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2017

# ECONOMIC OUTLOOK

Your source for data and insight on Arizona's economy.

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Vice Dean, Eller College of Management



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**Mike McCann**  
Market Executive, Commercial Banking Group  
Chase Bank



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## Our world

Global Economic Outlook

**Anthony Chan, Ph.D.**  
Chief Economist, Chase

**Global Overview Presentation**  
Dr. Anthony Chan  
November 2017

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MACRO THEMES | WORLD GDP GROWTH

**IMF World Economic GDP Projections**  
...what lies ahead?

**IMF AVERAGE GDP FORECASTING ERROR VS ACTUAL REAL GDP**

Source: Bloomberg, IMF World Economic Outlook Fall 2017  
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MACRO THEMES | MARKET PERFORMANCE

**Global markets continue to enjoy a strong 2017...**  
...as non-U.S. equity markets lead the pack

Sources: FactSet. Sectors shown above are represented by: EM Equities: MSCI EM; Europe: MSCI Europe; Asia ex Japan: MSCI Asia ex Japan; EAFE: MSCI EAFE; World: MSCI World; Gold: GDD (Spot); U.S.: S&P 500; Japan: TOPIX; U.S. High Yield: Barclays U.S. High Yield; U.S. Agg. Bonds: Barclays U.S. Agg. Bonds; U.S. Corporate HY: Barclays U.S. Corporate HY; Municipal bonds: Barclays Municipal Bonds 1-17 year; U.S. App. bonds: Barclays U.S. App. Bonds; U.S. Treasury: Barclays U.S. Treasury; Commodities: Bloomberg Commodity Index. Data is as of October 31, 2017.

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MACRO THEMES | U.S. EXPANSION

**This expansion has been one of the longest on record...**  
...but cycles don't die of old age

**THE U.S. ECONOMIC CYCLE IS AGED**

Sources: National Bureau of Economic Research (NBER), Bureau of Economic Analysis (BEA), FactSet, J.P. Morgan Asset Management - Guide to the Markets. Chart assumes current expansion started in July 2009 and continued through October 2017, lasting 100 months so far. \*Regressions months from one cycle ending to the next beginning. Data for length of economic expansions and recessions obtained from the National Bureau of Economic Research (NBER). Data is as of October 31, 2017.

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**This has already been a long cycle.**  
Now in its eighth year, the current expansion stands as the **third longest in history**.  
This has prompted some to wonder how tall this tree can grow...  
...after all, trees don't grow to the sky.

**So what has ended past cycles?**

- Inflation and aggressive tightening
- Major commodity price spikes
- Bubbles or extreme valuations
- Private sector imbalances

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INVESTING PRINCIPLES U.S. PRODUCTIVITY

### Can Tax Reform Help?...

Yes, if it boosts growth and US Productivity

**AVERAGE GDP AND AVERAGE PRODUCTIVITY GROWTH WHEN GDP IS ABOVE TREND (3.3% SA FROM PREVIOUS QUARTER)**

Category	Growth Rate
GDP	6.4
Productivity	4.1

**AVERAGE GDP AND AVERAGE PRODUCTIVITY GROWTH WHEN GDP IS BELOW TREND (3.3% SA FROM PREVIOUS QUARTER)**

Category	Growth Rate
GDP	0.7
Productivity	0.5

**GDP and productivity growth typically move in tandem...**

- Productivity growth is typically above average (2.1% SA from previous quarter) when GDP is above trend (3.3% SA from previous quarter).
- Productivity growth is typically below average (2.1% SA from previous quarter) when GDP is below trend (3.3% SA from previous quarter).

Source: Bureau of Labor Statistics, Bureau of Economic Analysis, Data as of Q3 2017.  
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MACRO THEMES FED FUNDS RATE

### Can a change in the Fed Funds Rate affect the market?

Outside of the 1.50 to 2 increase bucket, there is an inverse relationship between the increase in the Fed Funds Rate and the market.

**S&P 500 RETURNS (IN THE UPCOMING YEAR) BASED ON 1 YEAR FED FUNDS SPREAD**

Fed Funds Spread	S&P 500 Returns
< 0	9.9%
0 to 1	8.2%
1 to 1.25	4.2%
1.25 to 1.50	3.4%
1.50 to 2	7.0%
2 +	3.0%

**CHANCE OF A RECESSION (WITHIN 1 YEAR) BASED ON 1 YEAR FED FUNDS SPREAD**

Fed Funds Spread	Chance of Recession
< 0	7%
0 to 1	14%
1 to 1.25	23%
1.25 to 1.50	40%
1.50 to 2	23%
2 +	49%

Source: Bloomberg  
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MACRO THEMES U.S. EXPANSION

### Corporate profits have rebounded in 2017...

...as earnings headwinds continue to fade

**S&P 500 OPERATING EARNINGS PER SHARE**

**Oil collapse and USD surge led to a decline in earnings**

**Corporate profit growth has roared back in 2017 and is expected to be solid in 2018.**

- U.S. earnings are benefiting from fading drags of weak energy prices and a stronger U.S. dollar.
- Q1 and Q2 of 2017 demonstrated solid earnings growth, and Q3 seems to be continuing the trend.

**Risks to our view:** Weaker energy prices, renewed U.S. dollar strength, or a cool down in global consumption could derail the earnings rebound.

