CalPERS Trust Level Review
Investment Review

Period Ending December 31, 2019

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Investment Committee

March 16, 2020

Executive Summary

- Performance
  - PERF Calendar Year 2019 net return was 17.3%. This brings 5 and 10 year returns to 7.1% and 8.4% respectively.
    - Public Equity was the primary contributor to PERF performance, returning +25.8%
  - PERF Calendar Year 2019 excess return was -1 bp.
    - Primary contributors were Real Assets (+22 bps) and Income (+12 bps)
    - Primary detractors were Public Equity (-14 bps), Trust Level (-15 bps), and Allocation effects (-11 bps)
  - Affiliate Investment Program returns for FY2019 were in line with their respective asset allocations and closely tracked their benchmarks.
- Risk
  - The current risk model estimate for total plan volatility is 9.7%.
  - The model estimate is indicative of expected behavior given recent market experience. The bigger risk for PERF remains that of a severe and/or sustained drawdown in global equity markets which would not be predicted by the model.
  - Current active volatility estimate is 86 bps, within the 1.5% limit. Active volatility from public markets is 14 bps.
- Economic Update
  - Steady GDP and jobs market, benign inflation, stable sectoral imbalances and central bank/fiscal pivots all encouraged a risk rebound during 2019.
  - Central banks will likely keep policy very accommodative in 2020 but left tail risks (pandemic, trade, elections) make for a challenging year for returns.

