



# ECONOMIC FORECAST

## MAUI EDITION 2015-2016

### Robust Tourism Propels Maui's Economy Into 2016

There is much to be happy about in looking at Maui's economy in 2015 and going into 2016.

- The visitor sector has led the way, and 2016 looks promising as more capacity comes on line.
- Thanks to vibrant tourism, the county's labor market is strong, almost to the point of not being able to keep up with demand for workers.
- Construction, which has been bolstered by public infrastructure, seems ready to break out as greater commercial construction leads into more residential building activity.

However, question marks remain. A sustainable resolution for Maui Memorial Medical Center's financial problems is a necessary condition for the island's long-term outlook. Likewise, legal challenges to some agriculture enterprises and observatory activity on Haleakala have the potential for substantial economic interruptions. Assuming no significant changes on these issues, 2016 should be another good year for Maui's economy.

#### VIBRANT VISITOR INDUSTRY

The importance of tourism to Maui County's economy cannot be overstated. Compared to the state as a whole, Maui is almost three times as reliant on tourism (Chart 1).

U.S. visitors dominate Maui's tourism market, accounting for 72% of all arrivals (Chart 2). But this has been good for Maui since the U.S. market has been strong while Canada has been flat and Japan was down by 24% last year. In 2014, despite the Japanese decline, Maui visitor arrivals reached over 2 million, the highest total since the 2.2 million arrivals in 2007. Last year we were worried about a softening of the visitor sector, but the rest of 2014 and into 2015 has seen more than 5% year-over-year growth rates in arrivals (Chart 3).

CHART 1 - RELATIVE IMPORTANCE OF TOURISM SECTOR

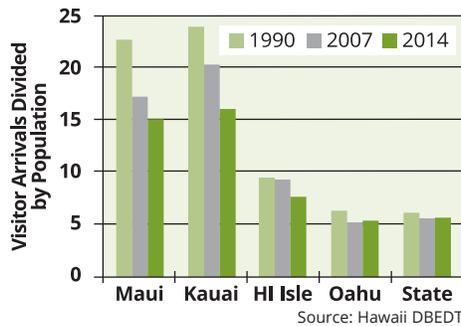


CHART 2 - MAUI VISITOR ARRIVALS BY MARKET, 2014

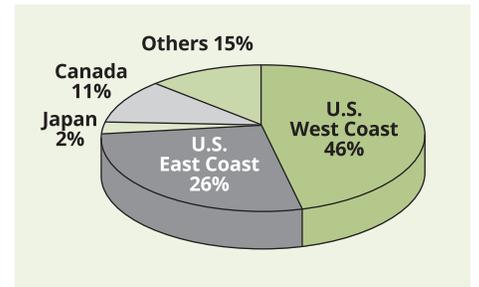


CHART 3 - MAUI COUNTY VISITOR GROWTH, 2008-15

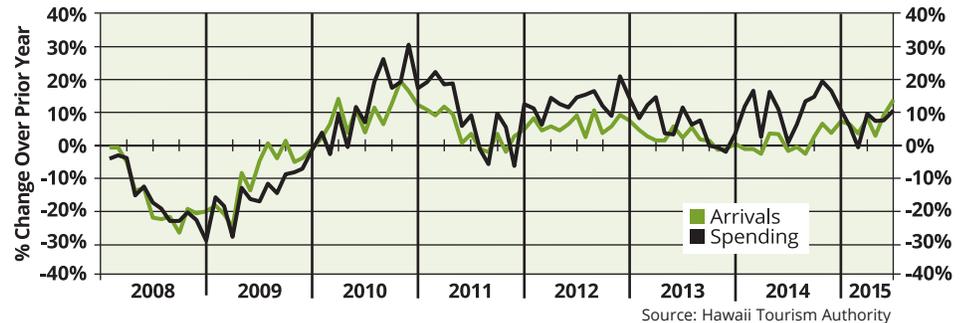
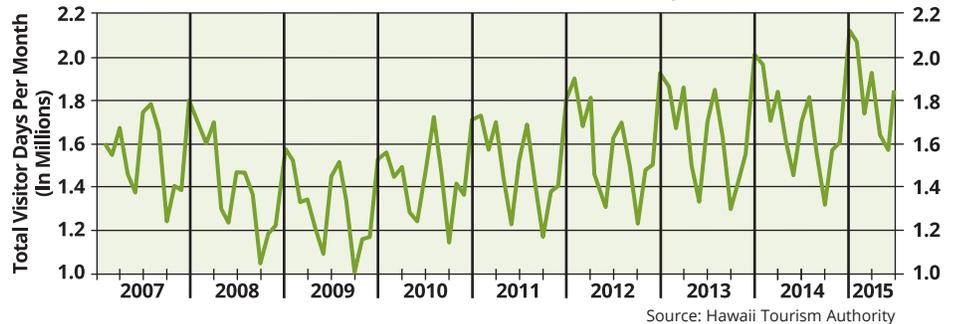


