

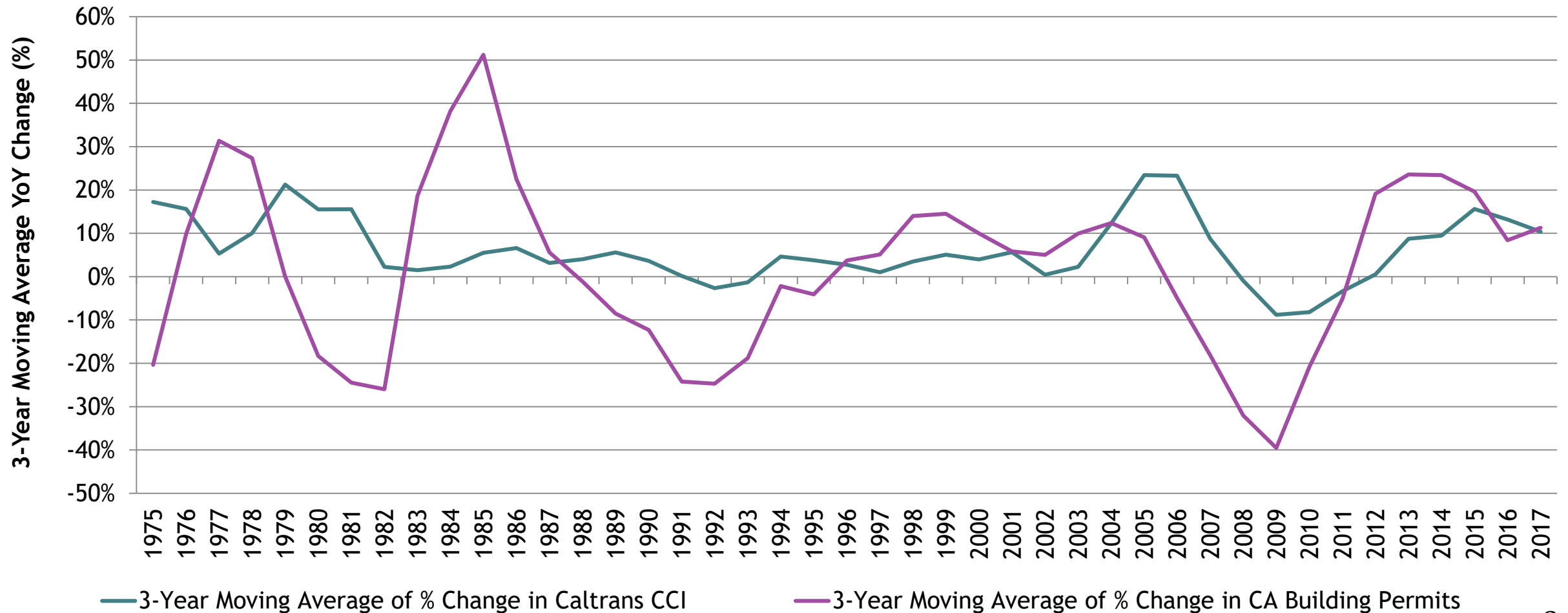
Measure M2 Next 10 Plan: Market Conditions Key Indicators Analysis and Forecast