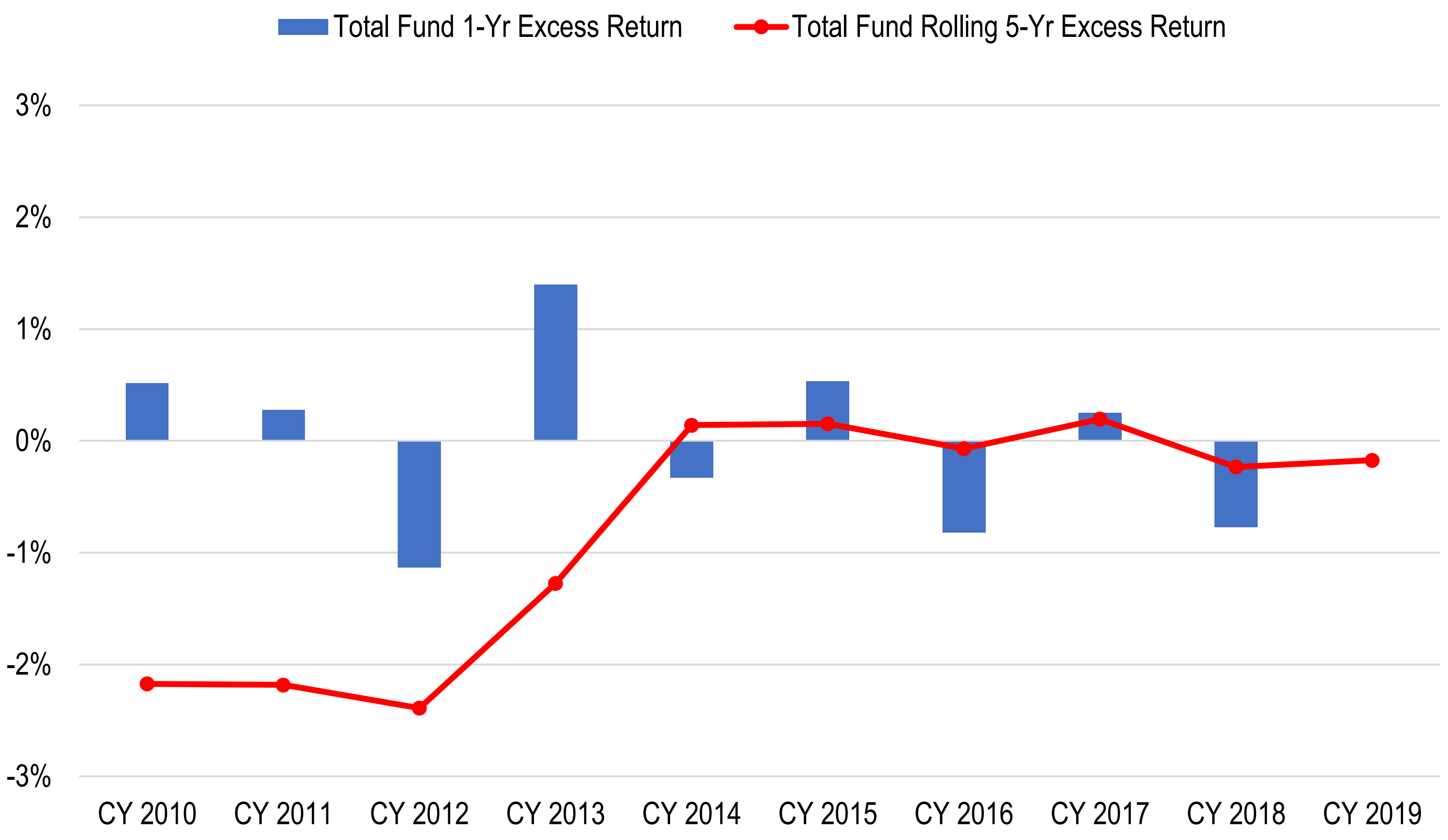
Performance & Risk

Performance Summary (as of December 31, 2019)

As of December 31, 2019 Funds Managed	Ending Market Value (MM)	20 Yr Net Return	20 Yr Excess bps	10 Yr Net Return	10 Yr Excess bps	5 Yr Net Return	5 Yr Excess bps	3 Yr Net Return	3 Yr Excess bps	1 Yr Net Return	1 Yr Excess bps	FYTD Net Return	FYTD Excess bps
Public Employees' Retirement Fund	394,844	5.7%	(32)	8.4%	(2)	7.1%	(17)	9.4%	(21)	17.3%	(1)	5.6%	(3)
CalPERS Health Care Bond Fund	490	4.3%	14	4.1%	37	3.1%	4	4.1%	4	8.7%	(3)	2.4%	(2)
CEPPT Strategy 1	4	-	-	-	-	-	-	-	-	-	-	-	-
CEPPT Strategy 2	0	-	-	-	-	-	-	-	-	-	-	-	-
CERBT Strategy 1	9,138	-	-	8.0%	25	6.8%	36	9.7%	30	21.7%	11	7.0%	11
CERBT Strategy 2	1,419	-	-	-	-	6.0%	33	8.6%	30	19.1%	7	5.9%	9
