPIRICAL EVIDENCE AND LIFE-CYCLE ECONOMICS THEORY, THIS IS THE WORLD'S CORE END CONSUMPTION DEMAND DEMOGRAPHIC.

■ U.S. Average Annual Disposable Income by Age Bracket      ■ U.S. Average Annual Expenditures by Age Bracket  
- - - - - Poly. (U.S. Average Annual Disposable Income by Age Bracket)      - - - - - Poly. (U.S. Average Annual Expenditures by Age Bracket)

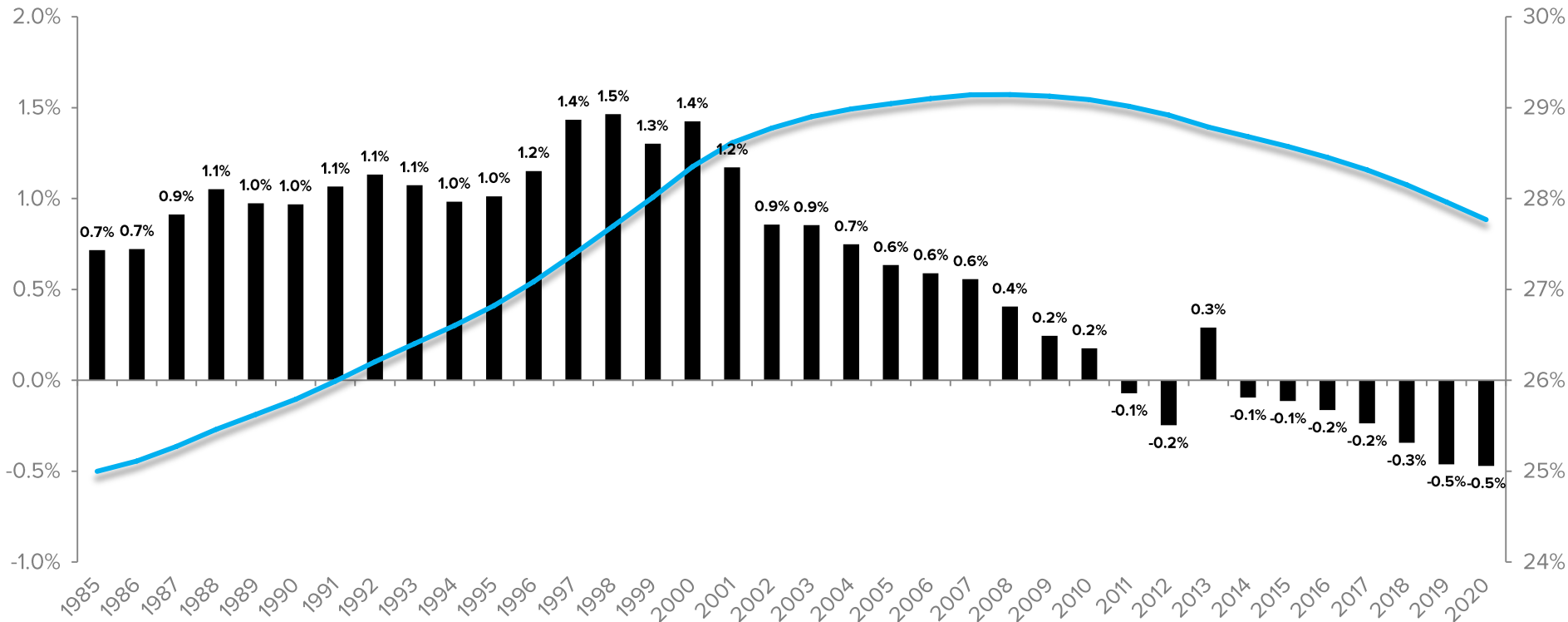


# SECULAR STAGNATION: EUROPE

EUROPE'S CORE END CONSUMPTION DEMOGRAPHIC IS PROJECTED TO CONTRACT AT AN ACCELERATED RATE THROUGH THE END OF THE DECADE; CAN DRAGHI EFFECTIVELY COUNTER THAT WITH A BURNING EURO?

