Vermont State Teachers Retirement System 403(b) Plan 940010 (Exclusive) 940060 (Non Exclusive)

Plan Summary

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Vice President and Managing Director

As of: **September 30, 2019**

Report contains information up through the last business day of the period end.

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Plan Summary

Plan Summary and Benchmark Trends

Plan Demographics Summary

	1/1/2018-9/30/2018	1/1/2019-9/30/2019
Total Participants*	2,583	2,705
Active Participants	2,245	2,338
Terminated Participants	315	342
Suspended Participants	1	0
Multiple Status Participants***	22	25
Average Participant Balance	$41,328	$43,153
Average Account Balance for Active Participants	$42,588	$43,955
Median Participant Balance	$17,615	$18,059
Median Participant Balance for Active Participants	$18,440	$18,660
Participants Age 50 and Over	1,335	1,389
Total Assets for Participants Age 50 and Over	$75,421,274	$84,417,378
Total (Contributions + Rollovers In)	$7,138,673	$9,506,264
Employee Contributions	$6,208,676	$7,242,175
Employer Contributions	$413,057	$465,226
Rollovers In	$516,940	$1,798,863
Total Distributions	($6,607,209)	($5,112,867)
Percentage of Assets Distributed	6.2%	4.4%
Market Value Gain / Loss****	($14,525)	$7,383,991
Total Participant Balances	$106,750,612	$116,729,137

**Participant(s) with an account balance greater than $0.*

**** Participant(s) with an account balance greater than $0 in more than one participant status category (e.g. Active status in one subplan but Terminated status in another subplan).*

*****This is not the equivalent of a plan level return on investment due to the timing of additions, distributions and underlying investment performance.*

Rollovers In is the total dollars credited to participant accounts within the period defined that originated in other qualified retirement plan accounts.

Total Participants includes count of participants with a balance and represents a unique count across all plans (i.e. if participant is in multiple plans, he/she will be counted only once).

Plan Features

GoalMaker	9/30/2018	9/30/2019
Plan Assets for Participants in GoalMaker	$3,552,923	$7,766,882
% of Plan Assets for GoalMaker Participants	3.3%	6.7%
# of Participants in GoalMaker	170	406
Participation Rate in GoalMaker	6.6%	15.0%
Prudential % of Participants in GoalMaker - As of 12/31/2018	50.8%	

Roth	9/30/2018	9/30/2019
Roth Assets	$2,883,073	$3,511,881
# of Participants in Roth	277	383
Participation Rate in Roth	10.7%	14.2%
Prudential % of Participants in Roth - As of 12/31/2018	12.5%	

Stable Value	9/30/2018	9/30/2019
Participation Rate in Stable Value	60.0%	48.1%
% of Plan Assets in Stable Value	12.4%	10.0%
Prudential % of Plan Assets in Stable Value - As of 12/31/2018	25.8%	

Participant Activity

Call Center	1/1/2018 - 9/30/2018	1/1/2019 - 9/30/2019
Total Call Volume	913	482

Loans	1/1/2018 - 9/30/2018	1/1/2019 - 9/30/2019
Amount of New Loans Taken	$116,938	$170,877
# of New Loans	10	13
# of Outstanding Active Loans	23	31
% of Participants have Outstanding Active Loans	0.9%	1.2%
Prudential % of Participants have Outstanding Active Loans - As of 12/31/2018	14.2%	

Transaction Summary

Transactions	1/1/2018 - 9/30/2018	1/1/2019 - 9/30/2019
Total Enrollees*	167	210
Contribution Rate Increases for Active Participants**	24	12
Contribution Rate Decreases for Active Participants**	8	9
Total Contribution Rate Changes**	32	21
Number of Participants w ith Transfers	1,858	409
Loan Initiations	10	13
Distributions	251	235

*Number of participants that w ere enrolled into the plan w ithin the reporting period. This can include those individuals w ho self enrolled or auto enrolled, if applicable on the plan. Rehires may not be included if their original enrollment date falls outside the reporting period.

**Sum of month over month contribution rate (% and $) changes are for active participants during the reporting period. This excludes any terminations, enrollments or auto enrollments(if applicable on the plan) during the respective months in w hich contribution rate changes occurred.

Enrollment by Age Group

	1/1/2019-9/30/2019						
	Less than 25	25-34	35-44	45-54	55-64	65+	Grand Total
Total	10	48	52	48	41	11	210

Asset Allocation/Net Activity By Age

January 1, 2019 to September 30, 2019

	Less than 25	25-34	35-44	45-54	55-64	65+	Total
Total Participant Balances	$156,388	$2,967,450	$13,720,699	$34,002,744	$46,546,542	$19,335,313	$116,729,137
% Assets	0.1%	2.5%	11.8%	29.1%	39.9%	16.6%	100.0%
Average Contribution Rate ($)	$133	$98	$139	$249	$250	$364	$212
Average Contribution Rate (%)	16.0%	7.6%	7.7%	15.0%	36.5%	0.0%	13.4%
Prudential Avg. Contribution Rate (%) as of 12/31/2018	*4.8%*	*5.8%*	*6.6%*	*7.8%*	*9.5%*	*11.1%*	*7.4%*
Contributions	$27,920	$510,998	$1,275,731	$2,505,229	$2,924,239	$463,284	$7,707,401
Rollovers In*	$0	$84,240	$517,878	$408,281	$610,052	$178,412	$1,798,863
Total (Contributions + Rollovers In)	$27,920	$595,239	$1,793,609	$2,913,510	$3,534,290	$641,696	$9,506,264
Cash Distributions	$0	($7,581)	($9,446)	($110,364)	($203,588)	($292,993)	($623,972)
Rollovers Out	($3,493)	($25,615)	($107,251)	($394,537)	($1,915,910)	($2,042,088)	($4,488,894)
Total (Cash Distributions + Rollovers Out)	($3,493)	($33,196)	($116,697)	($504,901)	($2,119,498)	($2,335,081)	($5,112,867)
Net Activity	$24,426	$562,043	$1,676,912	$2,408,609	$1,414,793	($1,693,385)	$4,393,397
Total Participants**	27	349	573	701	743	322	2,715
Average Account Balance	$5,792	$8,503	$23,945	$48,506	$62,647	$60,048	$42,994
Prudential Avg. Account Balance as of 12/31/2018	*$2,900*	*$13,375*	*$39,050*	*$76,411*	*$106,786*	*$113,266*	*$64,203*
Median Account Balance	$982	$3,704	$12,825	$24,336	$33,605	$29,478	$18,059
Prudential Median Account Balance as of 12/31/2018	*$3,965*	*$10,522*	*$26,803*	*$47,337*	*$71,696*	*$108,734*	*$64,761*

*Rollovers In is the total dollars credited to participant accounts w ithin the period defined that originated in other qualified retirement plan accounts.

**Total column for participant count is a sum of participants across each age group. E.g. If a participant has both a main account and beneficiary account w ithin different age groups (decedent's date of birth), that participant w ill be counted tw ice.