CERBT Strategy 3	663	-	-	-	-	5.0%	28	7.1%	25	16.2%	8	4.7%	6
Judges' Retirement Fund	39	1.9%	12	0.7%	8	1.2%	15	1.8%	13	2.3%	6	1.1%	5
Judges' Retirement System II Fund	1,855	5.5%	10	8.2%	17	6.6%	25	9.4%	28	20.8%	20	6.6%	10
Legislators' Retirement System Fund	116	5.5%	1	6.7%	26	5.1%	21	7.2%	23	16.2%	9	4.7%	5
Long-Term Care Fund	4,941	4.4%	13	5.7%	16	4.4%	5	6.6%	6	15.9%	(10)	4.5%	0
Terminated Agency Pool	170	-	-	-	-	3.5%	-	4.9%	-	11.7%	-	3.1%	-

PERF Excess Returns: Rolling 5-Yr

(as of December 31, 2019)



5 Year (-17 bps/yr excess return)

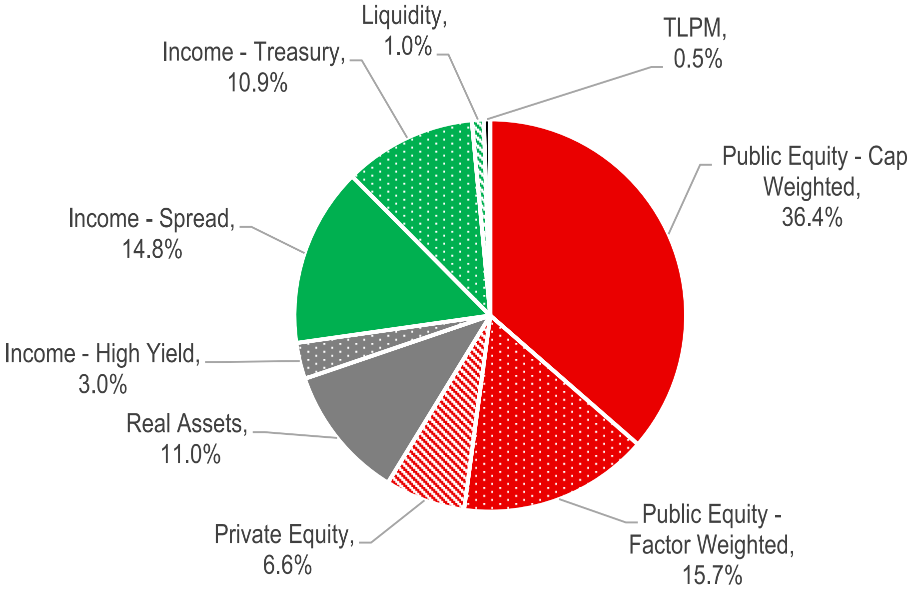
- Primary detractors
  - Public Equity (-6 bps)
  - Private Equity (-12 bps)
  - Allocation effects (-9 bps)
+ Primary contributor: Income (+8 bps)