Source: Compustat, Standard & Poor's, FactSet, I.P. Morgan Asset Management - Guide to the Markets, EPS levels are based on operating earnings per share. Earnings estimates are Standard & Poor's consensus analyst expectations. Past performance is not indicative of future returns. Data is as of October 31, 2017.  
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MACRO THEMES U.S. EXPANSION

### Valuations are somewhat elevated relative to historical average

Like a nice house in a great neighborhood, stocks may be worth the premium

**S&P 500 INDEX VALUATION**

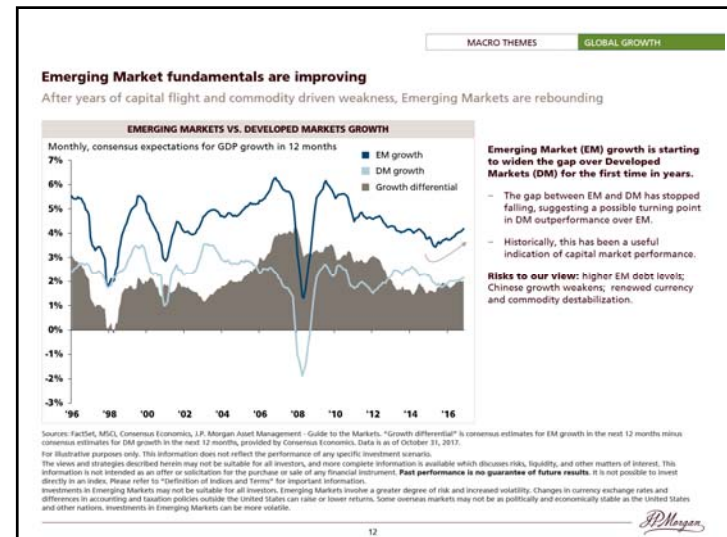
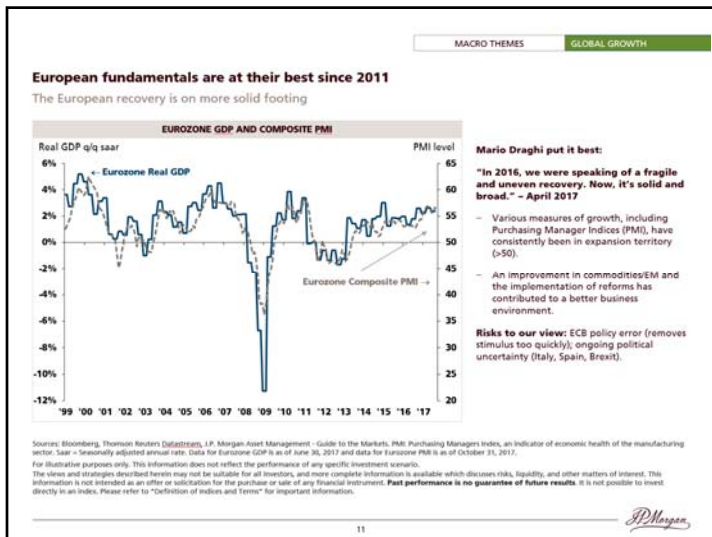
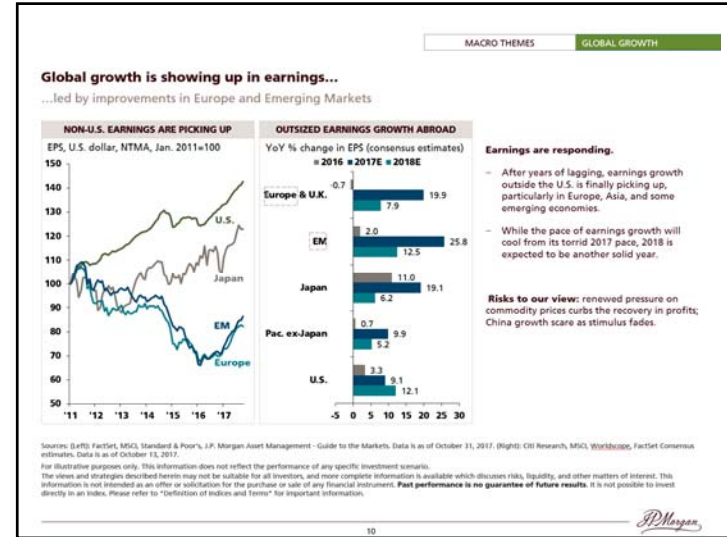
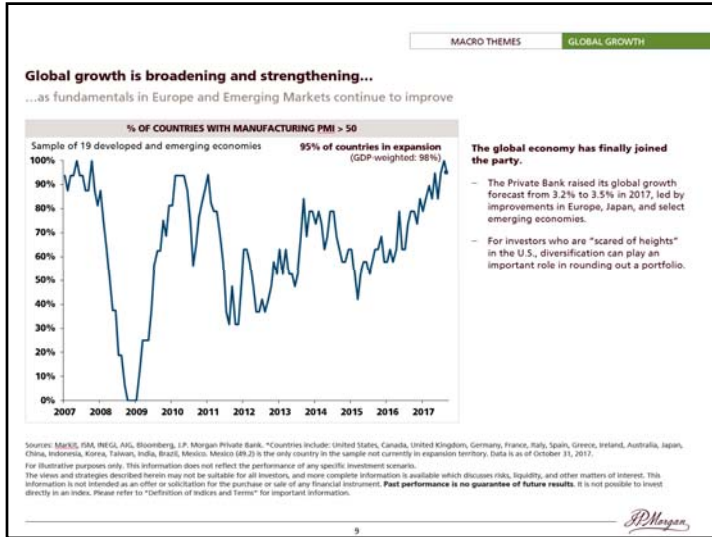
**It's no secret that stocks are not as cheap as they once were.**