Plan Activity

Contributions by Fund

INVESTMENT OPTIONS	1/1/2018 - 9/30/2018	%	1/1/2019 - 9/30/2019	%	Change	%
VANGUARD INSTITUTIONAL INDEX FUND INSTITUTIONAL SHARES	$1,268,377	19.2%	$1,556,270	20.2%	$287,894	22.7%
VANGUARD TOTAL INTERNATIONAL STOCK INDEX FUND INSTITUTIONAL SHARES	$892,024	13.5%	$1,101,521	14.3%	$209,497	23.5%
VANGUARD TOTAL BOND MARKET INDEX FUND INSTITUTIONAL SHARES	$673,889	10.2%	$737,115	9.6%	$63,226	9.4%
GUARANTEED LONG-TERM FUND	$616,389	9.3%	$720,956	9.4%	$104,568	17.0%
VANGUARD MID-CAP INDEX FUND INSTITUTIONAL SHARES	$580,021	8.8%	$673,366	8.7%	$93,345	16.1%
T. ROWE PRICE RETIREMENT I 2030 FUND I CLASS	$572,605	8.7%	$645,841	8.4%	$73,236	12.8%
VANGUARD SMALL-CAP INDEX FUND INSTITUTIONAL SHARES	$324,259	4.9%	$635,751	8.3%	$311,492	96.1%
T. ROWE PRICE RETIREMENT I 2020 FUND I CLASS	$456,638	6.9%	$485,031	6.3%	$28,394	6.2%
T. ROWE PRICE RETIREMENT I 2040 FUND I CLASS	$308,093	4.7%	$352,931	4.6%	$44,838	14.6%
PIMCO TOTAL RETURN ESG FUND INSTITUTIONAL CLASS	$284,458	4.3%	$290,904	3.8%	$6,446	2.3%
T. ROWE PRICE RETIREMENT BALANCED I FUND I CLASS	$79,147	1.2%	$129,545	1.7%	$50,398	63.7%
CALVERT EQUITY FUND CLASS I	$90,424	1.4%	$125,837	1.6%	$35,413	39.2%
LORD ABBETT SHORT DURATION INCOME FUND CLASS I	$96,669	1.5%	$103,507	1.3%	$6,838	7.1%
T. ROWE PRICE RETIREMENT I 2050 FUND I CLASS	$33,847	0.5%	$57,654	0.8%	$23,807	70.3%
T. ROWE PRICE RETIREMENT I 2010 FUND I CLASS	$70,993	1.1%	$46,619	0.6%	($24,375)	-34.3%
T. ROWE PRICE RETIREMENT I 2060 FUND I CLASS	$22,356	0.3%	$23,915	0.3%	$1,559	7.0%
PAX GLOBAL ENVIRONMENTAL MARKETS FUND INSTITUTIONAL CLASS	$10,986	0.2%	$20,637	0.3%	$9,651	87.8%
VANGUARD SMALL-CAP VALUE INDEX FUND INSTITUTIONAL SHARES	$207,528	3.1%	$0	0.0%	($207,528)	-100.0%
T. ROWE PRICE BALANCED I CLASS	$33,031	0.5%	$0	0.0%	($33,031)	-100.0%
Total Assets Contributed	$6,621,733	100.0%	$7,707,401	100.0%	$1,085,667	16.4%

Interfund Transfers

1/1/2019 to 9/30/2019

INVESTMENT OPTIONS	IN	OUT	NET
GUARANTEED LONG-TERM FUND	$445,527	($54,598)	$390,929
VANGUARD TOTAL BOND MARKET INDEX FUND INSTITUTIONAL SHARES	$249,464	($41,576)	$207,888
PIMCO TOTAL RETURN ESG FUND INSTITUTIONAL CLASS	$176,703	($56,936)	$119,767
LORD ABBETT SHORT DURATION INCOME FUND CLASS I	$54,819	($2,806)	$52,013
T. ROWE PRICE RETIREMENT I 2010 FUND I CLASS	$34,344	$0	$34,344
T. ROWE PRICE RETIREMENT I 2030 FUND I CLASS	$164,168	($142,958)	$21,210
VANGUARD TOTAL INTERNATIONAL STOCK INDEX FUND INSTITUTIONAL SHARES	$139,295	($121,067)	$18,228
T. ROWE PRICE RETIREMENT I 2060 FUND I CLASS	$0	($1,138)	($1,138)
PAX GLOBAL ENVIRONMENTAL MARKETS FUND INSTITUTIONAL CLASS	$3,318	($13,145)	($9,827)
T. ROWE PRICE RETIREMENT I 2040 FUND I CLASS	$1,000	($11,102)	($10,102)
T. ROWE PRICE RETIREMENT I 2050 FUND I CLASS	$537	($12,426)	($11,889)
CALVERT EQUITY FUND CLASS I	$27,317	($62,731)	($35,414)
T. ROWE PRICE RETIREMENT BALANCED I FUND I CLASS	$19,975	($89,721)	($69,746)
T. ROWE PRICE RETIREMENT I 2020 FUND I CLASS	$10,176	($112,652)	($102,476)
VANGUARD MID-CAP INDEX FUND INSTITUTIONAL SHARES	$33,492	($204,248)	($170,756)
VANGUARD INSTITUTIONAL INDEX FUND INSTITUTIONAL SHARES	$143,764	($327,810)	($184,046)
VANGUARD SMALL-CAP INDEX FUND INSTITUTIONAL SHARES	$52,394	($301,380)	($248,987)
TOTAL	$1,556,293	($1,556,293)	$0

Participant Distribution Statistics

Distribution Type	Amount of Withdrawals Taken 1/1/2018 - 9/30/2018	1/1/2019 - 9/30/2019	Change	% Change	# of Withdrawals 1/1/2018 - 9/30/2018	1/1/2019 - 9/30/2019	Change	% Change
Termination	$5,549,195	$4,550,170	($999,025)	-18%	117	93	(24)	-21%
Direct Transfer	$690,343	$157,018	($533,325)	-77%	9	9	0	0%
In-Service Withdraw al	$154,878	$219,840	$64,961	42%	13	16	3	23%
Death Distribution	$125,946	$35,789	($90,157)	-72%	16	13	(3)	-19%
QDRO	$0	$54,628	$54,628	n/a	0	2	2	n/a
Installment Payment	$49,588	$30,807	($18,781)	-38%	81	78	(3)	-4%
Required Minimum Distribution	$35,164	$36,872	$1,707	5%	12	16	4	33%
Hardship Withdraw al	$0	$27,226	$27,226	n/a	0	5	5	n/a
Return of Excess Deferrals/Contributions	$2,094	$517	($1,577)	-75%	3	3	0	0%
Grand Total	**$6,607,209**	**$5,112,867**	**($1,494,342)**	**-23%**	**251**	**235**	**(16)**	**-6%**

1/1/2019 - 9/30/2019						
	Amount of Withdraw als Taken			# of Withdraw als		
Distribution Sub-Type	Age < 50	Age >= 50	Total	Age < 50	Age >= 50	Total
Rollover	$383,253	$4,105,641	$4,488,894	10	53	63
Cash	$47,894	$576,079	$623,972	12	160	172
Grand Total	**$431,147**	**$4,681,720**	**$5,112,867**	**22**	**213**	**235**

Termination - A w ithdraw al that is taken w hen the participant is active and terminating from employment or is already in a 'Terminated' status.

Direct Transfer - Non-taxable transfer of participant assets from one type of tax-deferred retirement plan or account to another.

In-Service Withdraw al - A distribution that is taken w hile the participant is still active, before termination from employment.

Death Distribution - Distribution taken by a beneficiary. This could include required minimum distributions, installment payments, etc.

QDRO - Distribution taken by the recipient of a QDRO. This could include required minimum distributions, installment payments, etc.

Installment Payment - An Installment distribution is a payment option that disburses funds over time (i.e. monthly, quarterly, yearly).

Required Minimum Distribution - Minimum amounts that a participant must w ithdraw annually upon reaching a certain age or retirement. This w ould exclude any beneficiary or QDRO accounts.

Hardship Withdraw al - A distribution w hich is requested by a participant because of an immediate and heavy financial need that cannot be satisfied from other resources.

Return of Excess Deferrals/Contributions - Could include Actual Contribution Percentage (ACP), Actual Deferral Percentage (ADP), Excess Deferrals, Excess Annual Editions and/or Ineligible Contributions.