1 Year (-1 bp excess return)

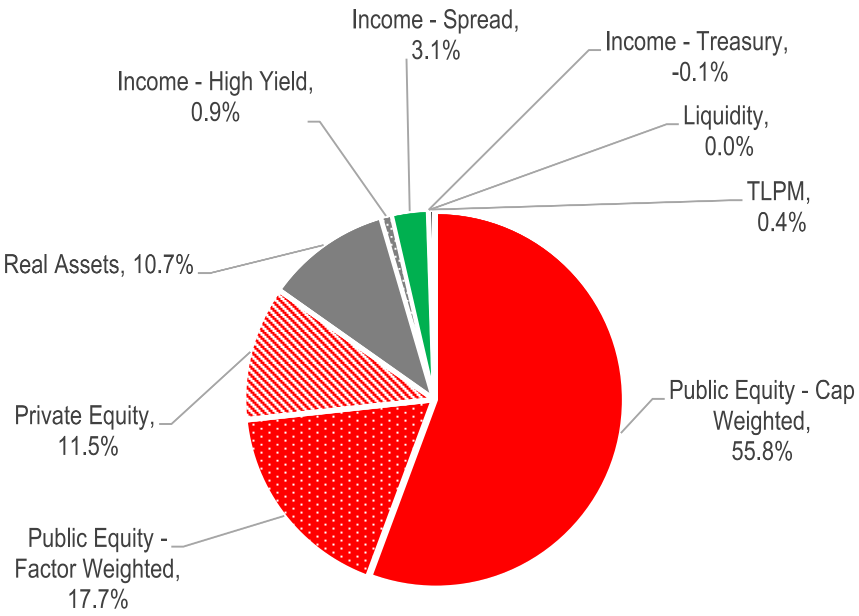
- Primary detractors
  - Public Equity (-14 bps)
  - Trust Level (-15 bps)
  - Allocation effects (-11 bps)
+ Primary contributors
  - Income (+12 bps)
  - Real Asset (+22 bps)

Growth Assets Dominate Risk (as of December 31, 2019)

