SONOMA COUNTY ECONOMIC DEVELOPMENT BOARD

WINTER 2018
LOCAL ECONOMIC REPORT

FORECAST REPORT

2018

ECONOMIC DEVELOPMENT BOARD

EDB FOUNDATION SPONSORS

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MEDIA LEVEL

North Bay Business Journal — NORTH SAN FRANCISCO BAY AREA: SONOMA, NAPA, AND MARIN COUNTIES

SONOMA COUNTY BOARD OF SUPERVISORS

CONTENTS

EXECUTIVE SUMMARY

February 2018

The Sonoma County Economic Development Board is pleased to present the Winter 2018 Local Economic Report. Our research partner, Moody's Analytics, provided the data for this report. For additional information, questions, comments, or suggestions, please contact us at (707) 565-7170 or visit www.sonomaedb.org.

HIGHLIGHTS

The October wildfires had a blurred effect on employment. Projections for the next five years of employment growth are significantly lower than the previous five years of growth (18.1% growth from 2012-2017 versus 4.2% growth from 2017-2022). However, it's not clear that this projected slowdown in growth is caused by the wildfires; Moody's Fall 2017 5-year projection was pegged at 4.5%. Sonoma County is ranked 207 of 409 metro areas in the U.S., placing it at below the national average and slightly behind its group of comparative areas. But as the chain reactions of the wildfires play out over 2018 (both economically negative, such as displacement, and positive, such as increased economic stimulation), these projections may change to fit Sonoma County's reality.

Sonoma County remains in the mid-expansion phase of the business cycle, with labor markets tight and production output increasing. The county's wineries, craft breweries, and food manufacturing are still drivers of industry with newcomer industries like outdoor recreation and health & wellness surging with higher-than-average growth. Sonoma County's Gross Metropolitan Product is currently $26.3 billion, with 12.2% growth expected over the next five years. Still, productivity lags the state average, with Sonoma County industry generating $85,607 per worker to California's $98,475. Impediments to productivity and Gross Metropolitan Product growth will be contingent on labor availability, cost of doing business, and commercial property development.

The county's "unfavorable age structure" will be an inhibitor to future growth if trends continue. Roughly a fifth of all residents are 65+, with another 15% within 10 years of retirement age. This is contrasted by a smaller proportion of the youth population (0-19), which currently accounts for about a quarter of total population. Overall population growth has slowed. 2012-2017 experienced a 2.8% growth in population while 2017-2022 is projected to see just a 1.1% increase. Net migration in Sonoma County is experiencing the same decline in growth as population; only 1,900 net migrants are estimated to settle in Sonoma County over the next five years.


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Cursors
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Analyze
Acquire
Display
Save Recall
Print
Tools
Clear Display
Utility
Quick Action
Touch
Wave Gen1
Wave Gen2
Push to Select
Intensity
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-298.0ms
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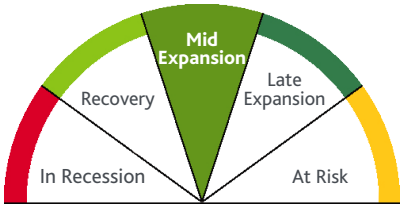
MOODY'S ANALYTICS

SONOMA COUNTY CA

METRO COMPARISON	EMPLOYMENT GROWTH RANK 2016-2018	EMPLOYMENT GROWTH RANK 2016-2021	RELATIVE COSTS LIVING	RELATIVE COSTS BUSINESS	VITALITY RELATIVE	VITALITY RANK
	Best=1, Worst=409		U.S.=100%		U.S.=100%	Best=1, Worst=402
Sonoma County	223 (3rd quintile)	207 (3rd quintile)	130%	114%	102%	125
Santa Barbara County	196 (3rd quintile)	193 (3rd quintile)	129%	119%	102%	120
Santa Cruz County	117 (2nd quintile)	78 (1st quintile)	144%	115%	105%	104
Sacramento MSA	153 (2nd quintile)	139 (2nd quintile)	108%	116%	110%	86
Monterey County	209 (3rd quintile)	188 (3rd quintile)	119%	112%	84%	267

BUSINESS CYCLE STATUS



STRENGTHS & WEAKNESSES

STRENGTHS

- World-class wineries and craft breweries serve as a magnet for tourism.
- Leader in organic food production.
- Diverse climate draws outdoor enthusiasts.

WEAKNESSES

- Limited land availability for new wineries and commercial construction.
- High costs relative to emerging tech hubs.
- Unduly tight labor market.
- Unfavorable age structure.

FORECAST RISKS

SHORT TERM ↑ | LONG TERM ↑

RISK EXPOSURE 2017-2022 **76** 1st quintile *Highest=1 Lowest=402*

UPSIDE

- Consumers embrace organic foods with even greater enthusiasm.
- Marin biotech firms expand in Sonoma
- Greater trade with East Asia boosts medical device and wine industries.

DOWNSIDE

- Declining housing affordability further discourages in-migration.
- More wine enthusiasts flock to the Pacific Northwest.

MOODY'S RATING

Aa2 SANTA ROSA AS OF JAN 30, 2013

ANALYSIS

Recent Performance. Sonoma County is finding its footing as damages wrought by October wildfires, the most destructive in recent history, begin to fade. Total payroll employment declined slightly in October as tourists to wine country canceled visits, causing employers in the important hospitality industry to put a hold on hiring and to pare back part-time staff.

Still, employment trends in recent months are positive, with total payroll gains in the months before the fires closely tracking those of midsize metro areas Santa Barbara, Sacramento, Santa Cruz and Monterey. While an outsize share of county jobs is on the pay scale's lower end, a tight job market pushes up wages for all workers: Per-worker wage and salary disbursements are rising among the fastest in all California metro areas.

Despite the decline in visitation and tourist spending in recent months, foreign markets remain a pillar of support. In contrast to most California metro areas, exports have risen steadily over the past two years as county wineries and electronics makers ramp up shipments to China and other emerging markets.

California's coastal areas have experienced significant declines in affordability over the past three years and Sonoma County is no exception. Despite surging house prices, labor shortages have kept homebuilders from meeting demand. The resulting squeeze on inventories has limited options for buyers and kept prices on the rise, contributing to a decline in home sales.

Resilience. Sonoma County will advance cautiously over the next few quarters as hotels, wineries, and other goods producers repair fire-related damage, but rebuilding efforts will not go unrewarded. Hotel bookings and revenues fell sharply in the wake of the Tubbs fire, which consumed much of downtown Santa Rosa, but most vineyards and wineries were spared and many have already begun to welcome back visitors. As disposable incomes rise in the West and the nation, rising tourist visits to wine country will enable the county to make up most of the economic output lost in the wake of the fires.

While vintners and hospitality operators will face greater competition from wineries in the Pacific Northwest, Sonoma's allure as a world-class destination for wine, cuisine and craft beer will draw a broader range of food and beverage enthusiasts. Diverse outdoor recreational opportunities and a host of holistic health centers will be a further boon: Destination spending on wellness treatments has risen nearly twice as fast as overall travel spending in recent years.