Participant Loan Statistics

Loan Initiations	Amount of Loans Taken 1/1/2018-9/30/2018	1/1/2019-9/30/2019	Change	% Change	# of Active Loans as of 9/30/2018	as of 9/30/2019	Change	% Change
General Purpose	$116,938	$170,877	$53,939	46%	22	30	8	36%
Residential	$0	$0	$0	0%	1	1	0	0%
Grand Total	**$116,938**	**$170,877**	**$53,939**	**46%**	**23**	**31**	**8**	**35%**

	1/1/2018-9/30/2018	1/1/2019-9/30/2019
# of Outstanding Active Loans	23	31
# of New Loans	10	13
Average Loan Balance	$8,664	$10,052
Total Outstanding Loan Balance	$199,276	$311,623

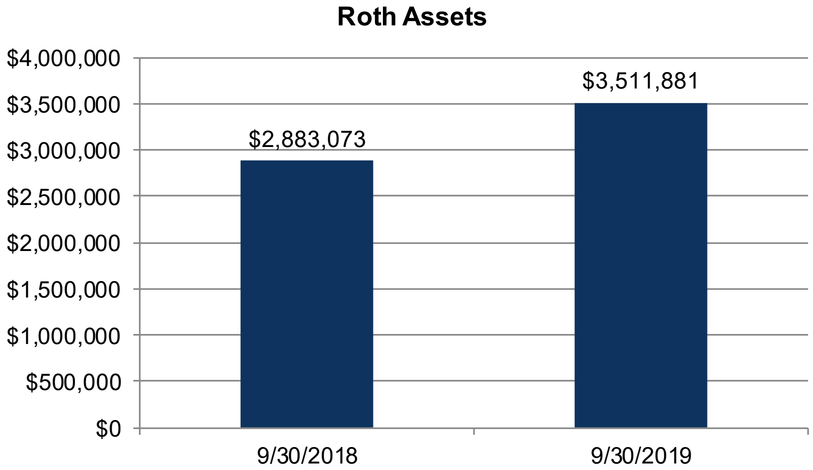
Participant Transaction Statistics

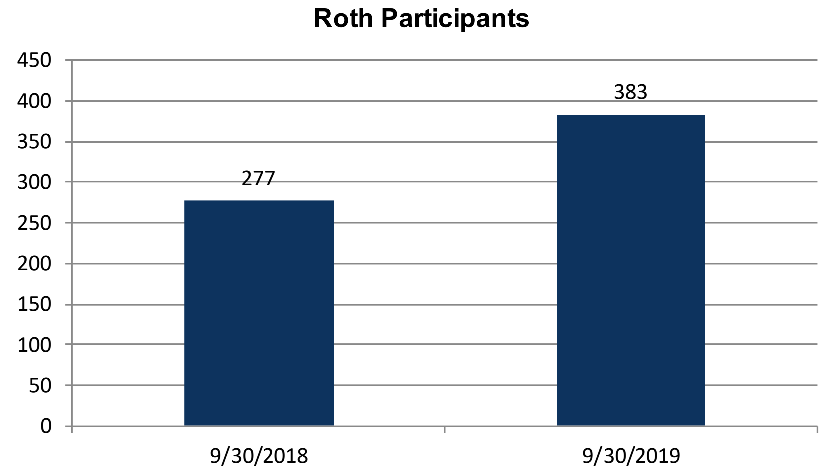
	10/1/2018 - 12/31/2018	1/1/2019 - 3/31/2019	4/1/2019 - 6/30/2019	7/1/2019 - 9/30/2019
Call Center				
Unique Callers	136	106	80	125
Total Call Volume	233	179	117	186

Call Center Reason Category	10/1/2018 - 12/31/2018	1/1/2019 - 3/31/2019	4/1/2019 - 6/30/2019	7/1/2019 - 9/30/2019
Account Explanations	48	41	28	61
Allocation Changes & Exchange	2	0	0	5
Contributions	7	6	2	8
Disbursements	81	68	66	72
Enrollments	2	1	0	2
Forms	0	0	0	2
Fund Information	9	3	0	2
Hardships	0	3	1	2
IFX	1	0	0	0
IVR or Web Assistance	45	18	5	7
Loans	23	12	9	6
Other	1	2	1	7
Payment Questions	0	0	0	0
Plan Explanations	6	4	2	3
Regen Reg Letter	0	0	1	0
Status of Research	0	0	0	1
Tax Information	0	8	1	0
Website Processing	8	13	1	8
Total	233	179	117	186

Definitions:
Unique Callers – The number of individuals that spoke to a Participant Service Center Representative during the reporting period (e.g., If the same individual called five times during the reporting period, they would only be counted once).
Total Call Volume – The number of calls to a Participant Service Center Representative during the reporting period (e.g., If the same individual called five times during the reporting period, they would be counted five times).

Roth Summary

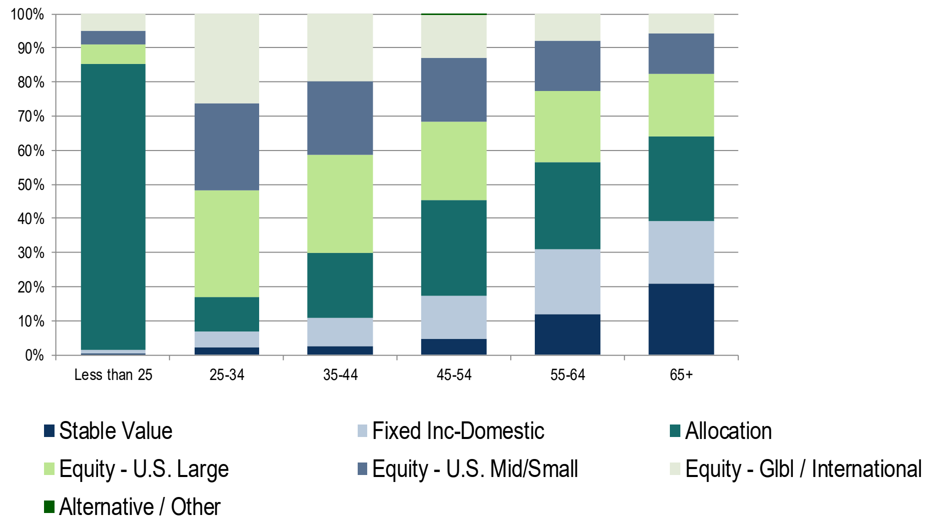




	9/30/2018	9/30/2019
Roth Assets	$2,883,073	$3,511,881
# of Participants in Roth	277	383
Partcipation Rate in Roth	10.7%	14.2%
Prudential % of Participants in Roth - As of 12/31/2018	12.5%	

Investment Diversification

Assets by Asset Class and Age
as of September 30, 2019



Asset Allocation

Asset Class	Your Plan Assets as of 9/30/2019	Your Plan % as of 9/30/2019
Stable Value	$11,692,455	10.0%
Fixed Inc-Domestic	$17,839,958	15.3%
Allocation	$29,359,883	25.2%
Equity - U.S. Large	$25,843,357	22.1%
Equity - U.S. Mid/Small	$19,370,533	16.6%
Equity - Glbl / International	$12,461,023	10.7%
Alternative / Other	$161,928	0.1%
Total Participant Balances	$116,729,137	100.0%

Fund Utilization By Age
as of September 30, 2019

	Less than 25	25-34	35-44	45-54	55-64	65+	Total
Average # of Funds per Participant	4.0	5.2	5.3	5.1	4.5	3.9	4.8
Prudential Participants Avg. # of Funds per Participant as of 12/31/2018	*6.1*	*6.0*	*5.8*	*5.6*	*5.4*	*4.1*	*5.5*
% of Plan Assets in Stable Value	0.3%	2.3%	2.7%	4.7%	12.0%	20.9%	10.0%
Prudential % of Plan Assets in Stable Value as of 12/31/2018	*11.3%*	*10.1%*	*12.3%*	*17.5%*	*29.3%*	*47.1%*	*25.8%*