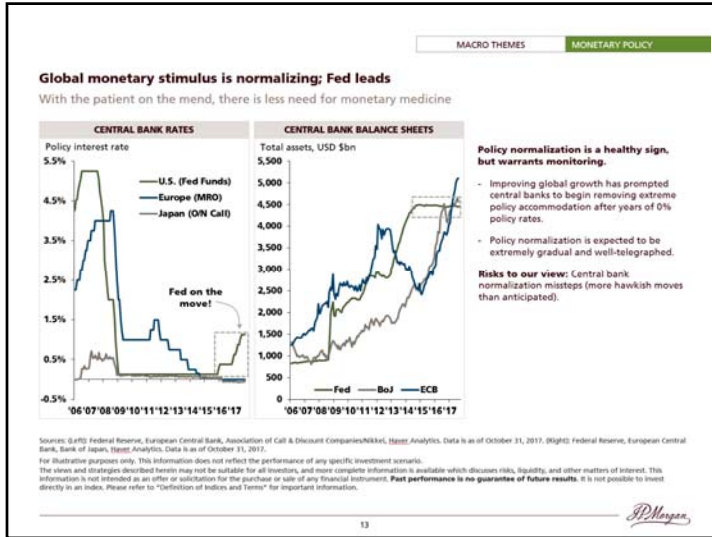
- But with earnings at a new record high, they are not overly expensive either.
- Importantly, higher valuations could limit future upside or exacerbate short-term pullbacks.
- However, with a favorable backdrop of slow-and-steady economic growth, well-contained inflation, and an improving global economy, stocks may be deserving of above-average valuations.

**Risks to our view:** A deterioration in growth expectations could cause investors to rethink the premium they are willing to pay. Meaningfully higher interest rates could make bonds more attractive to investors.

Source: Thomson Reuters, IBEI, Standard & Poor's, FactSet, I.P. Morgan Asset Management - Guide to the Markets, Average P/E and standard deviations are calculated using 25 years of IBEI history. Data is as of October 31, 2017.  
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### Appendix

#### Definitions of indices and terms

Note: Indices are for illustrative purposes only, are not investment products, and may not be considered for direct investment. Indices are an inherently weak predictive or comparative tool. All indices denominated in U.S. dollars unless noted otherwise.

The **Barclays Capital Global Aggregate Index** provides a broad based measure of the global investment grade fixed rate debt markets. The Global Aggregate Index contains three major components: the U.S. Aggregate (US2000), the Pan-European Aggregate (EUR 2000), and the Asian Pacific Aggregate Index (APY 2000). In addition to securities from these three benchmarks (94.1% of the overall Global Aggregate market value as of December 31, 2006), the Global Aggregate Index includes Global Treasury, Eurobonds (USD 3000s), Euro-Yen (JPY 250s), Canadian (USD 300m equivalent), and investment grade 144A (USD 200m) investment-grade securities not already in the three regional aggregate indices. The Global Aggregate Index family includes a wide range of standard and customized sub-funds by liquidity constraints, sector, quality, and maturity. A component of the Multiverse Index, the Global Aggregate Index was created in 1999, with Index History backfilled to January 1, 1990. All indices are denominated in U.S. dollars.

**Barclays U.S. Corporate High Yield Bond Index** is composed of fixed rate, publicly issued, non-investment grade debt.

**Bloomberg Commodity Index** is a benchmark designed to provide liquid and diversified exposure to physical commodities via futures contracts.

**Capital expenditures, or CapEx**, are funds used by a company to acquire or upgrade physical assets such as property, industrial building or equipment. It is often used to undertake new projects or investments by the firm.

**Certificate of deposit (CD)** is a savings certificate usually issued by a commercial bank with a fixed maturity date and specified fixed interest rate.

**Earnings per share, EPS**, the portion of a company's profit allocated to each outstanding share of common stock. Earnings per share serves as an indicator of a company's profitability.

The **Emerging Market Bond Index Global (EMBG Global)** was the first comprehensive EM coverage index in the market, after the EMBU. It provides full coverage of the EM asset class with representative countries, investable instruments (sovereign and quasi-sovereign), and transparent rules. The EMBG Global includes only USD-denominated emerging markets sovereign bonds and uses a traditional, market capitalization weighted method for country allocation.

**G7**: The Group of 7 (also known as the G-7) is a group consisting of Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States.

The **IBEX 35** is the official index of the Spanish continuous market. The index comprises the 35 most liquid stocks traded on the continuous market. It is calculated, unweighted and published by the Sociedad de Bolsa. The equities use free float shares in the index calculation. The index was created with a base level of 3000 as of December 27, 1989.

The **Ibovespa Index** is a gross total return index weighted by traded volume and comprises the most liquid stocks traded on the São Paulo Stock Exchange. The Ibovespa Index has been divided 10 times by a factor of 10 since January 1, 1983 (10/25/83, 10/27/83, 04/14/89, 01/17/90, 02/28/91, 01/21/92, 01/20/93, 02/27/93, 03/15/94, and 03/03/97).