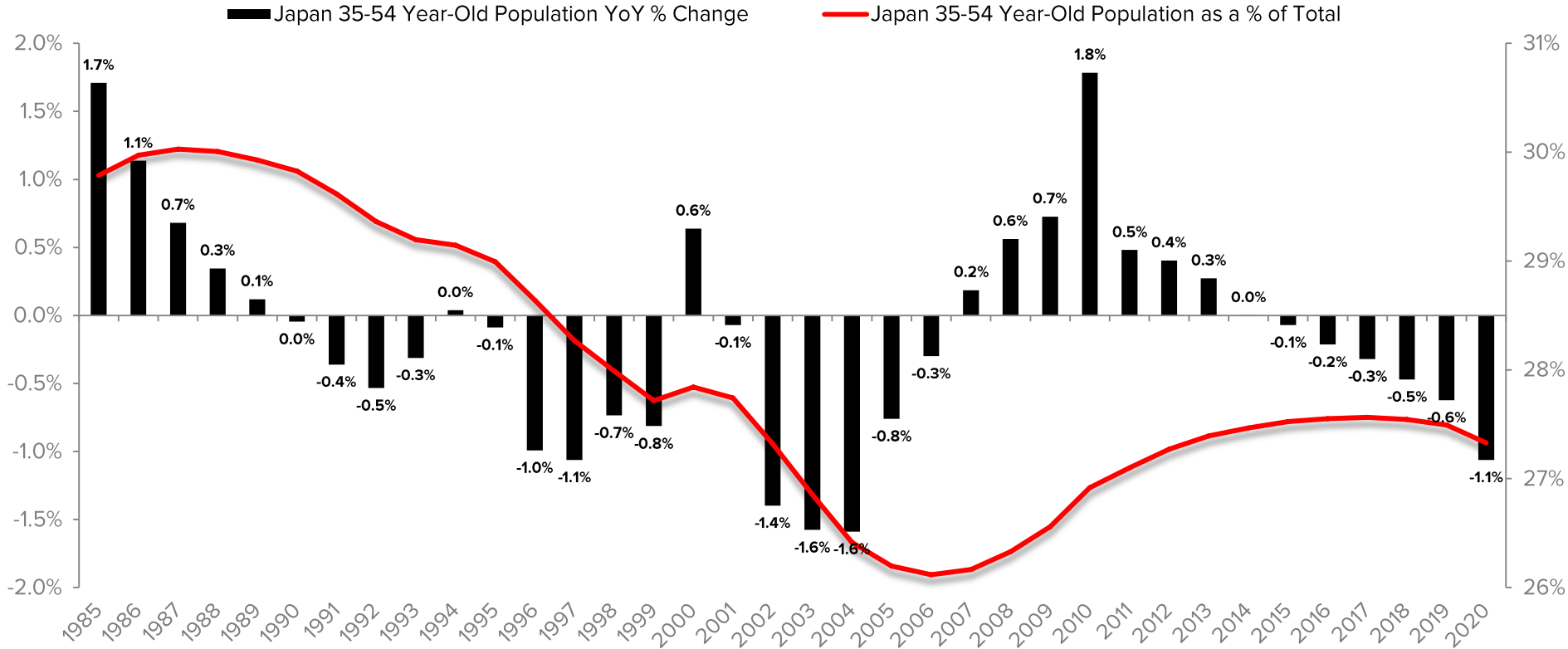
■ E.U. (27) 35-54 Year-Old Population YoY % Change