GoalMaker® Participation

as of 9/30/2019

	12/31/2018	3/31/2019	6/30/2019	9/30/2019
Plan Assets for Participants in GoalMaker	$5,018,186	$6,202,342	$7,170,286	$7,766,882
# of Participants in GoalMaker	267	313	347	406
Participation Rate in GoalMaker	10.2%	11.8%	13.1%	15.0%
% of Plan Assets for GoalMaker Participants	5.1%	5.6%	6.2%	6.7%

Prudential Book of Business For Plans Offering GoalMaker – As of 12/31/2018

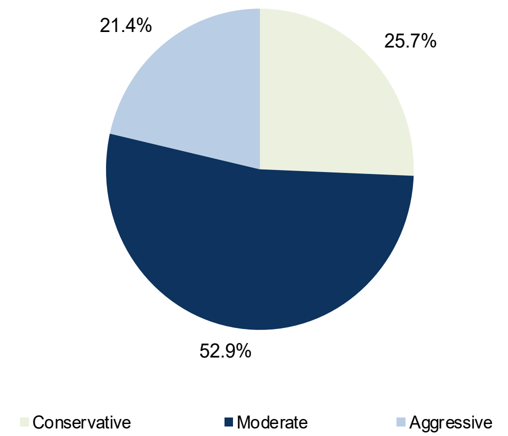
The participation rate in GoalMaker is 50.8%.

The percentage of plan assets for GoalMaker participants is 20.7%.

Participant Age Range	Conservative		Moderate		Aggressive		Total
	Active/Suspended	Terminated	Active/Suspended	Terminated	Active/Suspended	Terminated	
Less than 25	2	0	6	0	4	1	13
25-34	10	0	44	2	34	0	90
35-44	8	0	72	1	30	0	111
45-54	13	0	60	2	22	0	97
55-64	16	1	49	3	15	0	84
65+	4	0	5	1	1	0	11
Total	53	1	236	9	106	1	406

Participant Age Range	Conservative		Moderate		Aggressive		Total
	Active/Suspended	Terminated	Active/Suspended	Terminated	Active/Suspended	Terminated	
Less than 25	$1,643	$0	$12,014	$0	$2,520	$4,419	$20,595
25-34	$13,879	$0	$149,871	$33,532	$301,248	$0	$498,530
35-44	$114,060	$0	$1,126,437	$758	$432,633	$0	$1,673,887
45-54	$218,371	$0	$1,756,282	$40,183	$495,641	$0	$2,510,477
55-64	$1,206,203	$218,162	$766,027	$85,832	$362,456	$0	$2,638,680
65+	$220,302	$0	$84,375	$54,574	$65,462	$0	$424,713
Total	$1,774,458	$218,162	$3,895,004	$214,879	$1,659,960	$4,419	$7,766,882

Percentage of Assets by GoalMaker® Participation Portfolio - As of 9/30/2019



14.7%

average contribution rate (%) for active GoalMaker participants

0.9 Years

average length of time GoalMaker participants have been enrolled in GoalMaker

15.0%

GoalMaker participation rate for those who actively elected GoalMaker

Due to rounding, pie chart may not equal 100%

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Rep Stats

	10/1/2018-12/31/2018	1/1/2019-3/31/2019	4/1/2019-6/30/2019	7/1/2019-9/30/2019	Total
Group Presentations	5	0	0	6	11
Individual Participant Meetings	238	118	92	101	549
New Enrollments as a result of Group/Individual Meeting*	43	33	22	63	161
GoalMaker as a result of Group/Individual Meeting*	75	35	30	54	194
Contribution Rate Increases	67	26	18	25	136
Number of Rollovers	11	9	17	5	42
Rollover Dollars	$130,782	$229,252	$237,005	$636,623	1,233,662

*Enrollments above obtained by TDA Education Representatives

School Districts / Supervisory Unions 403b Plan Balance

Addison Northwest SD (006503)	$1,929,605.51
Champlain Valley School District (006514)	$13,452,206.01
Colchester School District (006515)	$7,782,497.06
Caledonia Central SU (006516)	$369,664.17
Essex North SU (006517)	$711,269.33
Essex Westford Unified SD (006518)	$28,884,779.68
Maple Run Unified SD (006519)	$6,591,036.64
Grand Isle Supervisory Union (006523)	$548,577.15
Lamoille South SU (006526)	$6,215,608.20
Greater Rutland Central SU (006537)	$1,208,140.71
South Burlington Sd (006544)	$16,823,804.29

Windsor Central Modfd Unfd Un SD (006556)	$2,068,550.42
Concord School District (016516)	$194,990.57
Alburgh Town SD (016523)	$707,233.06

Quarry Valley Unified Union SD (016537)	$1,177,715.10
Barnard Academy (016556)	$321,922.75
Lunenburg School District (026516)	$514,311.66

Windsor Central Mod Unif Un SD (026556)	$2,546,158.12

Rutland Town SD (036537)	$833,878.89

South Hero Town SD (056523)	$242,226.66

Champlain Islands UUSD (066523)	$745,389.26

School Districts / Supervisory Unions 403b Plan Balance

Mt. Abraham Unified School Distr (006502)	$145,218.02
Burlington SD (006509)	$494,111.59
Kingdom East SD District (006511)	$1,769,429.33

Franklin Northeast SU (006520)	$2,246,664.98
Lamoille North SU (006525)	$616,519.70
Milton Town SD (006527)	$77,884.31
North Country SU (006529)	$3,867.14
Orleans Central SU (006534)	$227,050.48
Orleans Southwest SU (006535)	$120,961.83

Enosburgh-Richford UUSD (016520)	$1,463,151.37
Lamoille North Mod Unif Union SD (016525)	$692,789.18
Town of Lowell SD (016529)	$13,764.93

Washington West SU (006551)	$2,491,968.21
Windham Southeast SU (006554)	$1,936,951.72
Windham Southwest SU (006555)	$108,380.60
Winooski SD (006560)	$1,190,019.04
Patricia A Hannaford Career Cen. (006561)	$182,723.99
Two Rivers Supervisory Union (006562)	$340,729.78

Twin Valley Unified Union SD (016555)	$328,449.41
Green Mtn USD (016562)	$335,109.49

Mount Mansfield UUSD (026513)	$5,061,476.51
Northern Mountain Valley UUSD (026521)	$317,770.60
Cambridge School District (026525)	$27,083.98
Jay Westfield Joint Elem School (026529)	$19,193.46

Southern Valley Unified Union SD (026555)	$104,157.89
Ludlow Mt Holly Union USD (026562)	$263,477.93

Vernon School District (066554)	$10,085.09
Windham Southeast SD (076554)	$1,885,245.68

Assets and contributions reflect actual participant account balances and do not include outstanding loan balances, forfeitures, and / or expense account assets.

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Section II: Economic Outlook

Prudential
Bring Your Challenges

Economic Perspective

October 28, 2019

THE GLOBAL ECONOMY: GROWTH CONTINUES TO WEAKEN

by **Robert F. DeLucia, CFA**
Consulting Economist

Summary and Major Conclusions:

The outlook for global economic growth is the primary determinant of the direction of world financial markets. The outcome is likely to be binary: Either a synchronized recovery in the world economy will spark a rebound in global equities and interest rates and a decline in the dollar; or continued economic stagnation will result in weakness in equity markets, sustained low levels in world interest rates, and continued dollar strength. A durable recovery in the global economy should also trigger a shift in equity market leadership from the US to the rest of the world.