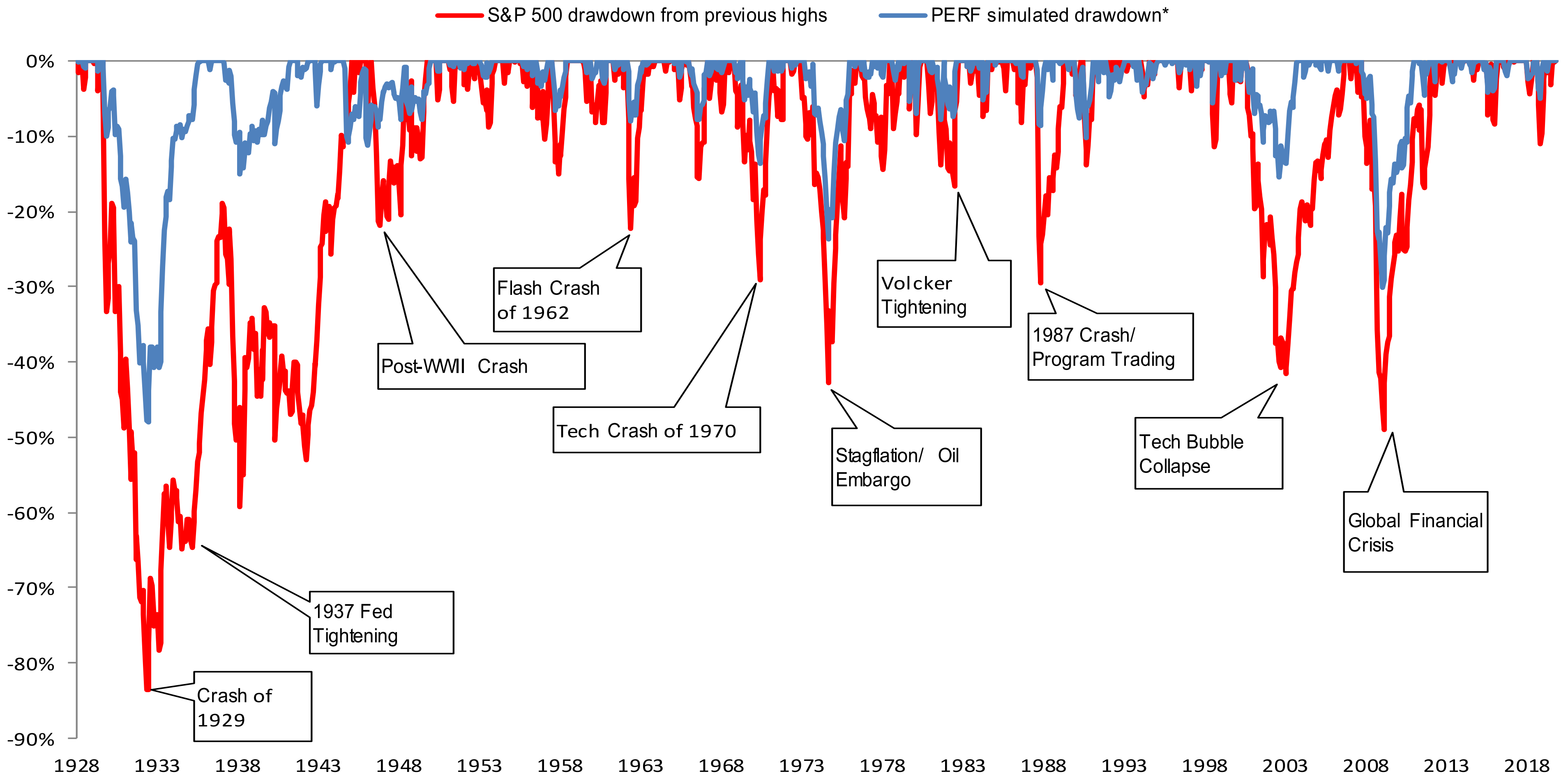
Asset Allocation



Risk Contribution by Asset Class



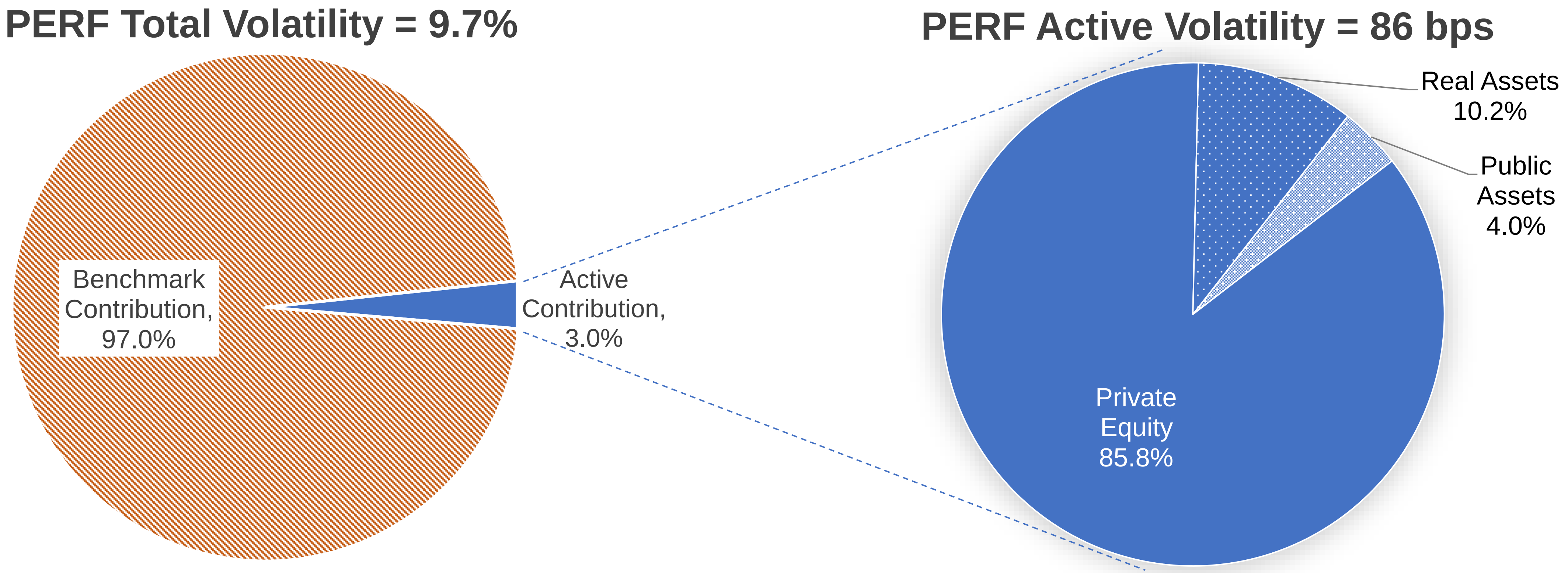
Equity Markets Drive PERF Drawdowns



*Simulated performance of PERF asset allocation rebalanced quarterly to the current policy targets assuming historical returns for current benchmarks. For historical periods where relevant indices are not available, risk comparable proxies are substituted.
Data Sources: Global Financial Data, Bloomberg Finance, MSCI, J.P. Morgan Asset Management

Active Risk in Total Fund Context (as of December 31, 2019)

- Strategic Asset Allocation (Policy Benchmark) determines the vast majority of risk for the PERF
- Of the active risk, only small portion is attributable to “controllable” public asset exposures. Majority is driven by private assets, subject to modeling challenges and non-investible benchmarks