Risks rising. Bedrock winemaking and tourism will recover, but the loss of several thousand housing units to the Tubbs fire poses considerable risk to the outlook. Affordable housing units were in short supply before the blazes, and the destruction of approximately 3% of the county's housing stock will put additional upward pressure on house prices. A more severe decline in affordability would put a dent in labor force growth. In-migration to Sonoma County has slowed in tandem with declining affordability, and at the current rate of construction, it will be at least two years before housing units lost in the blazes are replaced. Longer term, the rising incidence of drought and adverse climate conditions could deal a setback to the wine and agriculture industries at the core of Sonoma's industrial base.

Sonoma County will regain its step as rising tourist visits buoy its pivotal winemaking and tourism industries. However, rising land and labor constraints will apply restraint. Longer term, world-class wineries, breweries, and restorative care centers will enable the county to match California's other mid-size metro areas in job and income gains.

Jesse Rogers *1-866-275-3266*
December 2017 *help@economy.com*

2011	2012	2013	2014	2015	2016	INDICATORS	2017	2018	2019	2020	2021	2022
22.2	22.2	22.8	24.0	25.4	25.9	Gross metro product (C09$ bil)	26.3	27.0	27.6	27.9	28.7	29.5
2.3	*0.3*	*2.3*	*5.5*	*5.9*	*1.8*	*% change*	*1.6*	*2.8*	*2.1*	*1.1*	*2.9*	*2.9*
169.5	172.6	180.9	191.1	196.8	201.7	Total employment (ths)	203.8	206.8	208.6	208.7	210.0	212.4
1.2	*1.8*	*4.8*	*5.6*	*3.0*	*2.5*	*% change*	*1.0*	*1.5*	*0.9*	*0.0*	*0.6*	*1.1*
10.1	8.8	7.0	5.6	4.4	4.0	Unemployment rate (%)	3.5	3.1	3.0	3.8	4.3	4.2
5.5	4.4	4.2	6.3	8.4	4.1	Personal income growth (%)	3.4	3.6	4.1	4.1	4.5	4.5
61.0	61.5	63.4	65.3	69.7	73.9	Median household income ($ ths)	76.0	78.3	80.7	83.2	85.8	88.4
487.6	490.5	494.7	499.2	501.5	503.1	Population (ths)	504.2	505.0	505.9	506.9	508.1	509.8
0.6	*0.6*	*0.8*	*0.9*	*0.5*	*0.3*	*% change*	*0.2*	*0.1*	*0.2*	*0.2*	*0.2*	*0.3*
1.4	1.7	2.8	3.4	1.0	0.9	Net migration (ths)	0.5	0.0	0.2	0.2	0.5	1.0
449	312	453	419	431	621	Single-family permits (#)	906	1,183	1,326	1,349	1,374	1,371
183	248	593	244	190	298	Multifamily permits (#)	347	451	375	318	322	335
180.1	179.8	208.3	238.9	260.4	282.2	FHFA house price (1995Q1=100)	306.1	319.6	329.3	336.4	344.0	353.7

ECONOMIC HEALTH CHECK

3-MO MA

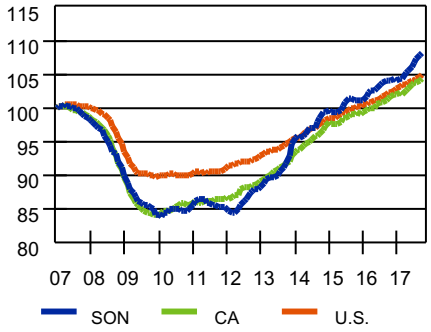
	May 17	Jun 17	Jul 17	Aug 17	Sep 17	Oct 17
Employment, change, ths	0.0	0.4	0.2	0.4	0.2	0.2
Unemployment rate, %	3.5	3.5	3.4	3.5	3.6	3.8
Labor force participation rate, %	63.3	63.1	62.8	62.6	62.7	62.9
Employment-to-population ratio, %	61.0	60.9	60.7	60.4	60.4	60.6
Average weekly hours, #	32.6	32.5	32.6	32.5	32.6	32.2
Industrial production, 2012=100	105.9	106.3	106.7	106.7	107.1	107.0
Residential permits, single-family, #	605	743	716	1,166	1,147	1,389
Residential permits, multifamily, #	189	167	123	579	609	603

Better than prior 3-mo MA | Unchanged from prior 3-mo MA | Worse than prior 3-mo MA

Sources: BLS, Census Bureau, Moody's Analytics

BUSINESS CYCLE INDEX

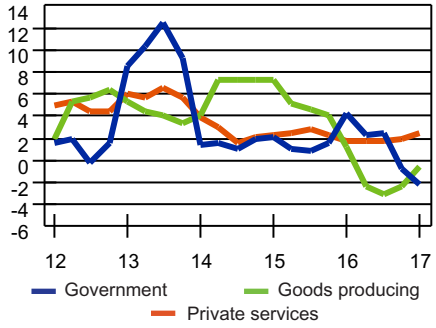
JAN 2007=100



Source: Moody's Analytics

CURRENT EMPLOYMENT TRENDS

% CHANGE YR AGO



Sources: BLS, Moody's Analytics

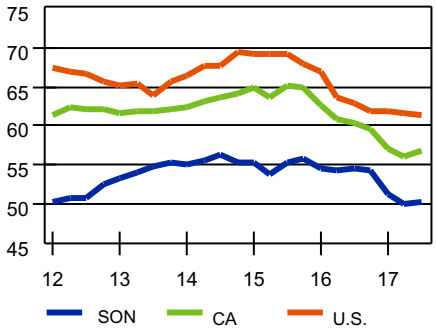
% CHANGE YR AGO, 3-MO MA

	Oct 16	Apr 17	Oct 17
Total	2.4	1.1	0.7
Mining	0.1	-0.2	0.1
Construction	8.3	4.8	6.5
Manufacturing	1.6	-7.3	-7.3
Trade	0.2	-1.5	0.5
Trans/Utilities	-0.7	6.4	4.9
Information	1.3	-1.4	0.2
Financial Activities	2.5	-2.2	-1.4
Prof & Business Svcs.	4.7	8.2	0.9
Edu & Health Svcs.	2.8	3.1	3.4
Leisure & Hospitality	0.3	-0.1	2.7
Other Services	4.3	3.5	3.3
Government	2.8	2.7	-0.9