— E.U. (27) 35-54 Year-Old Population as a % of Total



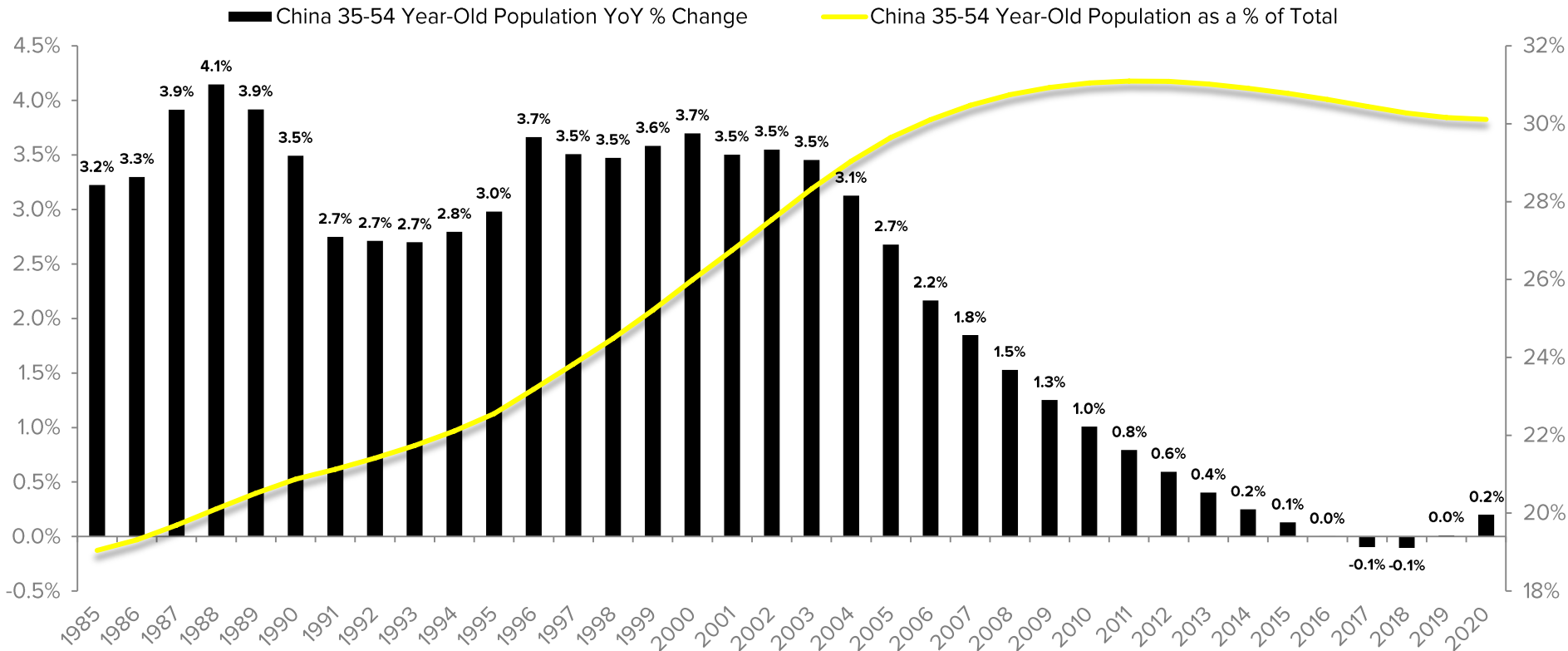
# SECULAR STAGNATION: JAPAN

AFTER A BRIEF RESPITE, JAPAN'S CORE END CONSUMPTION DEMOGRAPHIC RETURNS TO A TREND OF ACCELERATED CONTRACTION THROUGH AT LEAST 2020.