CHART 4 - MONTHLY VISITOR DAYS, 2007-15



Total visitor spending and total visitor days better indicate the sector's effect on the economy. Here, too, the news is good. Average length of stay has remained strong in 2013, 2014 and into 2015. Visitor days (Chart 4) have seen a positive trend since

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#### ON THE INSIDE

7 Global Economy Downshifts to Slower Growth Pattern

**MAUI COUNTY** (Continued from page 1)

2008 with the usual seasonal fluctuations around that trend. Improved arrivals and visitor days have caused total visitor spending (Chart 5) to double since the 2008-09 doldrums.

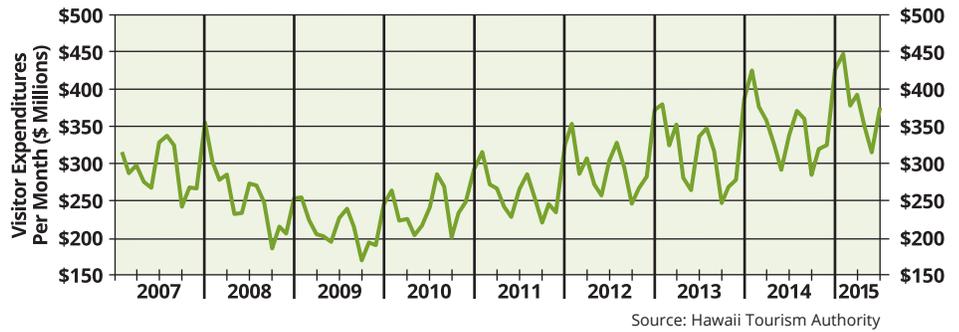
By 2013, daily spending per person returned to its pre-recession level of \$190. In 2014 it was \$207 and in early 2015 up to \$213. Visitor spending per day has barely budged between 2007 and 2013, and actually fell in inflation-adjusted terms. However, lodging as a percent of daily spending has increased significantly at the expense of most other categories, especially shopping and entertainment. Tourism retailers note that sales have been flat or at best increasing slowly.

**Seat capacity:** The good news in the tourism sector is due to and reflected in airline decisions on flight capacity. As of June 2015 airline seats to Kahului (Chart 6) were up significantly from both domestic and international (Canadian) origins. In fact, Kahului leads the state in seat growth, reflecting airline confidence in the Maui market. Lower fuel costs may explain part of the reason for airline optimism since carriers can provide more seats with less risk if these seats go unsold. During the summer, capacity was forecast to expand from both domestic and Canadian origins.

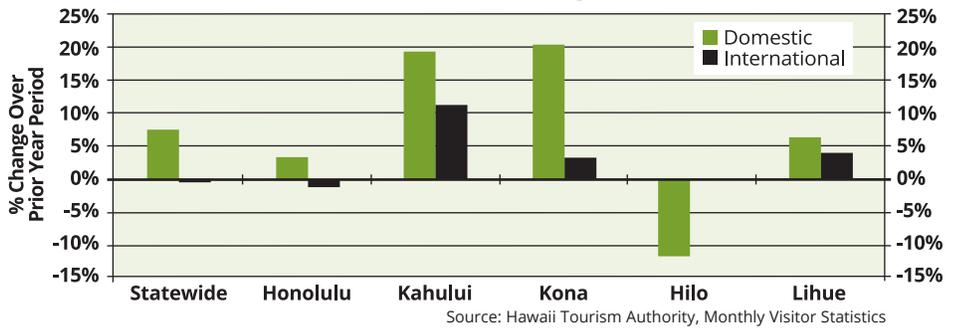
If the U.S. government works out a pre-clearance arrangement for visitors traveling from Narita and other Japanese airports, direct service from these markets to Maui will become more likely. At some point, the capacity of Kahului airport will become an issue. Already plans are being made for adding two jet ways at the commuter end of the building.

**Tourism Infrastructure:** With all this good news, it is easy to be complacent. However, there is a lot of competition out there from Mexico, the Caribbean, Europe, and elsewhere. Space, infrastructure and competition will eventually cause tourism growth to taper, increasing the urgency for the Maui Visitors Bureau to make sure that the Maui experience stays in the mind of the market.