- The future direction of the global equity, fixed-income, and currency markets is predicated upon the outlook for growth in the world economy. The major countries of the world remain in a synchronized economic slowdown, as GDP growth continues to downshift in all regions.
- Although economic growth has not collapsed, there are no credible signs of a cyclical bottom. Economic conditions worldwide are bifurcated, with growth in consumer spending, services, and employment offset by weakness in manufacturing and export trade.
- World GDP growth peaked in the first half of 2018 at an annual rate of nearly 4%, but has been in a steadily decelerating trend over the past 18 months. Third quarter GDP rose at an estimated rate of 3% and could slow to 2.5% over the next two quarters.
- Deflationary pressures are becoming more widespread, inducing world central banks to introduce extremely expansionary monetary stimulus. Continued weakness in demand could also result in fiscal policy initiatives to boost aggregate spending.
- There are several major contributors to the steady deterioration of economic conditions worldwide, including the ongoing trade war between China and the US; continued uncertainty surrounding Brexit and other geopolitical risks; and the lagged effects of previous monetary and fiscal tightening in China.
- The common denominator of these factors is business confidence. Heightened uncertainty regarding economic policy, domestic politics, and geopolitics has culminated in widespread retrenchment in capital formation and hiring on the part of business firms.
- A vicious inventory cycle worldwide has exerted enormous pressure on the global manufacturing economy. Export-oriented economies such as those of Germany, Japan, China, and South Korea have suffered disproportionately. The world auto sector is at the epicenter of the inventory drawdown.
- Following another two quarters of weakness, world GDP is likely to accelerate during 2020, rising at a 3.3% annual rate. This momentum should culminate in a further pick-up in growth to 3.5% in 2021.
- Deceleration in China's GDP over the past 18 months has not yet reached bottom. It seems plausible to assume that ongoing economic weakness will increase pressure on policymakers to deliver greater monetary and fiscal stimulus.

- China is the main engine of growth for the world economy. A more vibrant Chinese economy will have a powerful domino effect on the world manufacturing economy, providing stimulus for consumption, employment, and capital investment worldwide.

- Fears of a hard landing in China are unwarranted. Consumer spending, services, and real estate investment are all expanding at a rate well in excess of 5%, more than offsetting weakness in manufacturing, fixed-asset investment, and exports.

- A downturn in the global economy is unlikely to push the US into recession. Historically, the US economy has led the rest of the world; global recessions have always originated in America and spread to the world economy, not vice versa.

- The US also enjoys numerous structural advantages over most other countries, including a smooth-functioning, market-based economy; a healthy and resilient private sector; fewer government regulations; consistent capital inflows; an extremely sound banking system; and more favorable demographics.

- The US dollar (USD) appears to be in a long-term peaking process and could face significant downside over the next several years. Sustained depreciation of the USD would be an enormous positive force for the world economy and US corporate earnings.

- The outlook for global growth is the primary determinant of the direction of world financial markets. A synchronized world economic recovery would be the catalyst for a rebound in global equities and interest rates, and a decline in the US dollar.

- A sustained recovery in the global economy should trigger a shift in equity market leadership from the US to the rest of the world. Europe, Japan, and emerging Asia are highly leveraged to the global economy, and also offer far greater value relative to the US.

The future direction of the global equity, fixed-income, and currency markets is predicated upon the outlook for growth in the world economy. The major economies of the world remain in a synchronized slowdown, as GDP growth continues to downshift in all regions. This week's *Economic Perspective* provides an update on economic and policy trends within the world economy, along with implications for global financial markets.

HOW WOULD YOU BEST CHARACTERIZE WORLD ECONOMIC CONDITIONS?

I would characterize the world economy as follows: (1) World economic growth continues to weaken, with no signs of a cyclical bottom; (2) Economic conditions worldwide are bifurcated, with growth in consumer spending, services, and employment offset by profound weakness in manufacturing and export trade; (3) Deflationary pressures are becoming more widespread; and (4) Monetary conditions are extremely accommodative in most countries.

COULD YOU QUANTIFY THE MAGNITUDE OF THE WORLD ECONOMIC SLOWDOWN?

World GDP growth peaked in the first half of 2018 at an annual rate of nearly 4%, but has been in a steadily decelerating trend over the past 18 months. Third quarter GDP rose at an estimated annual rate of 3% and could slow to 2.5% over the next two quarters, which would be the slowest pace in several years. On a yearly basis, GDP growth peaked in 2017 at 3.8%, and has slowed to only 3% this year. Weakness is evident in all corners of the world, most notably among leading export-oriented economies in both developed and developing countries.

WHAT ARE THE KEY FACTORS RESPONSIBLE FOR THE SUSTAINED SLOWDOWN IN GROWTH?

There are several major contributors to the steady deterioration in economic conditions worldwide:

1. The ongoing *trade war* between China and the US has severely disrupted supply chains and triggered a major contraction in both the export trade and manufacturing sectors.

2. There is enormous uncertainty surrounding *Brexit* — the withdrawal of the UK from the European Union (EU). Business and consumer confidence in Europe and the UK have plummeted since the July 2016 referendum, triggering weakness in capital formation and job creation in the region.

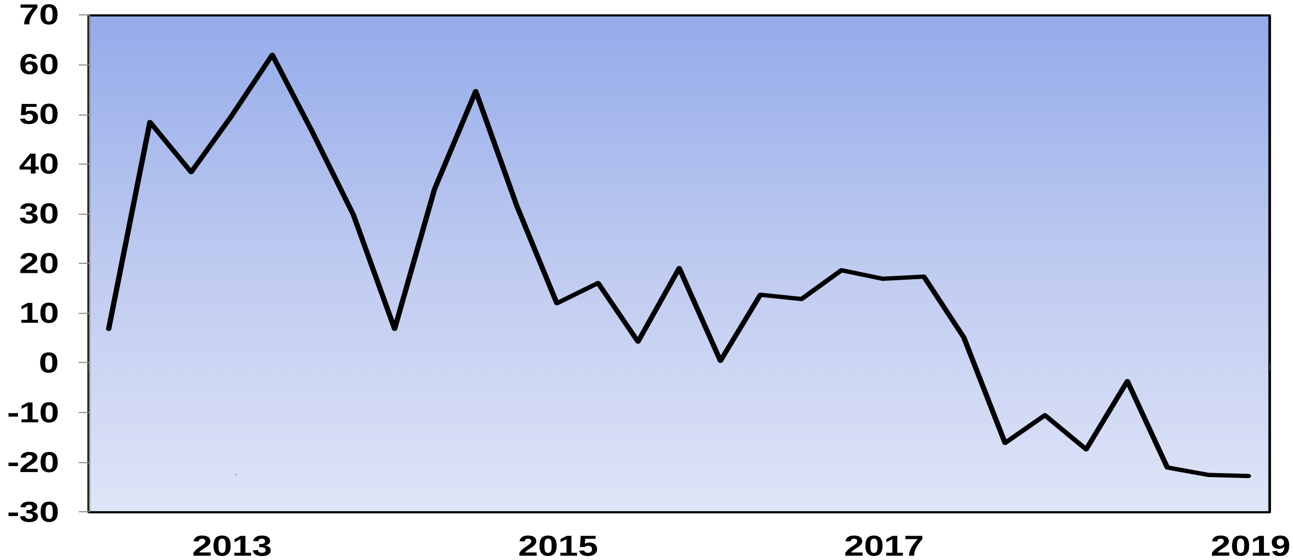
3. The lagged effects of *monetary and fiscal tightening in China* during 2017, a result of policymaker efforts to control excessive internal debt levels, remain a drag on growth. The government has eased credit policy somewhat but not enough to offset the previous period of draconian fiscal and monetary restraint.

4. The thrust of *US fiscal policy* has also contributed to global economic weakness, with a typical time lag. The Trump tax cuts that took effect in 2018 have gradually faded over the course of 2019. Similar to China, the US is a major engine of world economic growth.