The **JPM Corporate Emerging Market Bond Index (CEMBI)** series was launched in 2007 and was the first comprehensive USD corporate emerging markets bond index. There are two real series of the CEMBI with a diversified overlay for each version: the CEMBI and the CEMBI Broad. The CEMBI Broad Diversified version is the most popular among the four versions largely due to its lower coverage and diversification weighting scheme.

The **JPM Domestic High Yield Index** is designed to mirror the investable universe of the U.S. dollar domestic high yield corporate debt market.

The **JPM Investment Grade Index (IGLI)** provides performance comparisons and valuation metrics across a carefully defined universe of investment grade corporate bonds, tracking individual issuers, sectors and sub-sectors by their various ratings and maturities.

**LIBOR**: London Interbank Offered Rate is the average of interest rates estimated by each of the leading banks in London that it would be charged were it to borrow from other banks.

**MSC Money Supply M2** refers to a measure of money liquidity that includes cash and checking deposits (M1) as well as near money including savings deposits, money market mutual funds and other time deposits, which are less liquid and not as suitable as exchange mediums but can be quickly converted into cash or checking deposits.

The **MSCI AC Asia ex Japan Index** captures large cap and mid cap representation across ten of three developed Markets countries (excluding Japan) and eight Emerging Markets countries in Asia. With 60 constituents, the index covers approximately 85% of the free float adjusted market capitalization in each country. Developed Markets countries in the index include: Hong Kong and Singapore. Emerging Markets countries include: China, India, Indonesia, Korea, Malaysia, the Philippines, Taiwan and Thailand.

The **MSCI All-country World Index** is a free float adjusted market capitalization weighted index that is designed to measure the equity market performance of developed and emerging markets. The index consists of 23 developed market country indexes and 24 emerging market country indexes.

The **MSCI EAFE Index** is an equity index that captures large and mid cap representation across Developed Markets countries around the world, excluding the United States and Canada. With 629 constituents, the index covers approximately 85% of the free float adjusted market capitalization in each country.

The **MSCI Emerging Markets Index** captures large and mid cap representation across 23 Emerging Markets (EM) countries. With 834 constituents, the index covers approximately 85% of the free float adjusted market capitalization in each country. EM countries include: Brazil, Chile, Colombia, Czech Republic, Egypt, Greece, Hungary, India, Indonesia, Korea, Malaysia, Mexico, Peru, Philippines, Russia, South Africa, Taiwan, Thailand, Turkey and United Arab Emirates.

The **MSCI Emerging Markets (EM) Latin America Index** captures large and mid cap representation across five Emerging Markets (EM) countries in Latin America. With 130 constituents, the index covers approximately 85% of the free float adjusted market capitalization in each country. EM Latin America countries include: Brazil, Chile, Colombia, Mexico, and Peru.

The **MSCI Europe Index** represents the performance of large and mid cap equities across 15 developed countries in Europe.

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### Appendix

#### Definitions of indices and terms, continued

The **MSCI USA Index** is designed to measure the performance of the large and mid cap segments of the U.S. market. With 627 constituents, the index covers approximately 85% of the free float adjusted market capitalization in the United States.

The **MSCI World Index** is a free float adjusted market capitalization weighted index that is designed to measure the equity market performance of developed markets. The index consists of 23 developed market country indexes.

The **Mexican IPC Index** (Index de Precios y Cotizaciones) is a capitalization weighted index of the leading stocks traded on the Mexican Stock Exchange. The index was developed with a base level of 30 as of October 30, 1978.

**Net Interest Margin**: The difference between interest and dividends earned on interest bearing assets and interest paid to depositors and other creditors, expressed as a percentage of average earning assets.

The **Nikkei 225 Index** comprises 225 stocks selected from domestic common stocks in the first section of the Tokyo Stock Exchange, excluding ETFs, REITs, preferred equity contribution securities, trading stocks (non subsidiary dividends, etc.) other than common stocks.

**PE (Price to Earnings)**: A valuation ratio of a company's current share price compared to its per share earnings. Calculated as market value per share divided by earnings per share (EPS).

**PMI (Purchasing Managers' Index)** is an indicator of the economic health of manufacturing sector.

**Purchasing power parity (PPP)** is a theory in economics that approximates the total adjustment that must be made on the currency exchange rate between countries that allow the exchange to be equal to the purchasing power of each country's currency.

**SPDR Gold Shares** is part of the SPDR family of exchange traded funds (ETF) managed and marketed by State Street Global Advisors.

**Standard and Poor's 500 Index** is a capitalization-weighted index of 500 stocks. The index is designed to measure performance of the broad domestic economy through changes in the aggregate market value of 500 stocks representing all major industries. The index was developed with a base level of 10 for the 1841-83 base period.

**Standard and Poor's 500 Information Technology Index** comprises those companies included in the S&P 500 that are classified as members of the SICS Information Technology sector.

**STOXX Europe 600 Index (SX6E Index)**: An index tracking 600 publicly traded companies based in one of 16 EU countries. The index includes ematvols, medium cap, and large cap companies. The countries represented in the index are Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Iceland, Italy, Luxembourg, Norway, Portugal, Spain, Sweden, Switzerland, and the United Kingdom.