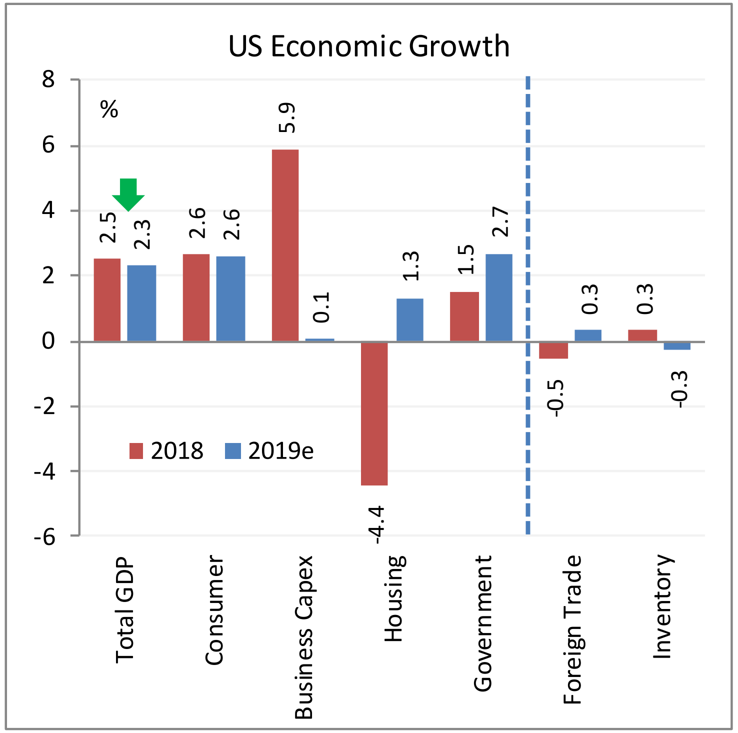


Economic Update

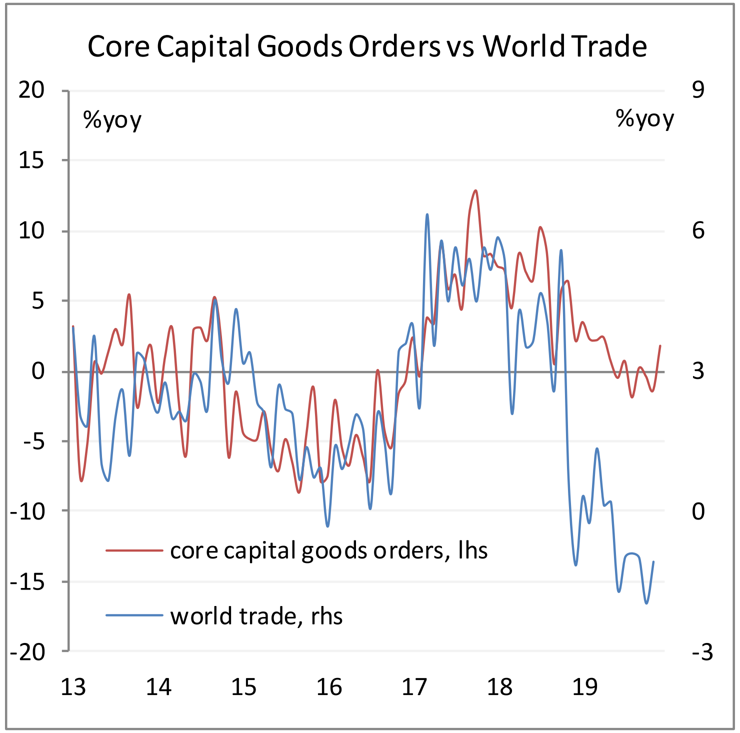
Review: stable growth/ benign inflation encouraged risk

- US economy grew by 2.3% during 2019, a remarkably stable outcome given the 'noise' around trade.
- US GDP volatility (standard deviation of growth rates) is at a post-war low.
- US jobs growth was also very stable (176K per month) but the labor share of income remained low.
- Housing effected a modest rebound.
- With weak earnings growth during 2019, the bearish mini cycle in capex is unresolved.

2.3% = expansion average



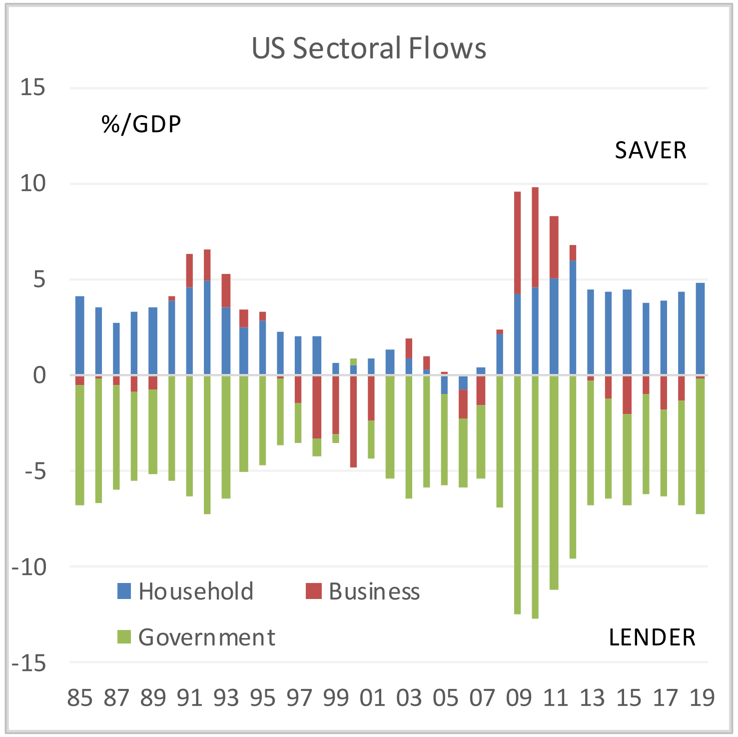
US business capex has been tepid



Outlook – tough road for returns

- Good news:
  - US imbalances remain low and consumers have a savings cushion.
  - Recession risk indicators remain below thresholds.
- Reasons for caution:
  - Consensus for US 2020 growth (1.8%) is below IMF (2.0%) and Fed (2.2%).
  - Coronavirus could pare ½ to 1% off China growth.
  - Election year uncertainty/ populism.
  - Available labor pool is diminishing.