Orange County Business Council
September 10, 2018

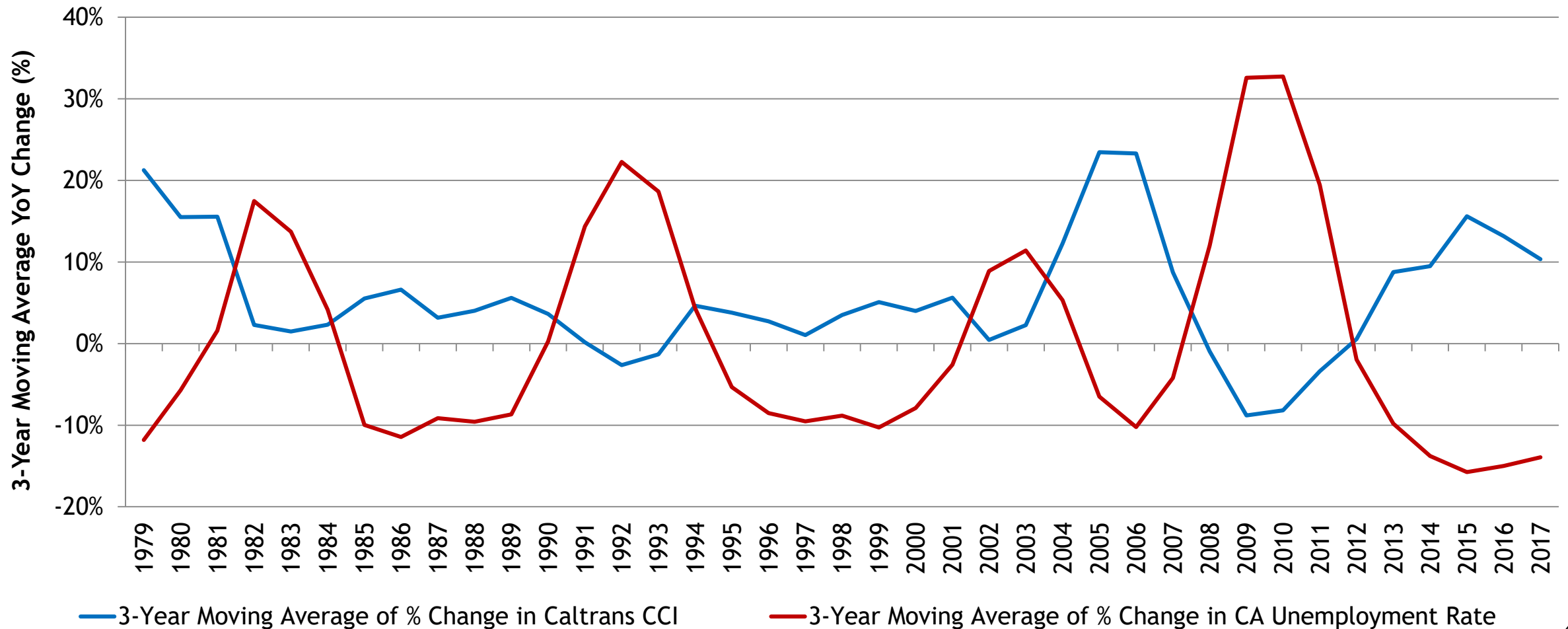
Orange County Transportation Infrastructure Construction Cost Pressure Index Model Components

- Economic Trends - State-level building permits and unemployment rate (Census and California Employment Development Department (EDD));
- Material Costs - Construction Aggregate, PCC Pavement, PCC Structural Concrete, Structural Steel and Bar Steel (Caltrans).
- Labor Costs - Localized construction wages of NAICS defined sectors provided by Bureau of Labor Statistics (BLS).
- Economic Conditions - Tight economy in 2002-2005 and slack economy in 2007-2011.

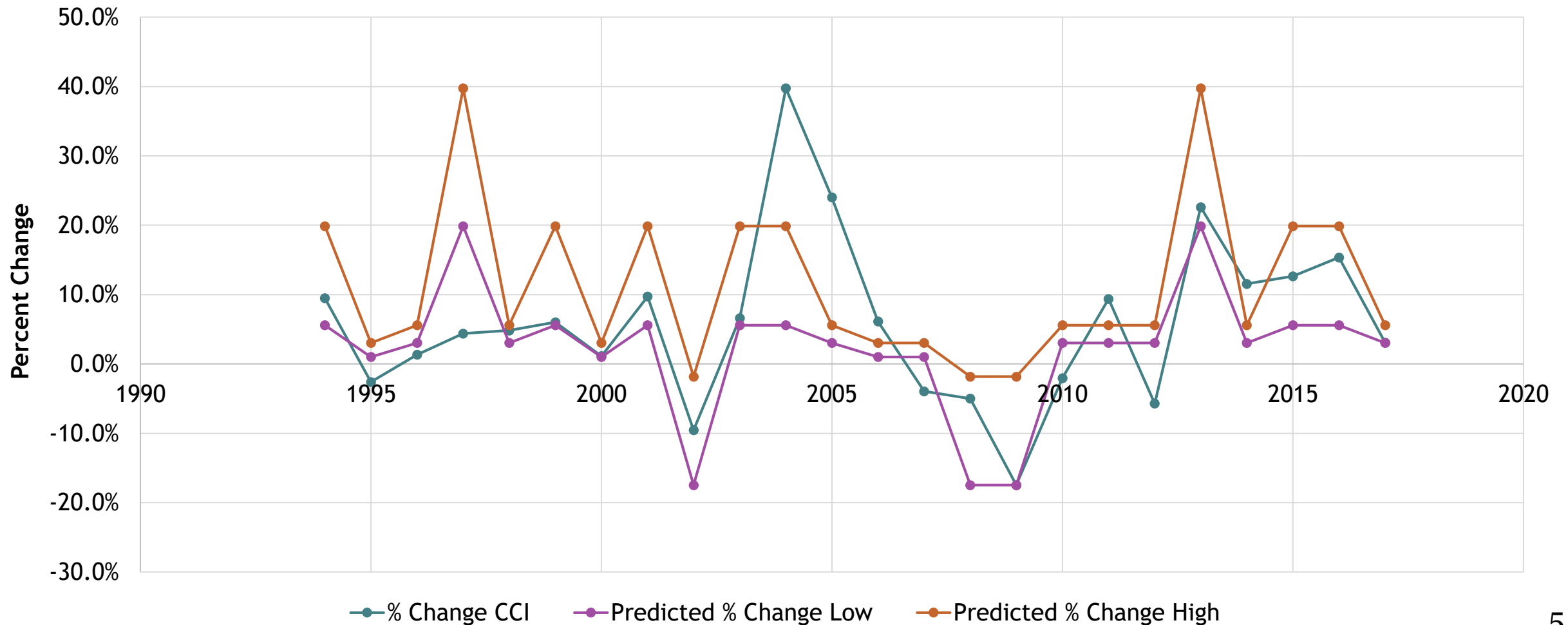
3-Year Moving Average of Year-Over-Year Percent Change in Caltrans CCI and Building Permits