**TOPIX**, also known as the Tokyo Stock Price Index, is a capitalization-weighted index of all companies listed on the first section of the Tokyo Stock Exchange.

**U.S. Treasury Index** is a broad, comprehensive, market value weighted index that seeks to measure the performance of the U.S. Treasury bond market.

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### Appendix

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**Appendix**  
Important information (continued)

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**Our region**  
Outlook for Tucson

**George Hammond, Ph.D.**  
Director, Economic Business Research Center

**Recent Developments**

- ▶ **Arizona job growth slowed in the third quarter.**
  - ▶ Preliminary estimates show no growth in Tucson over the year.
- ▶ **Tucson's job estimates are likely to be revised up.**
  - ▶ This will reconcile better with the buzz around town.
- ▶ **Gains in wages per job remain positive but slow.**
  - ▶ However, Arizona's growth is beating the nation.
- ▶ **Arizona exports to Mexico continue to decline.**
  - ▶ The dollar remains strong against the peso.
- ▶ **Arizona and Tucson are forecast to grow next year.**
  - ▶ Look for continued gains in jobs, income, and population.

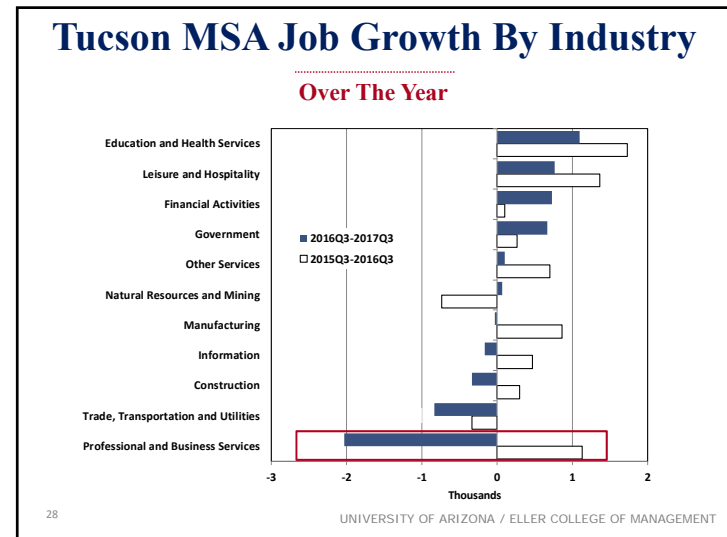
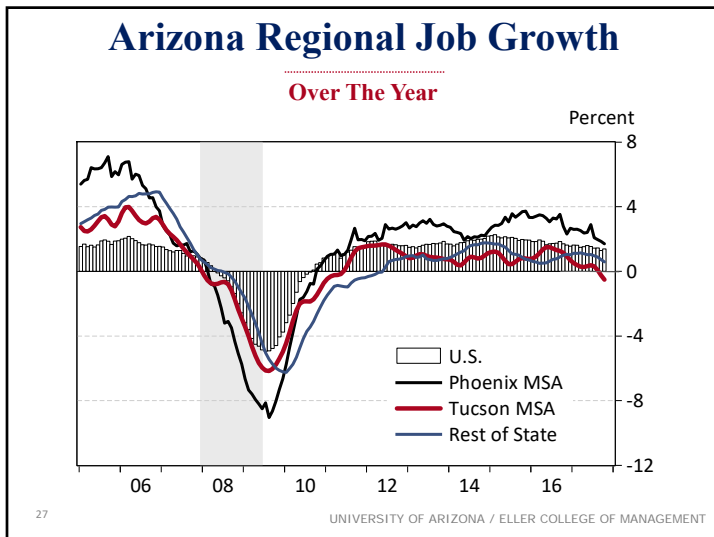
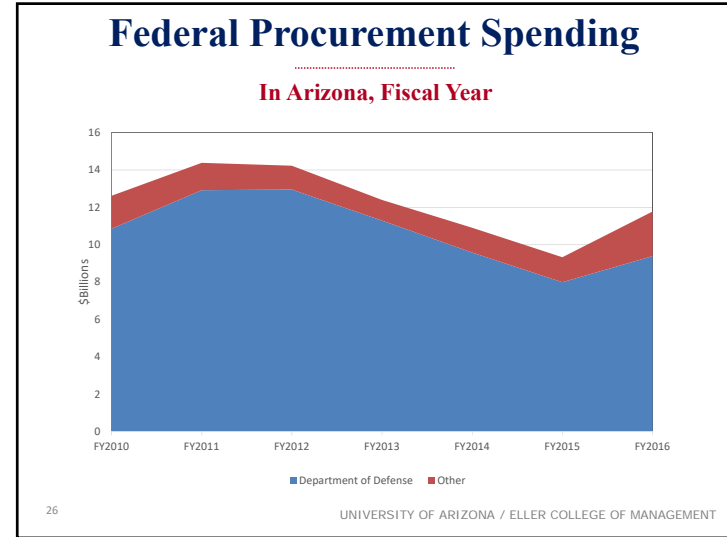
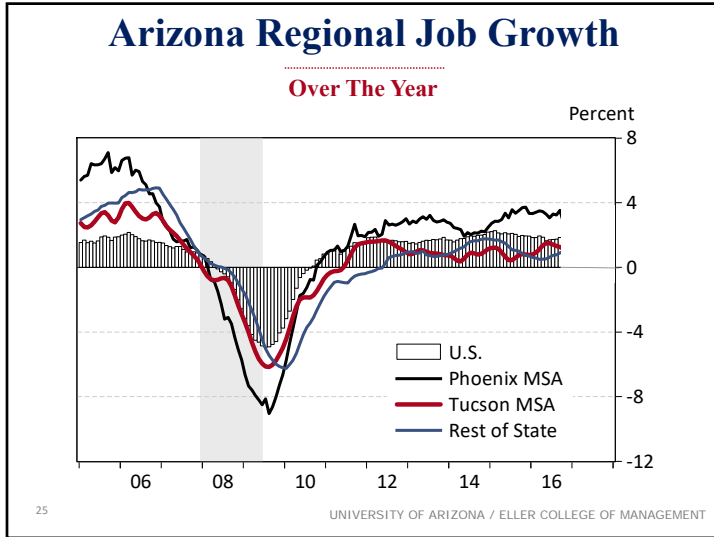
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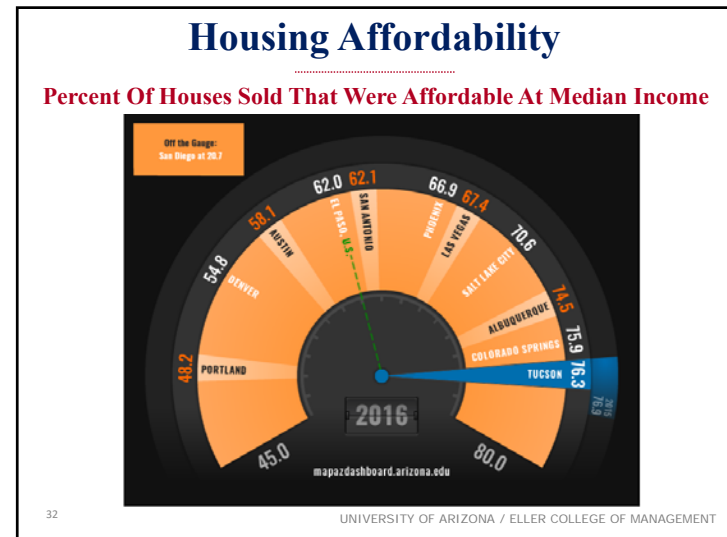
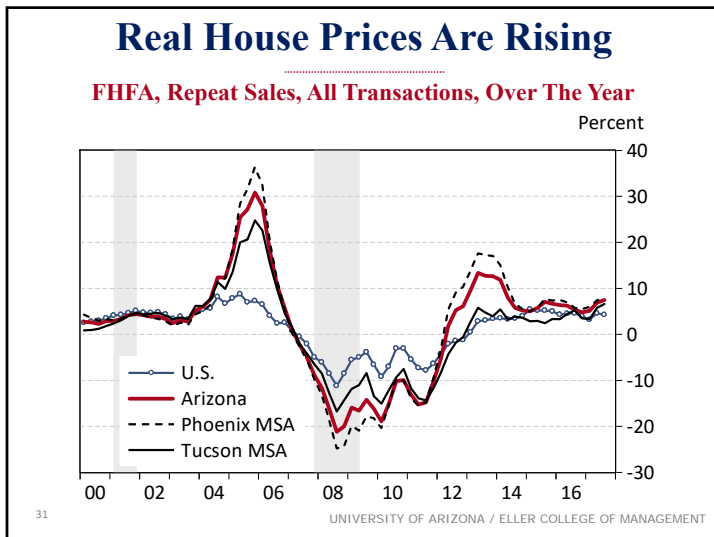
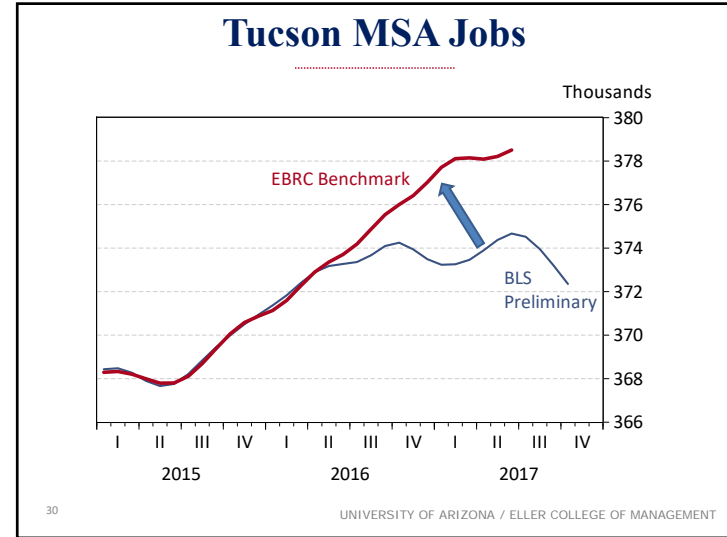
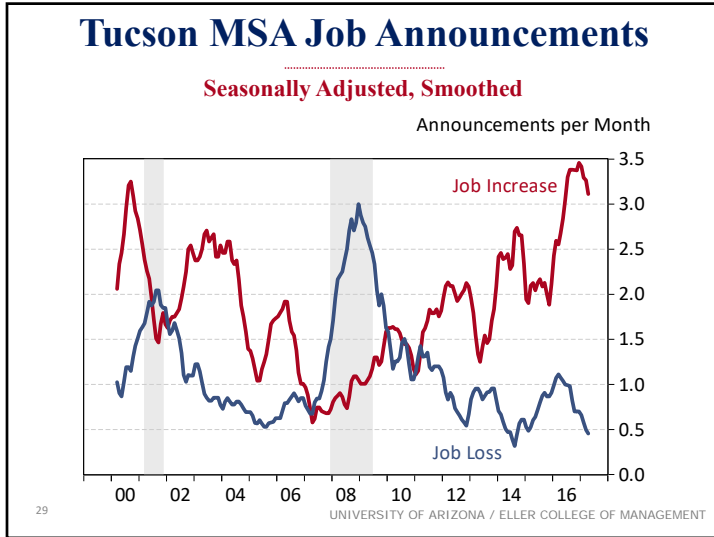
**Economy Overview**