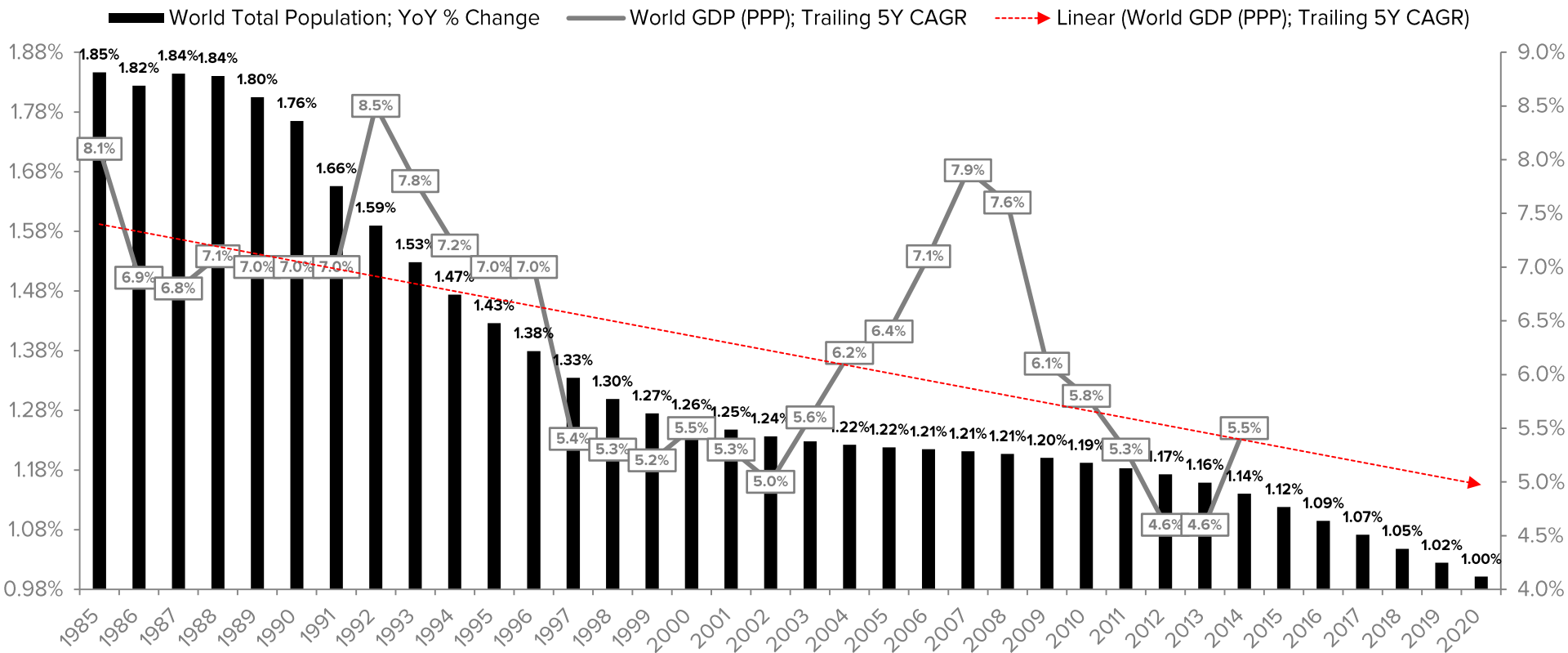
# SECULAR STAGNATION: CHINA

GIVEN CHINA'S STATUS AS A DEVELOPING COUNTRY AND IT'S SHAKY INCOME AND CONSUMPTION STATISTICS, IT'S LESS CLEAR THE IMPACT LIFE-CYCLE ECONOMICS HAS ON ITS CONSUMPTION PATTERNS; THAT SAID, HOWEVER, THE OUTLOOK FOR REBALANCING IS DIFFICULT AT BEST.



# MAJOR HEADWIND: POPULATION GROWTH

GLOBAL POPULATION GROWTH IS DECELERATING AT ITS FASTEST RATE SINCE THE EARLY-TO-MID-1990S. BASED ON HISTORICAL PRECEDENT, ANOTHER LEG DOWN IN GLOBAL GROWTH IS LIKELY TO FOLLOW.