3-Year Moving Average of Year-Over-Year Percent Change in Caltrans CCI and CA Unemployment Rates



Predicted vs. Actual Year-on-Year Percent Change in Caltrans CCI, 1994-2017



Forecast and Range of Orange County Transportation Infrastructure Cost Increases by Index Value²

- 2018 - Forecasted Index Value: 4
- 2019 - Forecasted Index Value: 3
- 2020 - Forecasted Index Value: 3

Range of Cost Fluctuations by Index Score			
Index	Low	Medium	High
0	-17%	-9.5%	-2%
1	-2%	-0.5%	1%
2	1%	1.5%	2%
3	2%	4%	6%
4	6%	8.5%	11%
5	11%	25.5%	40%

Potential Risks to Infrastructure Construction Cost Pressure Index

- Labor Costs

- Industry consolidation
- Aging construction workforce
- Weakening Housing Market

- Economic Trends

- Increased risk of Recession
- Weakening Economy
- Tariffs
- Political Uncertainty

Orange County's Construction Workforce: Labor Market Flows

Occupation (SOC Code)	Over/Under Supply in Orange County*
Engineers (17-2000)	102
Civil Engineers (17-2051)	-130
Construction and Extraction Occupations (47-0000)	-10,799
First-Line Supervisors of Construction Trades and Extraction Workers (47-1011)	-443
Construction Trades Workers (47-2000)	-9,136
Construction Laborers (47-2060)	-1,944
Construction Equipment Operators (47-2070)	-392
Other Construction and Related Workers (47-4000)	-421

*Undersupply is indicated by negative number, over supply is indicated by positive number

Commuters as a Percent of Orange County Construction Jobs

Year	Construction and Extraction Occupations	First-Line Supervisors of Construction Trades and Extraction Workers	Construction Trades Workers	Construction Laborers	Reinforcing Iron and Rebar Workers
2001	12.8%	15.6%	12.8%	9.1%	-0.1%
2002	12.4%	15.1%	12.4%	9.4%	-0.6%
2003	14.3%	17.3%	14.2%	12.7%	2.9%
2004	16.6%	19.1%	16.6%	14.0%	3.0%
2005	18.5%	20.9%	18.5%	16.1%	5.3%
2006	19.6%	22.0%	19.7%	16.4%	6.8%
2007	25.0%	27.0%	25.2%	21.9%	16.4%
2008	20.0%	22.2%	20.2%	16.3%	10.5%
2009	19.2%	21.4%	19.6%	16.4%	8.6%
2010	19.5%	21.5%	19.9%	17.1%	6.8%
2011	19.0%	21.0%	19.3%	15.9%	8.1%
2012	20.4%	22.7%	20.6%	17.8%	11.6%
2013	20.2%	22.3%	20.4%	17.1%	12.3%
2014	20.6%	22.8%	20.7%	17.0%	13.9%
2015	20.6%	23.2%	20.7%	17.2%	14.8%
2016	21.0%	23.8%	21.0%	18.6%	14.2%
2017	21.3%	24.0%	21.4%	19.3%	14.2%

OCBC Infrastructure Construction Cost Forecast

- Systematic Risks - more predictable and therefore in model
 - Construction/building environment
 - States economy influencing demand and cost
 - Direct measures of labor and materials cost

OCBC OC Transportation Infrastructure Construction Cost Index Score, 2018-2020		
Year	Index Score	Range of Cost Fluctuation
2018	4	6%-11%
2019	3	2%-6%
2020	3	2%-6%

- Idiosyncratic Risks - not predictable and therefore not in model
 - Tariffs and associated effects on cost of materials, from changing trade policy
 - Regulatory requirements/changes creating additional hurdles to the bidding process

Questions