Sources: BLS, Moody's Analytics

DIFFUSION INDEX

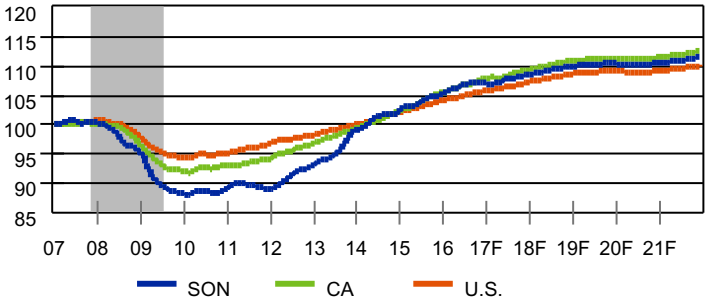
3-DIGIT NAICS LEVEL, 6-MO MA



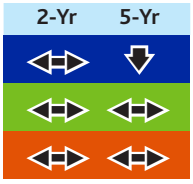
Sources: BLS, Moody's Analytics

RELATIVE EMPLOYMENT PERFORMANCE

JAN 2007=100



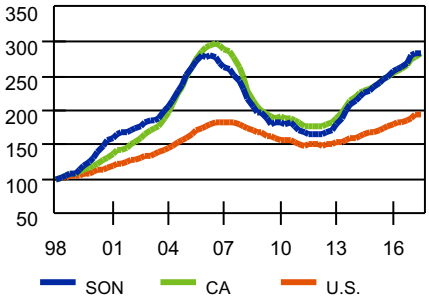
FORECAST VS. 6 MO PRIOR



Sources: BLS, Moody's Analytics

HOUSE PRICE

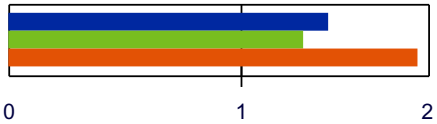
1998Q1=100, NSA



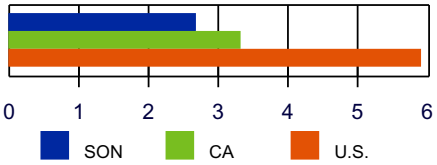
Sources: FHFA, Moody's Analytics

VACANCY RATES

HOMEOWNER, % HOUSES FOR SALE



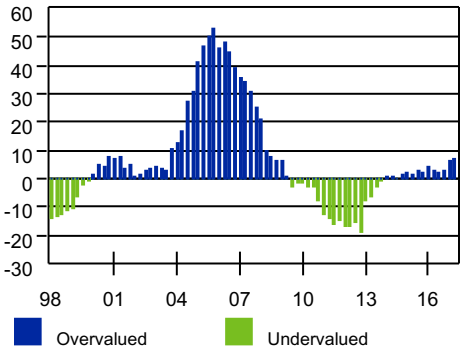
RENTAL, % INVENTORY FOR RENT



Sources: Census Bureau, ACS, Moody's Analytics, 2016

HOUSE PRICE TRENDS

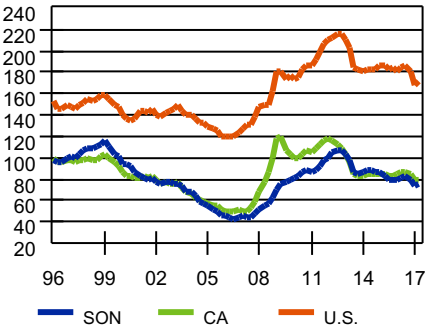
%



Sources: FHFA, Moody's Analytics

HOUSING AFFORDABILITY

GREATER THAN 100=MORE AFFORDABLE



Sources: NAR, Moody's Analytics

EMPLOYMENT AND INDUSTRY

TOP EMPLOYERS

Kaiser Permanente	2,640
Graton Resort & Casino	2,000
St. Joseph Health System	1,578
Keysight Technologies	1,300
Safeway Inc.	1,200
Medtronic CardioVascular	1,000
Amy's Kitchen	987
Sutter Santa Rosa Regional Hospital	936
Wells Fargo	916
Lagunitas Brewing Co.	900
Jackson Family Wine	800
Cyan	700
Wal-Mart Stores Inc.	650
Hansel Auto Group	600
AT&T	600
Lucky	550
Santa Rosa Community Health Centers	523
Pacific Gas and Electric Co.	500
Petaluma Acquisitions	455
Ghilotti Construction Co.	425

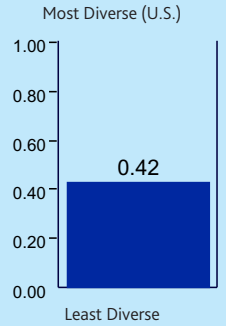
Sources: North Bay Business Journal Book of Lists, 2017, San Francisco Business Journal Book of Lists, 2017

PUBLIC

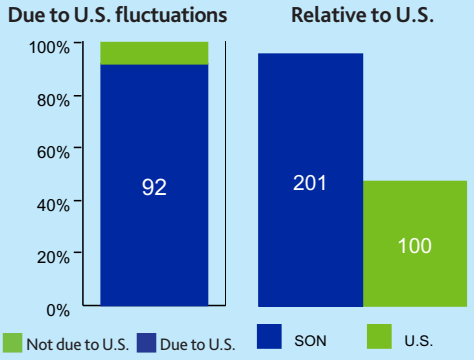
Federal	1,309
State	4,976
Local	26,083

2016

INDUSTRIAL DIVERSITY

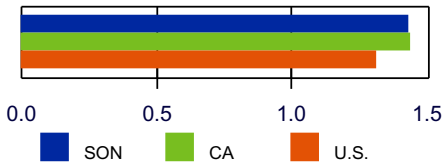


EMPLOYMENT VOLATILITY



ENTREPRENEURSHIP

EMPLOYMENT IN NEW COMPANIES, % OF TOTAL



Sources: Census Bureau, Moody's Analytics, avg 2010-2014

EXPORTS

Product	$ mil
Food and kindred products	ND
Chemicals	146.6
Primary metal manufacturing	ND
Fabricated metal products	ND
Machinery, except electrical	184.1
Computer and electronic products	422.2
Transportation equipment	ND
Miscellaneous manufacturing	ND
Other products	270.6
Total	1,194.3

Destination	$ mil
Africa	4.9
Asia	477.4
European Union	216.7
Canada & Mexico	291.4
South America	11.9
Rest of world	191.9
Total	1,194.3
% of GDP	*4.0*
Rank among all metro areas	*220*