5. A *vicious inventory cycle* worldwide has exerted enormous pressure on the global manufacturing economy. Export-oriented economies such as those of Germany, Japan, China, and South Korea have suffered disproportionately. The *world auto sector* has been the epicenter of the inventory drawdown, with China, Japan, and especially Germany being the main casualties.

6. A rise in *geopolitical risk* has undermined business confidence, and therefore plans for long-term investment in plant and equipment.

Chart 1: World Business Confidence Remains Depressed
The ZEW Indicator of Economic Sentiment
Source: Centre for European Economic Research



The common denominator of these six factors is ***business confidence***. Heightened uncertainty regarding economic policy, domestic politics, and geopolitics has resulted in widespread retrenchment by business firms in capital formation and hiring (see chart 1).

HOW DO EACH OF THESE UNKNOWN VARIABLES FACTOR INTO YOUR FORECAST?

Although a so-called grand bargain is unlikely, I continue to expect a significant truce between China and the US well in advance of the 2020 election. My assumptions regarding the outcome of the trade war with China have been overly optimistic. Instead of an interim truce as I was expecting, the trade war has escalated over the course of 2019, with leaders in both China and the US adopting an increasingly recalcitrant posture.

The logic for an eventual truce remains intact — improved economic, social, and political stability within both countries — but the timing remains highly uncertain. It seems plausible to assume that the key issue for President Trump is the 2020 election, suggesting a strong incentive on his part to stabilize trade conditions necessary to boost GDP growth, employment, and the stock market.

Continuation of the status quo — or worse, an escalation in trade restrictions — would be consistent with continued weakness in the US economy and ongoing volatility in equity markets. Conversely, an agreement to roll back tariffs would spark a rise in stock prices and an increase in capital spending budgets. Although far from assured, the latter outcome seems most likely, but the timing remains highly uncertain.

DOES THE OCTOBER 11 PARTIAL AGREEMENT WITH CHINA ALTER THE OUTLOOK?

No, I have been anticipating some partial agreement between the two parties for months; last week's meeting at the White House was only a small step forward and far from the breakthrough needed to lift business and investor confidence, and therefore risk-taking. Even without an escalation in tariffs, the current gridlock remains a serious headwind to world trade and to a resumption of healthy economic growth. As a reminder, the status of the December 15 tariffs on US imports of Chinese consumer goods remains uncertain and is another wild card in the outlook.

WHAT ARE YOUR ASSUMPTIONS REGARDING BREXIT?

Most recent developments have been encouraging, following more than three years of political turmoil and uncertainty surrounding the UK's exit from the European Union (EU). Unexpectedly, the UK government and the EU appear to be on the verge of a potential deal that would avoid a dreaded "hard" (no-deal) Brexit.

The situation remains highly fluid and could take a number of turns, but the odds of passing a constructive deal between the UK and the EU have increased significantly. The UK will likely ask for an extension of the October 31 deadline, suggesting that a speedy resolution of the issue is not likely. Although the timing and precise terms are unclear, ultimate passage of a deal should boost business and investor confidence enormously.

HOW LONG WILL CHINA REFRAIN FROM MORE AGGRESSIVE MONETARY AND FISCAL STIMULUS?

China has refrained from aggressive monetary and fiscal stimulus because of policymaker fears regarding the massive debt overhang and vulnerability of the banking system. The ratio of debt to GDP has risen sharply in recent years to an all-time high. Moreover, nonperforming loans in the banking system are at dangerous levels, raising fears of a credit crisis or banking sector collapse (see chart 2).

The Chinese economy remains weak and the deceleration in GDP over the past 18 months has not yet bottomed. Under these circumstances, it seems likely that ongoing economic weakness will intensify pressure on policymakers to deliver greater monetary and fiscal stimulus to stabilize China's economy. A sustained rebound in Chinese domestic demand is crucial for a recovery in the world economy.

Chart 2: China Debt Surges to Record Share of GDP
Total China Debt, Percent of GDP
Source: Bloomberg Economics

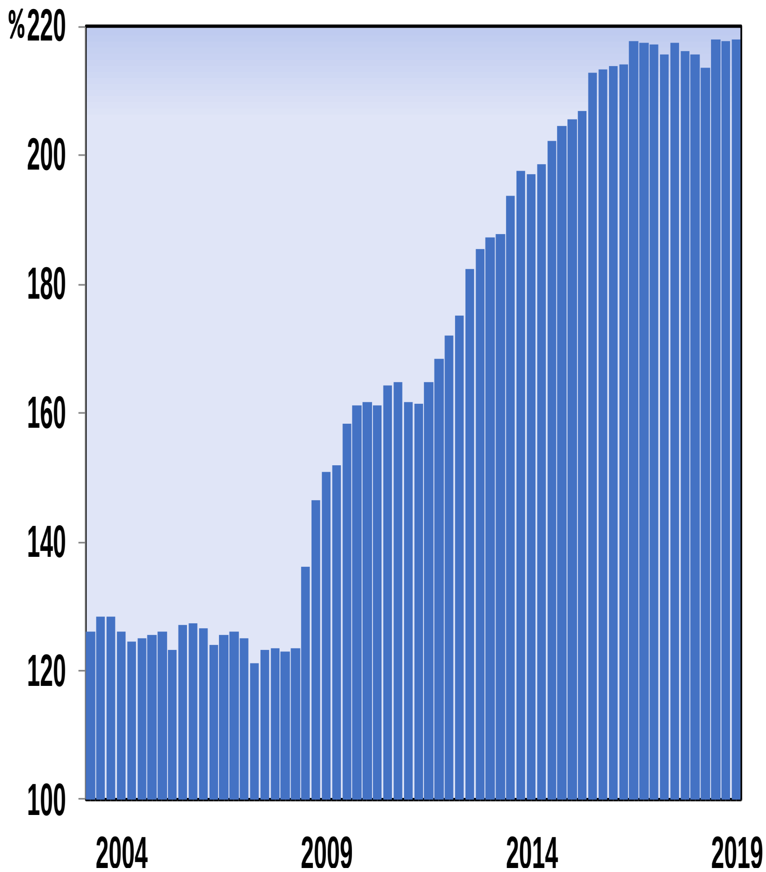
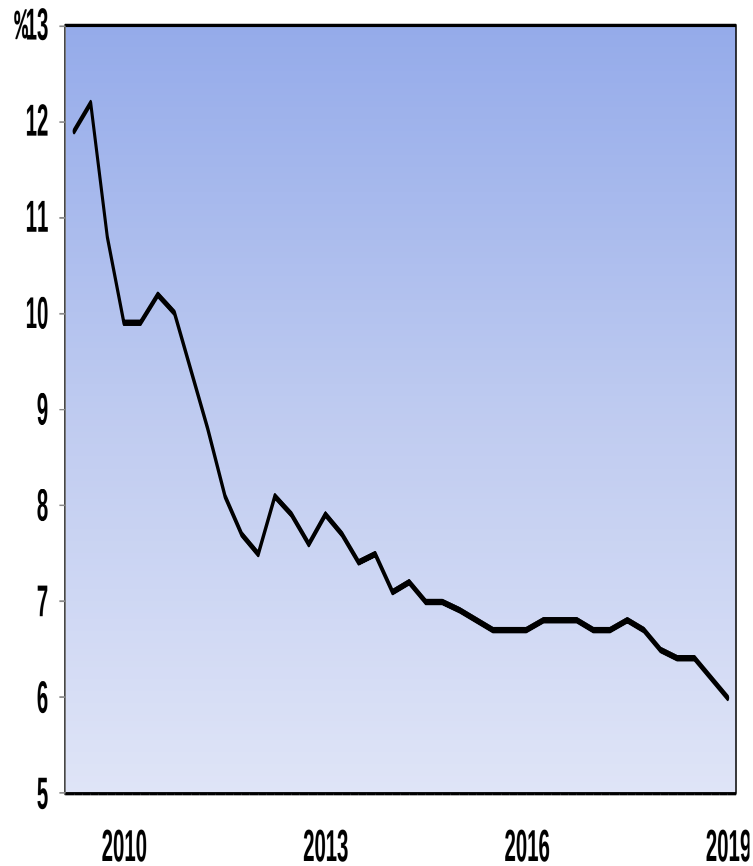