INDICATOR	HOW ARE WE DOING?	HOW DO WE COMPARE?	RECENT CHANGE
BUSINESS GROWTH	0.4% FROM 2015 TO 2016	☁️	▲
EMPLOYMENT GROWTH	1.3% FROM 2015 TO 2016	☁️	▲
HOUSING AFFORDABILITY	76.3%	☀️	▼
MEDIAN HOUSEHOLD INCOME	\$46,162	☁️	▲
PATENTS PER 10,000 WORKERS	17.4	☀️	▼
REAL GDP	0.2%	☁️	▲

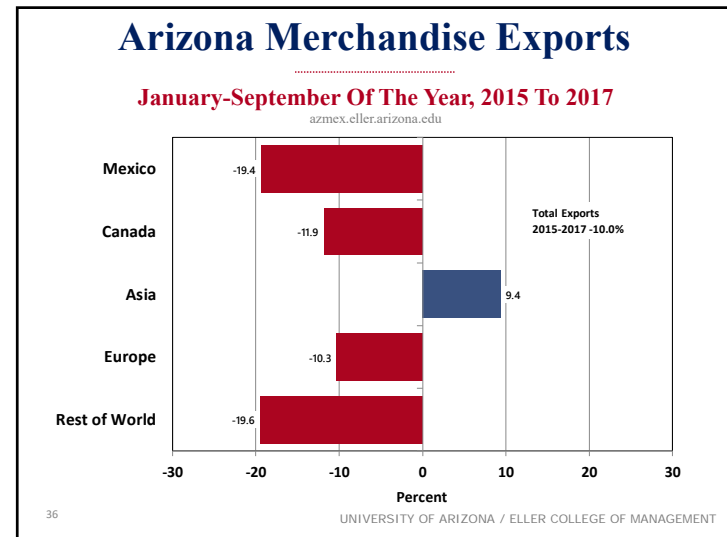