Sources: BEA, International Trade Administration, Moody's Analytics, 2016

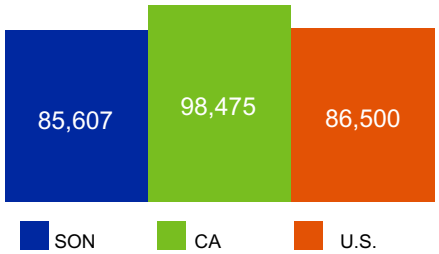
COMPARATIVE EMPLOYMENT AND INCOME

	% OF TOTAL EMPLOYMENT			AVERAGE ANNUAL EARNINGS		
Sector	SON	CA	U.S.	SON	CA	U.S.
Mining	0.0	0.1	0.4	$17,528	$71,263	$90,606
Construction	6.2	4.7	4.7	$85,643	$76,177	$67,379
Manufacturing	11.1	7.9	8.6	$82,408	$102,895	$80,835
Durable	*37.6*	*62.8*	*62.5*	*nd*	*$116,086*	*$83,048*
Nondurable	*62.4*	*37.2*	*37.5*	*nd*	*$81,146*	*$77,168*
Transportation/Utilities	2.1	3.6	3.8	$63,667	$61,961	$64,189
Wholesale Trade	3.8	4.4	4.1	$71,785	$80,572	$80,930
Retail Trade	12.3	10.2	11.0	$40,816	$41,552	$34,829
Information	1.3	3.2	1.9	$99,796	$168,335	$114,771
Financial Activities	4.2	5.0	5.7	$42,936	$59,539	$53,946
Prof. and Bus. Services	10.4	15.4	14.0	$52,514	$77,632	$68,173
Educ. and Health Services	16.4	15.4	15.7	$57,717	$55,492	$54,662
Leisure and Hosp. Services	12.4	11.5	10.8	$28,474	$34,606	$27,790
Other Services	3.6	3.4	3.9	$46,210	$39,508	$36,665
Government	16.0	15.3	15.4	$83,852	$98,293	$77,509

Sources: Percent of total employment — BLS, Moody's Analytics, 2016, Average annual earnings — BEA, Moody's Analytics,2016

PRODUCTIVITY

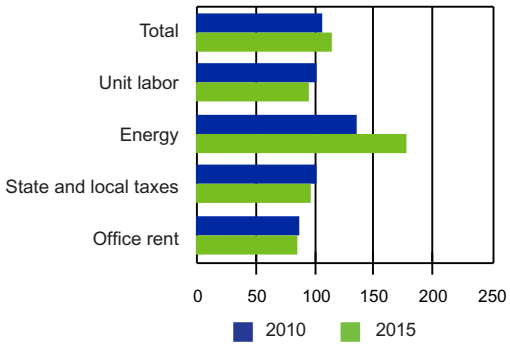
REAL OUTPUT PER WORKER, $



Sources: BEA, Moody's Analytics, 2015

BUSINESS COSTS

U.S.=100



Source: Moody's Analytics

HIGH-TECH EMPLOYMENT

	Ths	% of total
SON	8.6	4.3
U.S.	6,937.1	4.8

HOUSING-RELATED EMPLOYMENT

	Ths	% of total
SON	23.8	11.8
U.S.	13,565.7	9.4

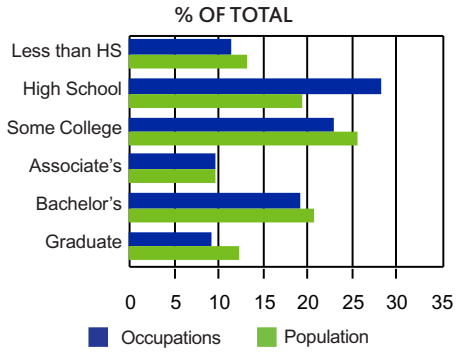
Source: Moody's Analytics, 2016

LEADING INDUSTRIES BY WAGE TIER

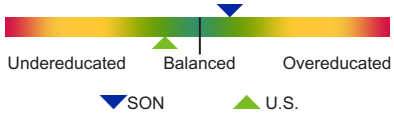
	NAICS	Industry	Location Quotient	Employees (ths)
HIGH	6221	General medical and surgical hospitals	0.7	4.3
	6214	Outpatient care centers	3.6	4.2
	6211	Offices of physicians	0.7	2.6
	5511	Management of companies and enterprises	0.7	2.1
MID	GVL	Local Government	1.3	25.4
	3121	Beverage manufacturing	25.1	8.1
	GVS	State Government	0.7	5.0
	2382	Building equipment contractors	1.0	2.9
LOW	7225	Restaurants and other eating places	1.1	16.3
	6241	Individual and family services	2.4	7.5
	4451	Grocery stores	1.7	6.5
	FR	Farms	1.6	6.0

Source: Moody's Analytics, 2016

SKILLS MISMATCH



Sources: Census Bureau, ACS, Moody's Analytics, 2015

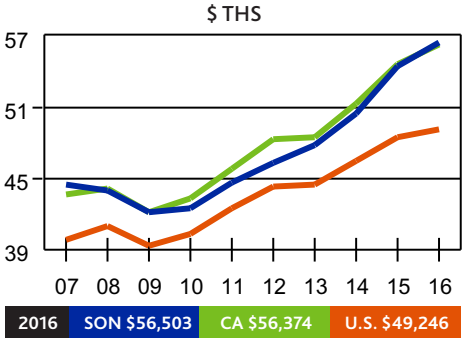


ECONOMIC DISENFRANCHISEMENT

Index	2016	Rank*
Gini coefficient	0.45	262
Palma ratio	3.0	274
Poverty rate	9.2%	368

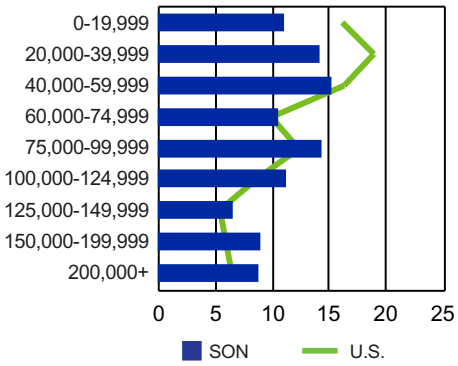
*Most unequal=1; Most equal=401

PER CAPITA INCOME



Sources: BEA, Moody's Analytics

HOUSEHOLDS BY INCOME, %



Sources: Census Bureau, ACS, Moody's Analytics, 2016

MIGRATION FLOWS

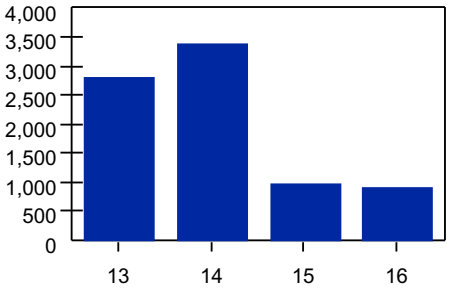
INTO SONOMA COUNTY CA

	Number of Migrants
San Rafael CA	1,886
San Francisco CA	1,435
Oakland CA	1,303
Sacramento CA	796
Los Angeles CA	599
San Jose CA	544
Napa CA	487
Vallejo CA	440
San Diego CA	362
Riverside CA	294
Total in-migration	*15,868*

FROM SONOMA COUNTY CA

San Rafael CA	1,167
Oakland CA	1,009
Sacramento CA	899
San Francisco CA	762
Vallejo CA	533
Napa CA	509
Los Angeles CA	382
San Diego CA	326
San Jose CA	312
Portland OR	226
Total out-migration	*13,809*
Net migration	**2,059**

NET MIGRATION, #

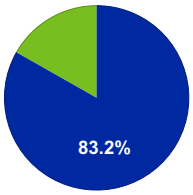


	2013	2014	2015	2016
Domestic	2,385	2,837	370	298
Foreign	423	551	605	592
Total	2,808	3,388	975	890