Chart 3: Slowest Economic Growth in China in Nearly Three Decades
China GDP Growth, Adjusted for Inflation, Annual Rate
Source: China National Bureau of Statistics

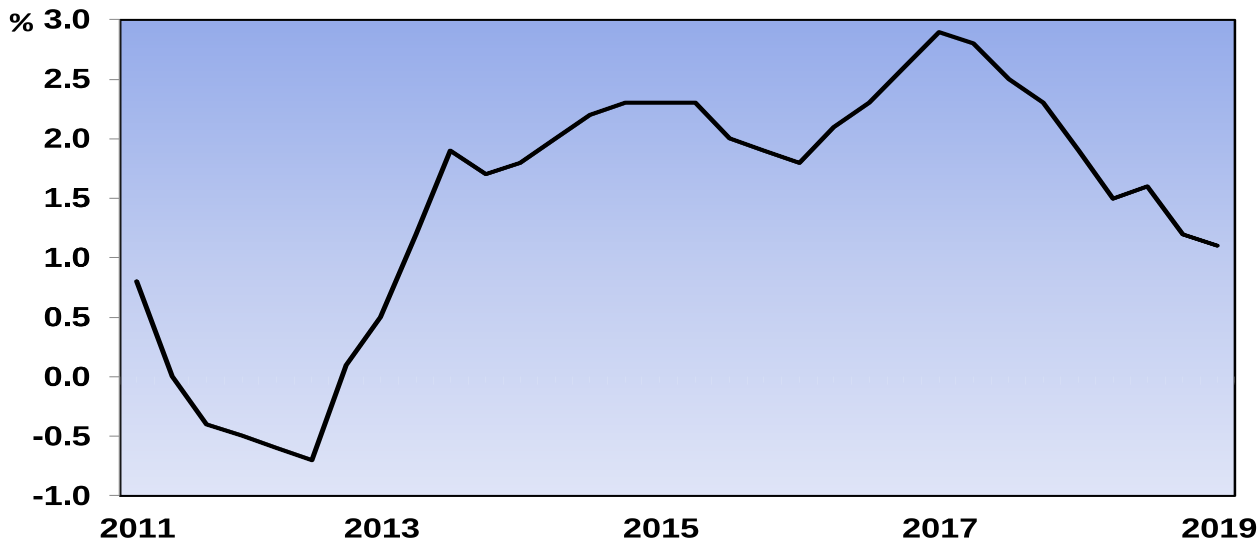


China is the main engine of growth for the world economy, accounting for one-third of global GDP growth annually. As such, a strengthening of its economy would culminate in a powerful ***domino effect*** on the world economy, initially boosting world manufacturing activity, which would then provide stimulus for consumption, employment, services, and capital investment worldwide.

HOW LIKELY IS AN OUTRIGHT RECESSION IN CHINA?

Although China's economy has weakened considerably over the past 18 months, a hard landing appears unlikely at this time. GDP growth is likely to fall below 6% in coming quarters — the slowest rate in nearly three decades — but economic growth should stabilize within a range of 5% to 6%. Consumer spending, services, and real estate investment are all expanding at a rate in excess of 5%, more than offsetting weakness in manufacturing, fixed-asset investment, and exports. Assuming at least a partial end to the trade war, growth should accelerate modestly in 2020 and 2021, back to a cyclical peak of 6.5% (see chart 3).

Chart 4: Continued Slowing in Eurozone Economic Growth
Eurozone GDP, Adjusted for Inflation, Annual Rate
Source: Eurostat



IS THE EUROZONE ECONOMY CAPABLE OF EXPANDING AT A FASTER PACE?

Investors should not expect a robust economic recovery in Europe, but economic conditions should stabilize around yearend and gradually improve during 2020. Financial conditions are steadily improving, courtesy of exceptional monetary ease by the European Central Bank (ECB). Domestic demand and employment have been resilient in the face of a recession in manufacturing and slump in export trade.

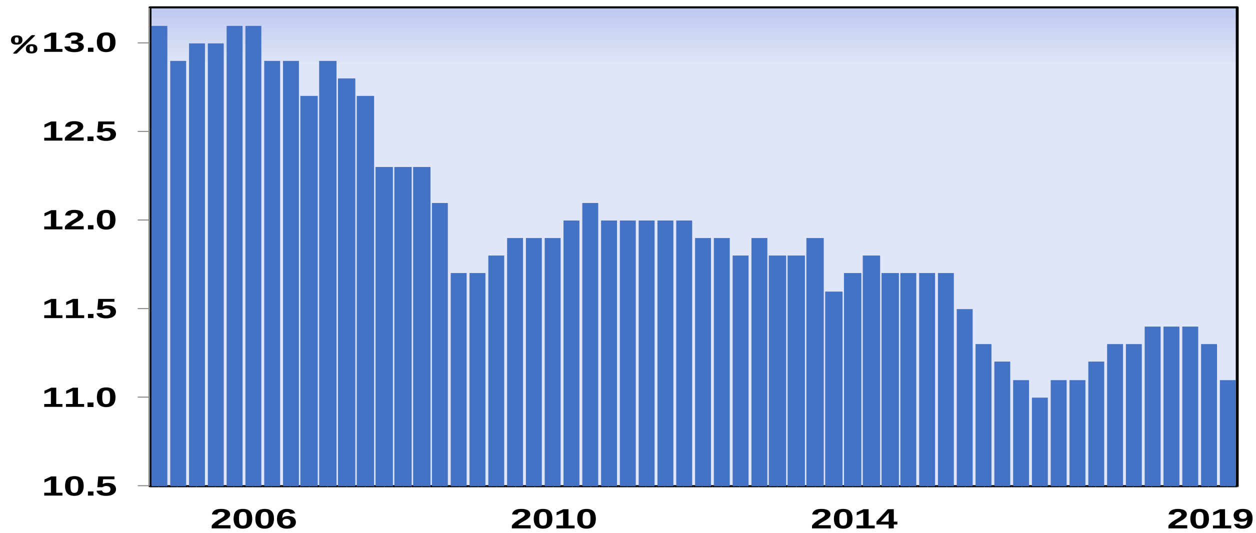
With business inventories in liquidation, stronger domestic demand in China and the US should support eurozone manufacturing and trade. Continued progress in Brexit negotiations should also support growth by lifting business confidence. Compared with only 1% this year, GDP growth could accelerate to 1.5% in both 2020 and 2021 (see chart 4).

COULD AN OUTRIGHT RECESSION IN THE WORLD ECONOMY TRIGGER A RECESSION IN THE US?

A downturn in the global economy is unlikely to push the US economy into recession. *Historically, the US economy has led the rest of the world; global recessions have always originated in America and spread to the world economy, not vice versa*. There are at least three reasons why a world recession would not culminate in a US recession:

1. **Export Trade**: The US economy is also far less dependent upon exports when compared with other major economies. Because the current slowdown is heavily influenced by weakness in world trade, the *strong domestic orientation* of the US has sheltered GDP.