Household surplus 'funding' federal deficit



IMF revisions were before coronavirus

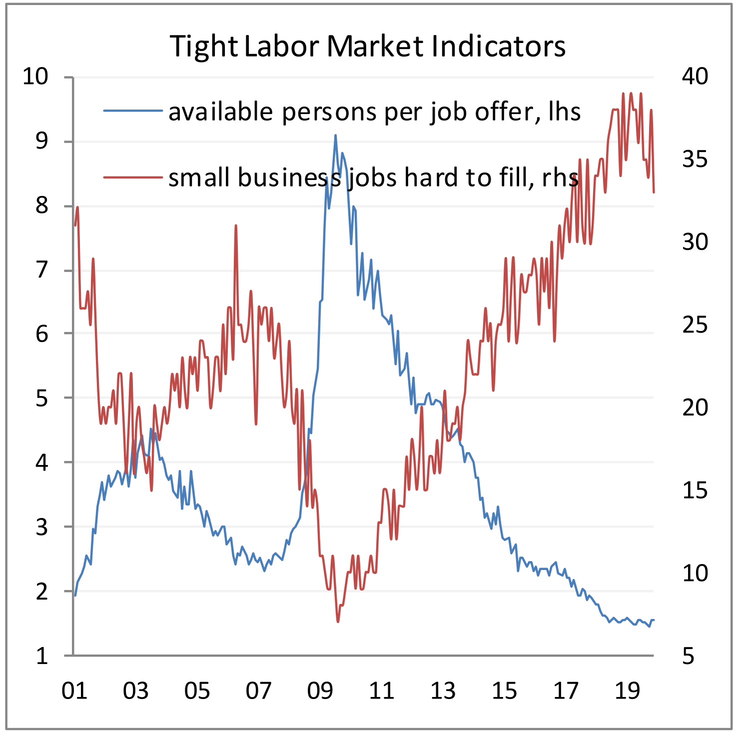
IMF Outlook for World GDP, January 2020

	2018	2019	2020	2021
World Output	3.6	2.9	3.3	3.4
Advanced	2.2	1.7	1.6	1.6
US	2.9	2.3	2.0	1.7
Japan	0.3	1.0	0.7	0.5
Euro Area	1.9	1.2	1.3	1.4
UK	1.3	1.3	1.4	1.5
Canada	1.9	1.5	1.8	1.8
Emerging	4.5	3.7	4.4	4.6
China	6.6	6.1	6.0	5.8
India	6.8	4.8	5.8	6.5
ASEAN	5.2	4.7	4.8	5.1
EMEA	3.1	1.8	2.6	2.5
Russia	2.3	1.1	1.9	2.0
Brazil	1.3	1.2	2.2	2.3
Mexico	2.1	0.0	1.0	1.6

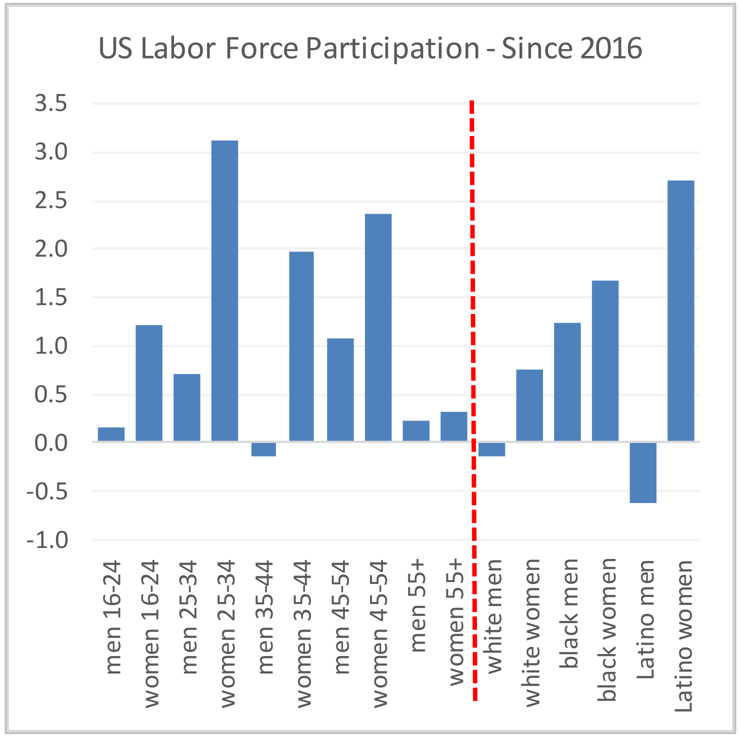
CalPERS

Outlook – jobs market constraint

Applicants scarce, jobs hard to fill



Further upside in participation rates?



Still scope for labor market to grow