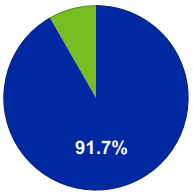
Sources: IRS (top), 2014, Census Bureau, Moody's Analytics

COMMUTER FLOWS

RESIDENTS WHO WORK IN SON



WORKERS WHO LIVE IN SON



Top Five Outside Sources of Jobs

Sonoma County CA	Share
San Rafael CA	7.4
San Francisco CA	3.3
Napa CA	1.9
Oakland CA	1.7
Vallejo CA	0.5

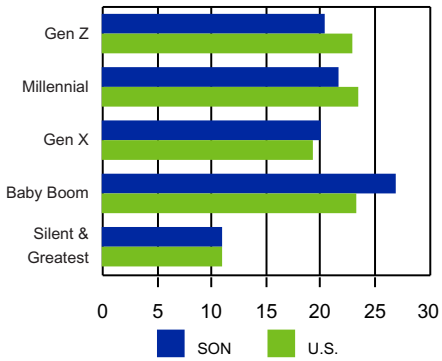
Top Five Outside Sources of Workers

Sonoma County CA	Share
San Rafael CA	2.1
Vallejo CA	1.3
Napa CA	1.0
Oakland CA	0.9
San Francisco CA	0.5

Sources: Census Bureau, Moody's Analytics, avg 2009-2013

GENERATIONAL BREAKDOWN

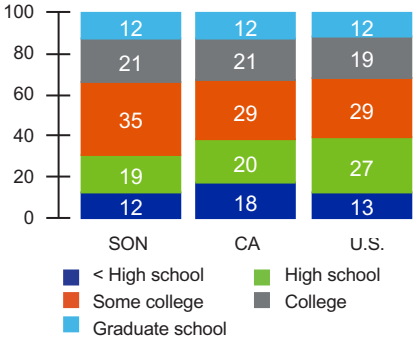
POPULATION BY GENERATION, %



Sources: Census Bureau, Moody's Analytics, 2015

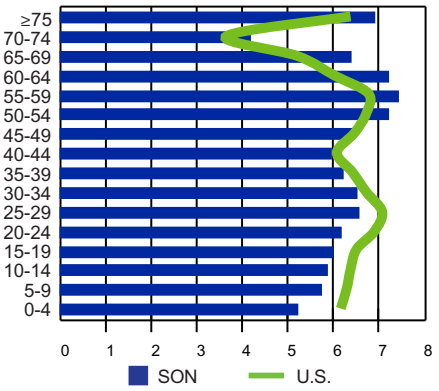
EDUCATIONAL ATTAINMENT

% OF ADULTS 25 AND OLDER



Sources: Census Bureau, ACS, Moody's Analytics, 2016

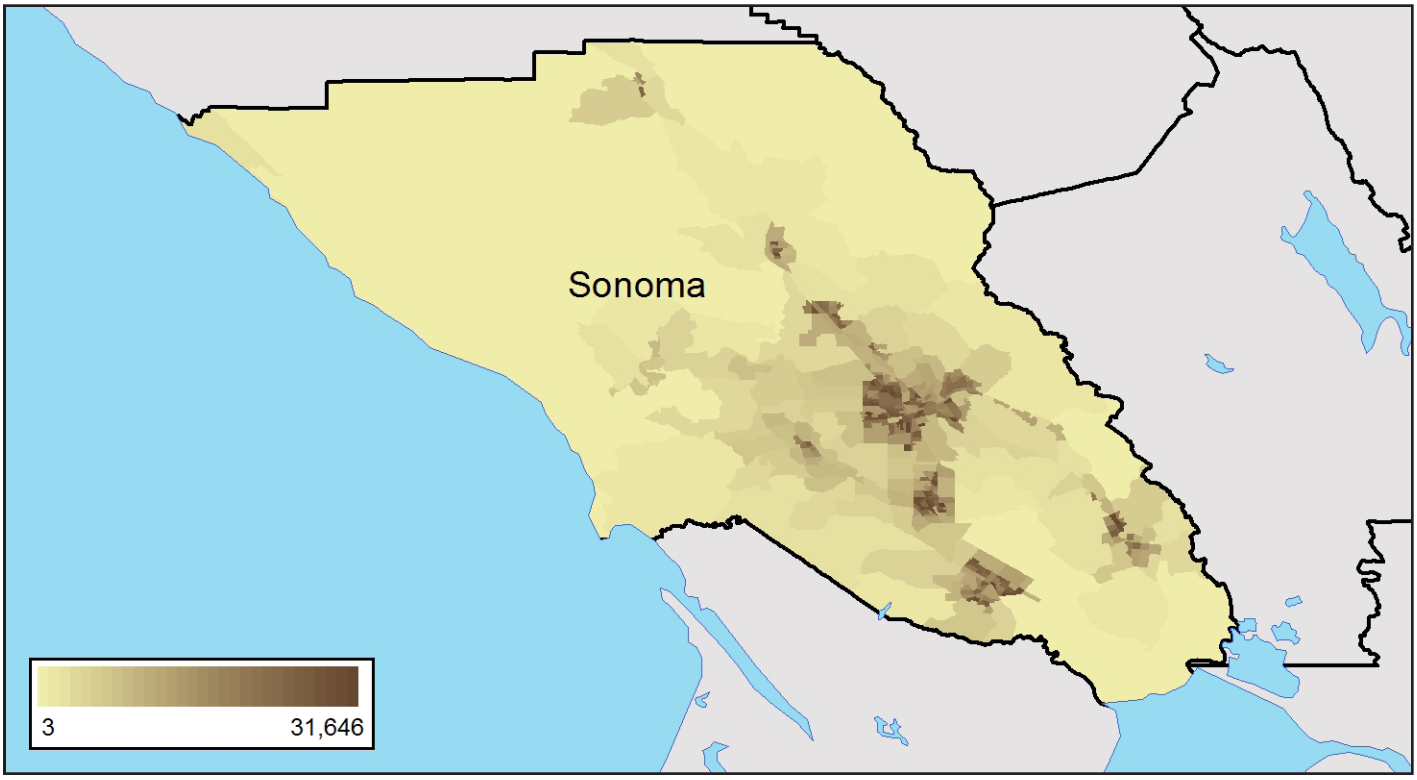
POPULATION BY AGE, %



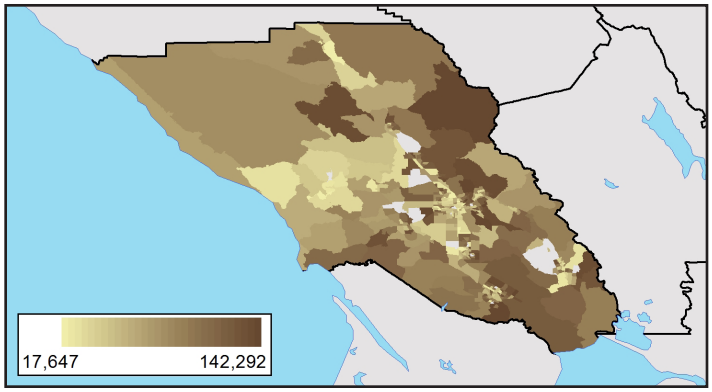
Sources: Census Bureau, Moody's Analytics, 2016