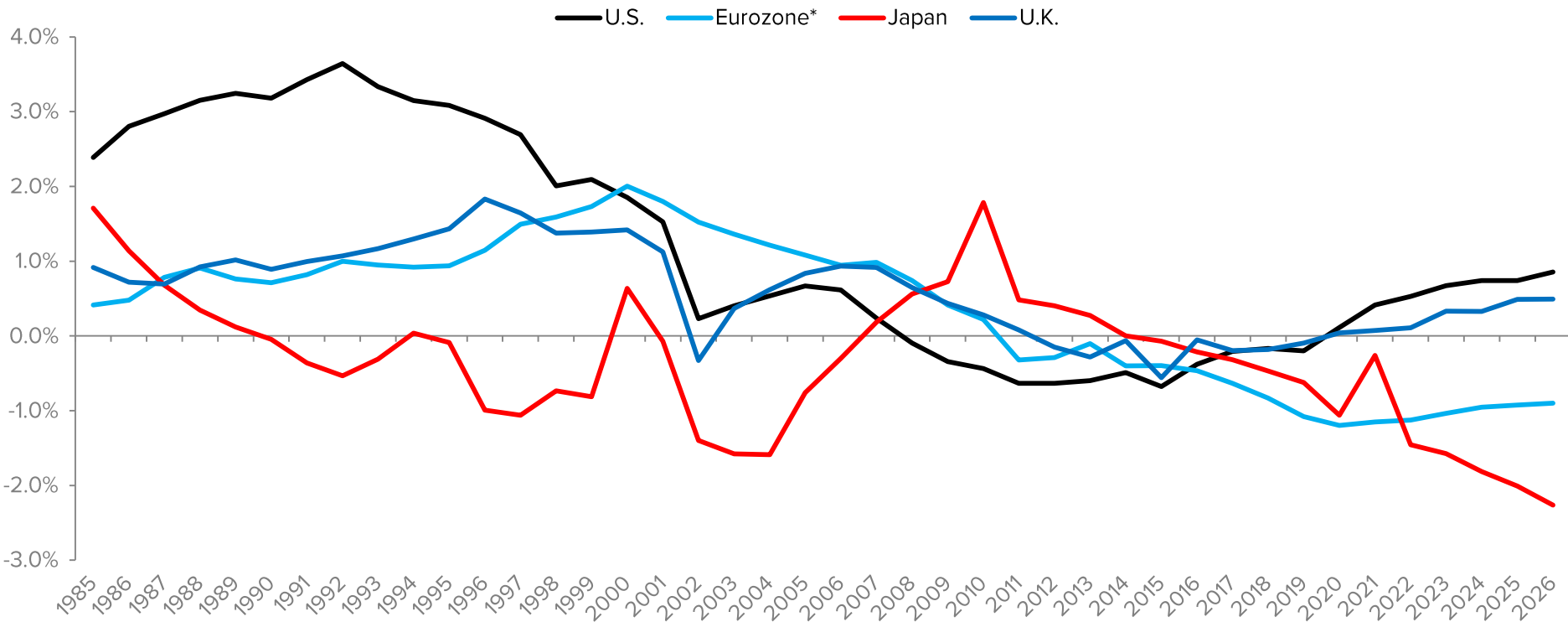




# “BEST HOUSE IN A BAD NEIGHBORHOOD”

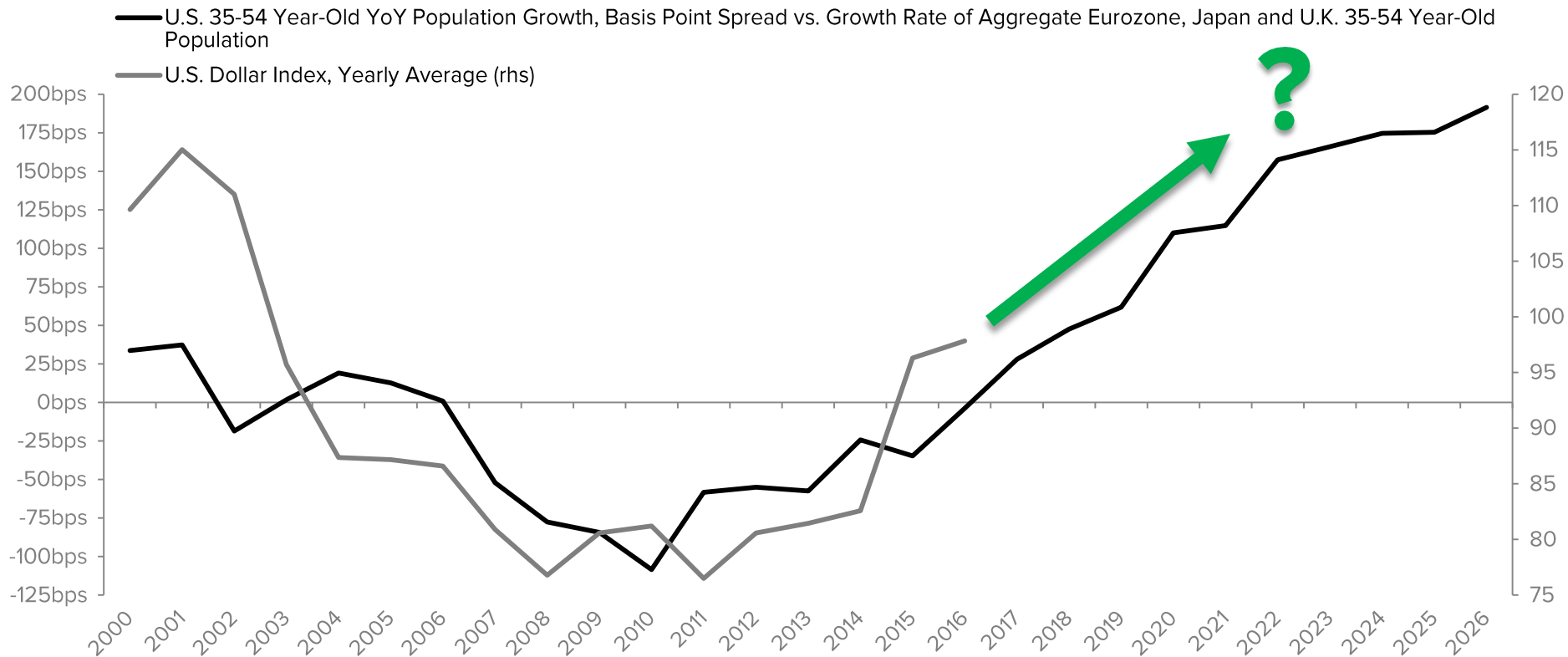
THE GROWTH RATE OF THE U.S.'S CORE CONSUMPTION DEMOGRAPHIC WILL GO FROM WORST (IN 2015) TO FIRST (BY 2020), WHICH IMPLIES ORGANIC DEMAND GROWTH IN THE U.S. WILL OUTPACE THAT OF ITS DEVELOPED MARKET COUNTERPARTS FOR THE FORESEEABLE FUTURE.

35-54 Year-Old Population, YoY % Change



# SECULAR BULL CASE FOR THE U.S. DOLLAR

LIFE-CYCLE SPENDING PATTERNS WOULD SEEM TO SUGGEST THAT THE U.S. WILL INCREASINGLY BECOME THE “BEST HOUSE IN A BAD NEIGHBORHOOD” FOR YEARS TO COME – WHICH MAY PROVE TO BE STRUCTURALLY BULLISH FOR THE U.S. DOLLAR.



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