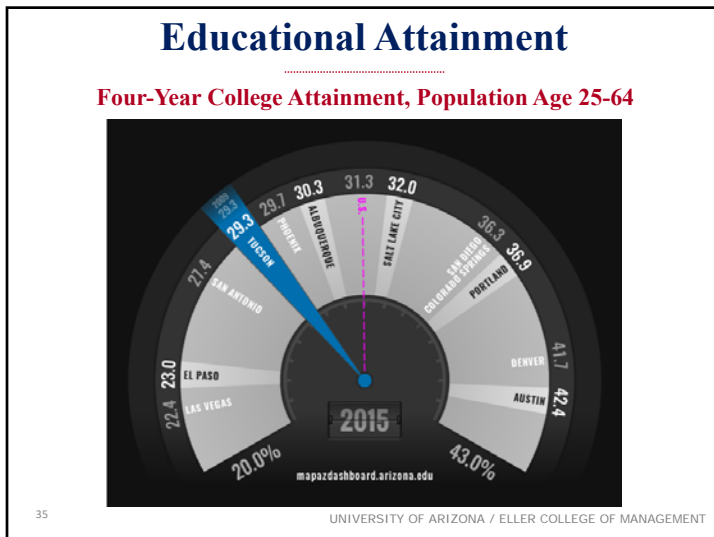
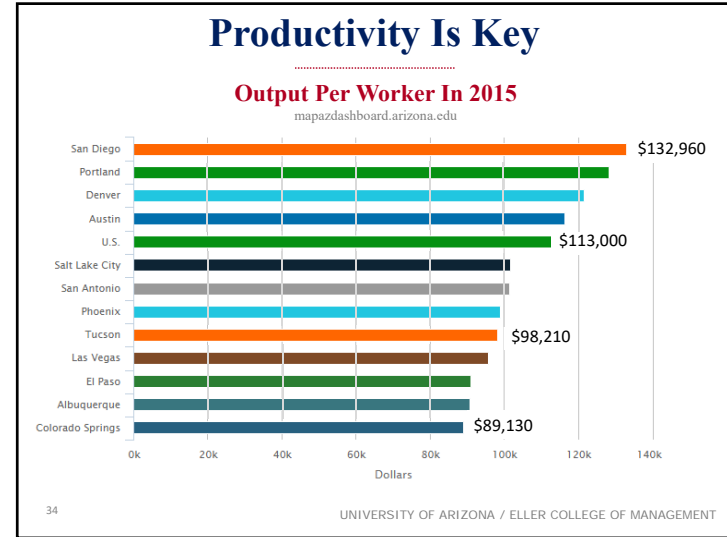
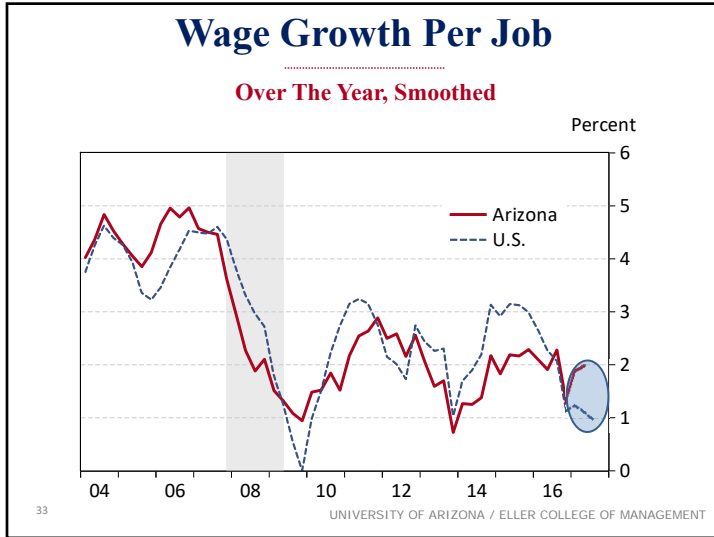
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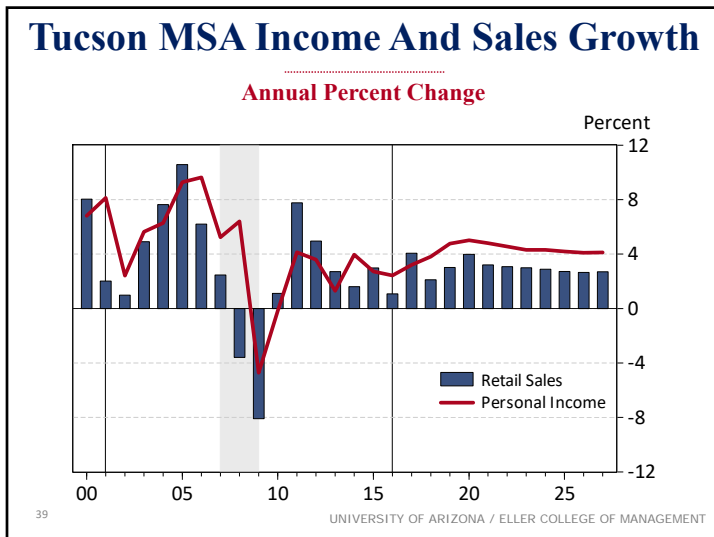
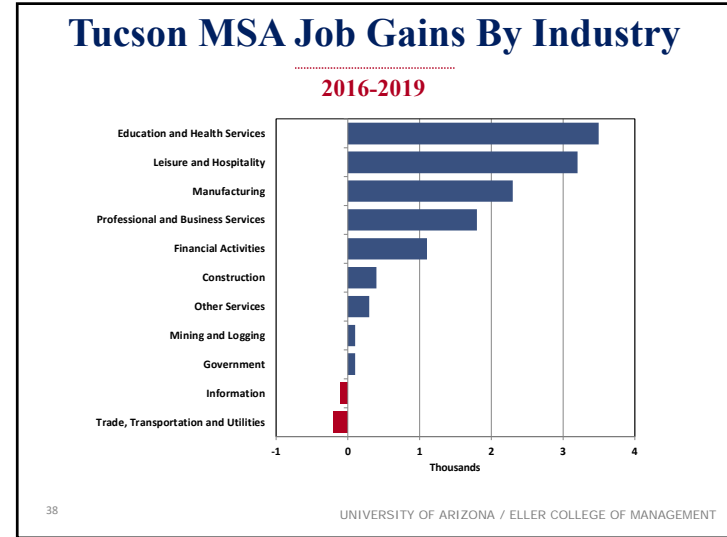
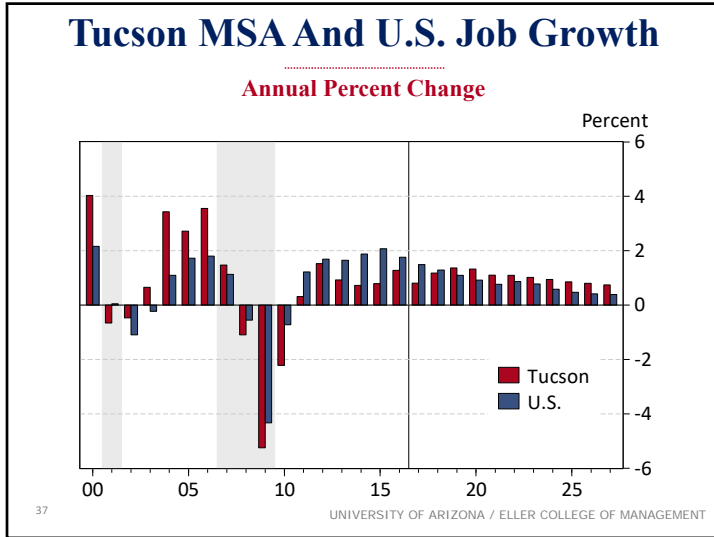
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