GEOGRAPHIC PROFILE

POPULATION DENSITY



MEDIAN HOUSEHOLD INCOME



AVERAGE COMMUTE TIME

COMING SOON

POPULATION & HOUSING CHARACTERISTICS

	Units	Value	Rank*
Total land area	sq mi	1,575.8	210
Population density	ratio population to land area	319.2	123
Total population	ths	503.1	124
White	% of population	64.0	275
Hispanic	% of population	26.6	58
Black	% of population	1.5	349
Asian	% of population	4.0	92
U.S. citizen at birth	% of population	80.9	351
Naturalized U.S. citizen	% of population	7.4	51
Not a U.S. citizen	% of population	10.1	48
Median age		42.1	59
Total housing units	ths	208.2	127
Owner occupied	% of total	55.1	259
Renter occupied	% of total	35.0	95
Vacant	% of total	9.9	231
1-unit; detached	% of total	67.4	183
1-unit; attached	% of total	8.9	38
Multifamily	% of total	18.0	283
Median year built		1977	

** Out of 402 metro areas and metro divisions*

Sources: Census Bureau, Moody's Analytics, 2016 except land area 2010

Sources: ACS, Moody's Analytics

Powering Forward

BY MARK ZANDI

Recent Performance

The U.S. expansion continues to power forward. Abstracting from the near-term ups and downs in the data, real GDP growth remains just above 2% and job growth at more than 2 million per year. This is about the growth experienced since the expansion began 8½ years ago.

The pace of growth remains firmly above the economy's potential, and any underutilized resources are being absorbed quickly. Unemployment at just over 4% and underemployment—a broader measure of slack in the job market—at less than 8% are consistent with an economy operating beyond full employment. The last time the job market was this tight was at the peak of the technology boom around Y2K.

Manufacturing utilization rates have also hit a cyclical high, and although they are not as high as in previous cycles, this has to do with the shifting makeup of the nation's manufacturing base and measurement issues. Aside from high-end multifamily properties, for which new construction has boomed, vacancy rates in real estate markets are also low.

Wage and price pressures have been slow to build despite the tightening markets, but this is changing. Wage growth is accelerating and is closing in on 3%. Producer prices are rebounding, and single-family rental rates are up strongly. Consumer price inflation has yet to revive, but that seems a matter of time.

Christmas cheer

The next test for the economy will be the strength of the Christmas buying season. Consumers have been the strongest and most consistent source of growth in the expansion, accounting for nearly three-fourths of the economy's rise (see Chart 1). They show no sign of letting up this Christmas.

In addition to the strong job market, consumers are buoyed by their solid balance sheets. They have deleveraged. Total household debt outstanding has hit a new high, but it has been a decade since the previous high, and incomes are much higher. The household debt-to-income ratio is close to a quarter-century low and is stable.

More important, the proportion of after-tax income that households must use to make payments and remain current on their debts has never been lower in the 35 years of available data. Most households have also insulated themselves from rising interest rates by refinancing into long-term fixed-rate mortgages, on which the average coupon is only 4%. A record low one-fifth of household debt has an interest rate that adjusts within a year of a change in market rates.

Credit quality on mortgage and consumer loans is about as good as it has ever been. Mortgage delinquency rates have never been lower, and although credit card delinquency rates are rising, they are still low by any historical standard and the recent increase simply reflects a normalization of credit conditions (see Chart 2).

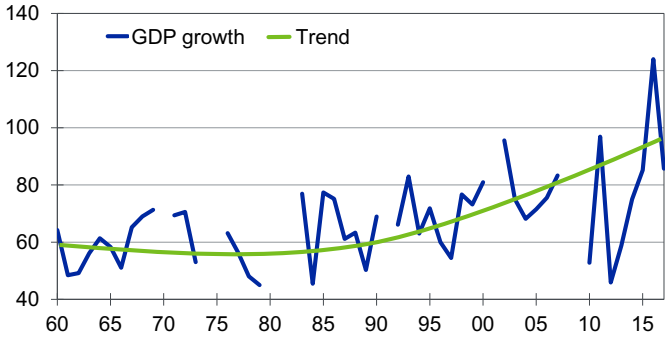
Lenders have eased up on their standards and credit is flowing freely. Credit- and retail-card lending is back to normal, as is consumer finance lending. Even home-equity lending has come back to life, as higher house prices have increased homeowners' equity and lenders are more comfortable extending loans. It is also easier to qualify for a first mortgage loan to refinance and purchase a home, although standards are still a bit tight compared with pre-housing bubble historical norms. The only exception is vehicle lending, as vehicle lenders have responded to a weakening in credit quality and have tightened their standards.

Wealth supercharger

Supercharging consumer spending during this expansion has been the wealth effect. This goes to both the rapid rise in asset prices and the sensitivity of households' willingness and ability to spend in response to changes in their wealth.

Consumers Power Economic Growth

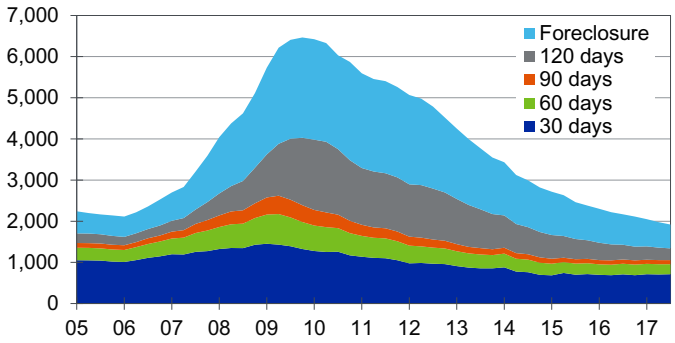
Share of GDP growth due to consumer spending in expansion yrs, %



Sources: BEA, Moody's Analytics

Mortgage Credit Quality Is Pristine

Troubled first mortgage loans, ths



Sources: Equifax, Moody's Analytics

The increase in household wealth has been stunning. Since their bottom near the nadir of the Great Recession in early 2009, stock prices have rocketed higher. Based on the Wilshire 5000, the value of all publicly traded stocks has risen from $7.5 trillion to $26 trillion. Over the past 18 months, since the last significant stock market correction, they are up close to 30%, equal to a gain in stock wealth of more than $6 trillion.

The revival in house values has also been impressive. House prices hit bottom in early 2012 after a long, painful 30% crash in prices during the housing bust. Since then, prices have fully recovered and are at record highs. The value of housing owned by households has risen from a low of not quite $16 trillion to about $24 trillion. Over the past 18 months, house prices are up almost 10%, equal to an increase in housing wealth of close to $2 trillion.