Chart 5: Manufacturing Comprises Only 11% of US Economy
US Manufacturing Output, Percent of Total US GDP
Source: Bureau of Economic Analysis



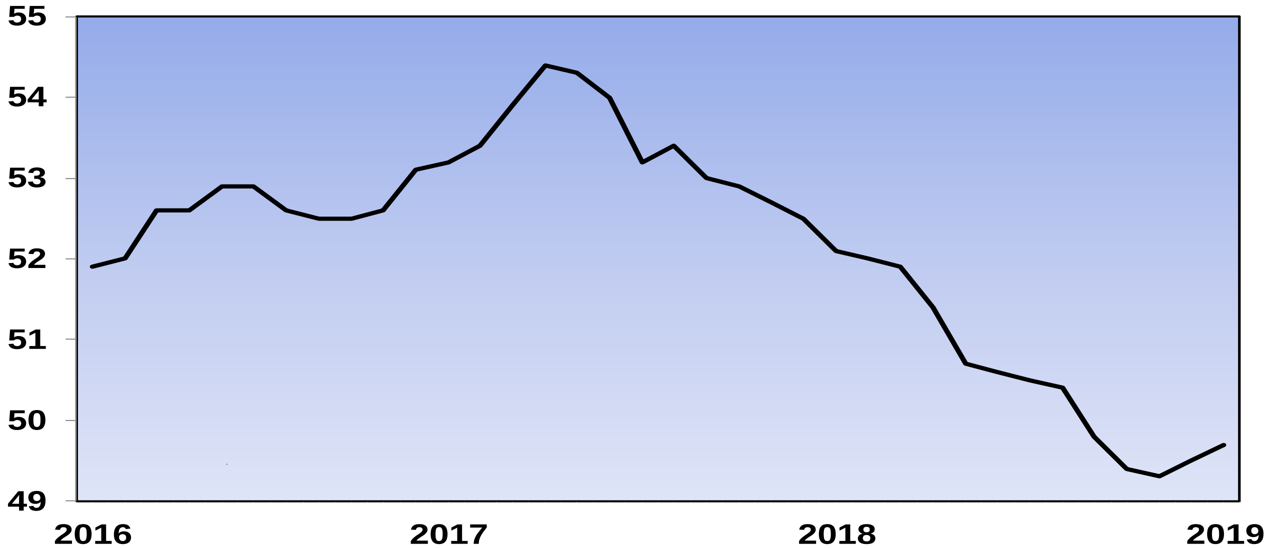
2. **Services Versus Manufacturing**: In contrast to virtually all major economies, the US economy has a low exposure to manufacturing and a *very high exposure to services*. Compared with 80% for services, manufacturing comprises only 11% of US GDP. Spending on services is relatively stable and seldom contracts (see chart 5).

3. **Export Trade**: The US economy is also far less dependent upon exports when compared with other major economies. Because the current slowdown is heavily influenced by weakness in world trade, the *strong domestic orientation* of the US has sheltered GDP.

4. **Structural Advantages**: The US also enjoys numerous structural advantages over most other countries, including a smooth-functioning, market-based economy; a healthy and resilient private sector; fewer government regulations; an extremely sound banking system; steady inflows of international capital; and more favorable demographics. The US economy is also far more diversified than other major economies.

Consequently, with current GDP growth of 2%, the US economy is expanding at close to potential. *By comparison, GDP growth in most major economies has declined to rates that are below potential*. While manufacturing and trade weakness in the global economy could eventually contaminate the US economy to an increasing degree, the probability of an outright recession is less than 50%.

Chart 6: World Manufacturing Slump in a Bottoming Process
Index of World Manufacturing
Source: JP Morgan



WHAT IS YOUR FORECAST FOR THE WORLD ECONOMY?

World GDP is on track to expand by less than 3% this year, down from 3.5% in 2018 and a peak growth rate of 3.8% in 2017. Eurozone GDP could expand by 1.2%, down from a peak growth rate of 2.8% in 2017, while China's GDP has slowed from nearly 7% in 2017 and 6.5% in 2018 to 6% or less this year. *I continue to assume that world economic growth will accelerate in 2020 following another two quarters of weakness, with GDP rising at a 3.3% annual rate*. A further pick-up in growth to 3.5% in 2021 is possible. There are preliminary signs of a cyclical bottom in global manufacturing (see chart 6).

WHAT ARE YOUR ASSUMPTIONS PERTAINING TO FOREIGN EXCHANGE MARKETS?

Leadership within foreign exchange markets is likely to change significantly over the next two years, based upon the following fundamental considerations:

- The US dollar (USD) has risen by nearly 15% over the past 18 months and is at a multi-year high. The USD is a classic *countercyclical currency*, appreciating during periods of economic weakness and financial stress, and declining during periods of economic strength.

- The USD is significantly *overbought and overvalued*, as global investors seek the safety of high-quality investments in the US.

- As the anti-dollar currency, the euro exhibits a strong *negative correlation* with the USD. The euro is undervalued by more than 15% on a purchasing-power-parity (PPP) basis, and appears attractive for patient investors.

- The pound (GBP) has declined by 28% since 2014 and is also undervalued against the USD. Assuming a reversal of the Brexit referendum, the GBP offers significant appreciation potential over a two-year period.

- Developing economy currencies are undervalued versus the USD and would benefit significantly from a world economic recovery.

Pulling it all together, the USD appears to be in a long-term peaking process and could face significant downside over the next several years. Sustained depreciation of the USD would be an enormous positive force for the world economy and US corporate earnings. A weak dollar is consistent with improving global liquidity and an expanding global economy, which in a ***virtuous cycle***, would exert further downward pressure on the dollar, providing stimulus for global growth.

WHAT ARE THE KEY INVESTMENT IMPLICATIONS?

The outlook for global economic growth is the primary determinant of the direction of world financial markets. The outcome is likely to be ***binary***: *A synchronized recovery in the world economy would be the catalyst for a rebound in global equities and interest rates, and a decline in the US dollar*. Conversely, continued economic stagnation would result in weakness in equity markets, sustained low levels in world interest rates, and continued strength in the US dollar.

A sustained recovery in the global economy should trigger a shift in equity market leadership from the US to the rest of the world. While US stocks are viewed as safer and more defensive, European, Japanese, and emerging Asian equities are more cyclically oriented, and more tightly correlated to global economic trends. Each of these markets also offers far greater value relative to that of the US. I expect non-US equities to begin to outperform the domestic equity market as evidence of a world economic revival becomes more apparent and widespread.

Robert F. DeLucia, CFA, was formerly Senior Economist and Portfolio Manager for Prudential Retirement. Prior to that role, he spent 25 years at CIGNA Investment Management, most recently serving as Chief Economist and Senior Portfolio Manager. He currently serves as the Consulting Economist for Prudential Retirement. Bob has 45 years of investment experience.

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CBOE Volatility Index: An index of implied equity market volatility, reflecting the market estimate of future volatility for the S&P 500 Stock Index over the next 30 days, using options.

MSCI Emerging Market Index: An index of equity market performance for developing markets, primarily in Asia, Latin America, and Eastern Europe. The index tracks both large-cap and small-cap stocks and is weighted by market capitalization.

MSCI World Ex US Index: Measures the performance of the large and mid cap segments of world, excluding US equity securities. It is free float-adjusted market-capitalization weighted.

Russell 2000 Small-Cap Index: Is an index measuring the performance of approximately 2,000 small-cap companies within the United States.

S&P 500® Index: Measures the performance of 500 widely held stocks in US equity market. Standard and Poor's chooses member companies for the index based on market size, liquidity and industry group representation. Included are the stocks of industrial, financial, utility, and transportation companies. Since mid 1989, this composition has been more flexible and the number of issues in each sector has varied. It is market capitalization-weighted.

State Street Investor Confidence Index: measures investor confidence or risk appetite quantitively by compiling actual buying and selling patterns of institutional investors.

US Trade-Weighted Dollar Index: An index that measures the value of the US dollar in relationship with other currencies, statistically weighted on the basis of importance to the US as trading partners.

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