The impact of changes in household wealth on consumer spending is evident in the strong inverse relationship between wealth and the personal saving rate (see Chart 3). The simple correlation coefficient between the ratio of household assets to disposable income and the personal saving rate over the past more than 50 years is a strong -0.84. That is, rising asset values are associated with declining personal saving, and thus more consumer spending.

That the relationship remains strong today is clear that over the past five years, during which the assets-to-disposable income ratio has surged close to a record high, the personal saving rate has been halved from 7% to 3.5%. The only other time the personal saving rate was lower was during the housing bubble in the mid-2000s.

Based on econometric analysis, Moody's Analytics estimates that the wealth effect on total consumer spending is 4.5 cents. That is, for every $1 change in household wealth, consumer spending ultimately changes by 4.5 cents. More than one-fifth of the growth in consumer spending during this expansion, and closer to half the spending over the past year, is thus due to the wealth effect. Wealth effects peak one year after a change in wealth, and they are asymmetric—larger when asset prices are falling than when prices are rising.

Wealth threat

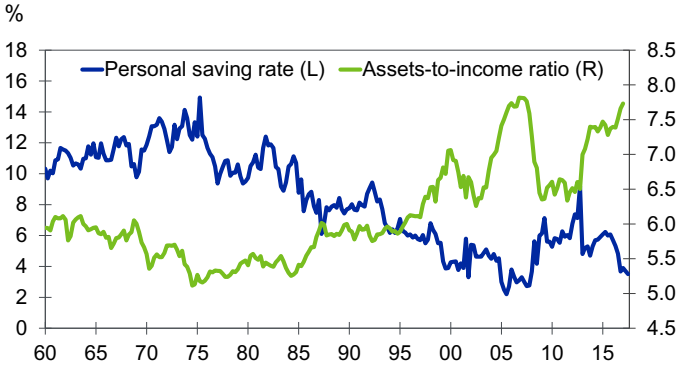
This highlights the significant support the Federal Reserve's quantitative easing has provided the expansion. One of the principal channels through which QE and resulting lower long-term interest rates impact the real economy is through higher asset prices and the resulting wealth effects. At its peak impact in late 2013, QE reduced 10-year Treasury yields by approximately 100 basis points, lifting stock prices by more than 15% and house prices by almost 10%. The Fed's QE lifted real GDP growth via the wealth effect by more than 75 basis points on a cumulative basis by the end of 2013. This is not quite three-quarters of the total estimated increase in real GDP due to the Fed's QE programs.

With the Fed now winding down its QE and the prospects for higher interest rates, risks are rising that asset prices will come under pressure, and the wealth effect fades or—even more serious—weighs on economic growth. With stock prices at record highs, and most measures of stock valuation stretched, there is a real threat of a significant and persistent decline in stock prices (see Chart 4). A once-and-for-all decline in stock prices of 10%, consistent with a typical stock market correction, would ultimately reduce real GDP by about 70 basis points via the wealth effect. A sustained 20% decline, consistent with a bear market, would result in an economy that is barely growing and at risk of sliding into recession.

The risk of a decline in house prices is much lower, but given that housing in some parts of the economy appears overvalued relative to incomes and rents, the possibility increases that house price growth will slow meaningfully.

The American consumer is key to the U.S. expansion and, given our large trade deficit, the global economy. Fortunately, consumers are enjoying significant tailwinds. However, it is critical that stock and housing values hold their own. The wealth effect is powerful, and declining stock or housing prices could quickly overwhelm all the positives now powering consumer spending. This is not the most likely outlook, but it bears watching.

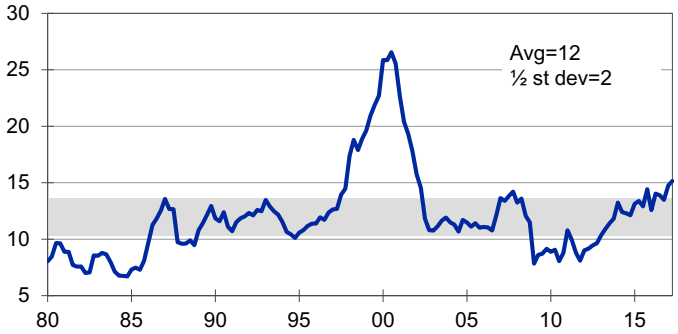
Household Wealth Surges, Saving Rate Falls



Sources: Federal Reserve, BEA, Moody's Analytics

Stock Prices Are Stretched

Ratio of Wilshire 5000 and corporate profits, %



Sources: Wilshire, BEA, Moody's Analytics

Forecast Assumptions

BY MARK ZANDI

Monetary policy

The Federal Reserve is expected to steadily normalize interest rates over the remainder of the decade. This will entail three or four 25-basis point rate hikes each year, with the federal funds rate peaking near 4%. This is just above the Moody's Analytics 3.4% estimate of the long-run equilibrium funds rate or r-star. The next increase in the funds rate is expected at the December meeting of the Federal Open Market Committee.

Driving the expected normalization in monetary policy is an economy that is operating beyond full employment. Both the unemployment rate at just over 4% and the sub-8% underemployment rate are below our estimates of the natural rate. The labor market is sure to tighten substantially more given that the current pace of job growth is more than double that necessary to employ those coming into the labor force.

Inflation is also expected to steadily accelerate, from under its 2% target as measured by the growth in the core consumer expenditure deflator, to a high between 2.5% and 3% by 2019. Fueling the stronger inflation will be the tight labor market, strong rent growth, and greater medical care inflation. Somewhat higher oil and other commodity prices will offset impacts on inflation of an anticipated modest strengthening of the U.S. dollar.

There is a consensus that the federal funds rate consistent with normalization—the long-run equilibrium rate—has fallen since the crisis, but there is little consensus on how much. The Moody's Analytics 3.4% estimate of the long-run equilibrium rate is down from over 4% before the crisis. Fed officials believe the equilibrium rate has fallen to just below 3%.

The equilibrium rate is consistent with the sum of the Fed's 2% inflation target and the economy's long-run potential growth rate. We estimate the current equilibrium rate to be closer to 2.5%, due to a number of temporary headwinds, including the adjustment to a significant increase in the required capitalization and liquidity of the post-crisis banking system.

Normalization of monetary policy also means that the Fed will allow its balance sheet to diminish. The balance sheet swelled to nearly $4.5 trillion in Treasury and mortgage securities as a result of four rounds of quantitative easing. In a full-employment economy, the Fed's balance sheet should be closer to $3 trillion. The Fed has begun to right-size its balance sheet by allowing the securities it owns to mature and prepay.

Fiscal policy

The federal government's fiscal situation has begun to weaken. The budget deficit came in at $666 billion in fiscal 2017, equal to nearly 3.5% of GDP. This is up from less than $600 billion in fiscal 2016. The deficit hit its nadir of $439 billion in fiscal 2015, equal to 2.4% of GDP, which will be the best fiscal performance for the foreseeable future.

After a number of years of austerity, fiscal policy has become a small positive for growth, adding about 20 basis points to per-year real GDP growth for the past three years.

Lawmakers will be busy as the Trump administration pushes its fiscal policy agenda. While this agenda is very uncertain, we are assuming there will be tax cuts costing more than $500 billion over the next decade on a static basis. The majority of the cuts will be to corporate taxes. More government spending on veterans' benefits and the military is expected, and while more infrastructure spending is not as sure, the president supports it.

There is also the sequester—the across-the-board spending cuts that were suspended as part of the 2013 budget deal. Unless lawmakers make a change, it is set to kick back in with the current fiscal year. The sequester cuts to defense and mandatory entitlement programs likely will be suspended or eliminated, but Republican policymakers will allow the cuts to most nondefense discretionary programs to take effect. Even so, government spending seems set to increase by almost $500 billion over the next decade.

President Trump's tax and spending policies are assumed to be largely deficit-financed, and thus will add approximately $1 trillion to the cumulative budget deficits over the next decade. The nation's debt-to-GDP ratio will be more than 2 percentage points higher by the end of Trump's term than if there were no change in fiscal policy.

U.S. dollar

The real broad trade-weighted U.S. dollar has weakened this year. Behind the recent softness is the stronger global economy. Given the better economic backdrop, the European Central Bank signaled it will soon begin tapering quantitative easing; the next step is to begin normalizing rates, though that is a way off. The Bank of Canada began raising short-term rates, and the Bank of England is signaling its intent to soon adopt a less accommodative monetary stance.

The Trump administration's political problems and investors' diminished expectations have contributed to the softer dollar. The dollar is expected to soon stabilize and to appreciate a bit over the next two years as the Federal Reserve normalizes monetary policy.

Energy prices

Oil prices are hovering close to $55 per barrel. U.S. gasoline prices have jumped recently because of Hurricane Harvey and are close to $2.75 per gallon of regular unleaded.

Oil prices will remain volatile but are expected to slowly rise. Underlying this outlook is the sharp pullback in investment in North American shale oil production. OPEC has also moved to curtail production, and higher-cost non-OPEC producers in the North Sea and Arctic are also curtailing investment plans.

The long-run price for oil is estimated to be $55 to $60 per barrel.

Brent oil prices should narrow relative to West Texas Intermediate, given the reversal in the Seaway oil pipeline and other projects.

Natural gas prices will remain low for the next decade.

Forecast Risks

BY MICHAEL FERLEZ

⬇ Geopolitical tensions

Geopolitical tensions outside the U.S. transmitted through international trade, consumer sentiment and financial markets pose an indirect threat to the U.S. economy. The U.K. has begun the formal process of withdrawing from the European Union. Although the dire Brexit scenarios have yet to materialize, much depends on what kind of agreement the U.K. and EU are able to negotiate. Less than cordial terms of a U.K. withdrawal from the European single market would not only disrupt financial markets but also lower the growth outlook in the U.K. and the EU.

Within the euro zone, political uncertainty is once again on the rise. In Germany, Angela Merkel and her Christian Democratic Union secured their fourth term, but their victory was far from convincing, making it more difficult to form a coalition government. Also, for the first time since World War II, a far-right party will hold seats in the Bundestag. Meanwhile, as a barometer for next year's national election, Italy's far-right Five Star Movement tallied the second most votes in regional elections held in Sicily. Like Germany and France, Italy is a country without which the EU cannot survive.

Outside of Europe, tensions with North Korea pose an intensifying downside risk. Saber-rattling between the U.S. and North Korea has raised tensions to an unprecedented level. Continued provocations risk upending financial markets, or something much worse.

⬇ Trade and immigration

President Trump's strong protectionist stance on immigration and trade, especially anti-China and anti-Mexico trade rhetoric and the desire to renegotiate key trade agreements, poses a significant downside risk to the forecast. Though the baseline forecast does not assume a trade war, it would not be surprising if foreign countries retaliated in kind against U.S. tariffs. Should this scenario play out, growth in the U.S. would fall short of expectations. Immigration adds to uncertainty as undocumented workers leave the country, leading to a contraction in the labor force. Tighter immigration policies, including a proposed plan to limit the number of green cards, would dampen population growth, which is already at its slowest rate since the Great Depression.

⬆ Renewed global growth

Despite numerous geopolitical risks, the global economy is strengthening and there are reasons to be optimistic that growth will be even stronger in the years ahead. Nearly 10 years after the recession, all the world's major economies are growing. U.S. growth has accelerated after a sluggish first quarter, and the euro zone is expanding at the fastest rate in two years. South America is on the path to recovery after a two-year recession. Asia will remain the world's fastest-expanding region, with stabilizing growth in China driving broad-based expansion. Assuming the global economy can avoid serious setbacks, solid economic fundamentals could usher in a period of stronger economic growth.

⬇ China

A hard landing for China would deal a serious blow to the global economy. Recent economic data from China have been mixed, but the world's second largest economy has stabilized following turbulence in 2015 and 2016. The Chinese economy expanded by 6.7% in 2016, and only slightly slower gains are expected this year. Growth will decelerate over the medium term as the government attempts to rebalance the economy toward more domestic consumption.

Uncertainty lies in China's ability to maintain sturdy growth and the impact of its interventions in the foreign exchange market on other global markets. China's expansion has been supported by a massive buildup in credit that poured into property investments and other projects. This has led to overcapacity in some industries and a frothy housing market. Should property prices tumble, the resulting sharp drop in asset quality in China's banks could heighten stress in the domestic financial sector, with significant spillover effects on global financial markets. Chinese officials are working to tighten lending standards and rein in the shadow banking system. A policy misstep during this process could have significant impacts on both financial markets and the global economy.

⬇ U.S. fiscal policy

In September, Trump was able to strike a deal with congressional Democrats to pass a three-month continuing resolution and a suspension of the debt limit for the same amount of time. However, the deal only postpones a potentially bruising fiscal showdown until December. A shutdown during the holidays would do more economic harm than in the fall because of the sheer amount of consumer spending. Once the debt ceiling kicks in again in December, the Treasury will have fewer extraordinary measures at its disposal than in March when the statutory limit was last reinstated. This means that Treasury will be able to stave off the deadline to raise the debt limit only into early to mid-spring at most. Finally, the looming fiscal showdown could distract lawmakers from tax reform in the intervening period.

⬇ Productivity

Productivity growth has been lackluster in the aftermath of the financial crisis. Since the recession, nonfarm business productivity has averaged a disappointing 1% per annum. The decline in productivity that stems from the pullback in business investment is especially concerning. Restrictions on legal immigration and the accelerated deportation of undocumented workers could affect long-run productivity as well, as immigrants have historically been a key driver of business creation and have played an important role in the tech industry. With the U.S. at or near full employment, unless productivity gains begin to improve, the economy will not deliver on GDP, income, profits, tax revenue and asset returns.

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