**CHART 5 - MONTHLY VISITOR EXPENDITURES, 2007-15**



**CHART 6 - AIRLINE SEATS, YTD JUNE 2015 VS. 2014**



**CHART 7 - NUMBER OF NEW JOBS, 2010 TO 2015**



Tourism facility owners have continued to invest in their properties. Some examples are the renovations at the Makena Resort, Maui Lu, Kaanapali Ocean Resort and Kaanapali Alii. Even the Maui Palms property will be resurrected as a 174-room hotel.

Whaler's Village has started a \$26 million renovation to be completed in late 2016. Kaanapali Beach restoration has received \$800,000 funding for environmental impact

work that will take two years starting in 2016. The actual project will start in 2018 at a cost of about \$7 million.

**MAUI'S LABOR MARKET STRENGTHENS**

Robust tourism has helped the Maui labor market continue to recover from the Great Recession. Since 2010, Maui has added nearly 9,000 jobs with most of those in the restaurant and lodging sectors (Chart 7). In fact, only federal government jobs declined.

Chart 8 shows total jobs in Maui County have increased to within 1,300 of the pre-recession peak. Maui's unemployment rate, well above the statewide average in 2009, has declined even faster than that of the state and is now equal to the state average of about 4%.

Low unemployment is good news, but comes with a cost to employers. Businesses are starting to have trouble hiring skilled workers such as machine operators. Likewise, hiring less-skilled workers and middle managers has become harder and more expensive as potential employees have more options in the strong economy.

### CONSTRUCTION IMPROVES GRADUALLY

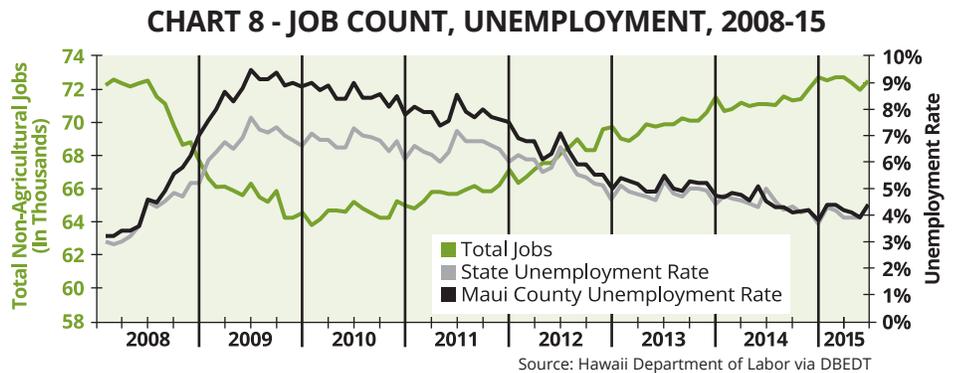
For several years now we have been hoping that the good tourism news would spread to the construction sector. While this still has not yet occurred broadly, there are glimmers of hope.

Only about 1,100 construction jobs have been added since the 2010 trough. Total construction jobs (Chart 9) remain 1,600 below the pre-recession peak.

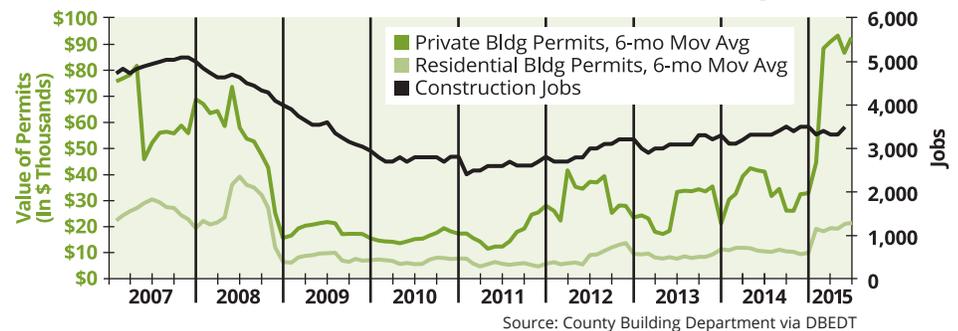
The good news is that there is an upward trend in the total value of permits. In 2009 total private permits averaged less than \$20 million per month; by 2014 this had increased to nearly \$37 million. 2015 has begun with a bang as all categories of private permits are up significantly, foreshadowing accelerating construction into 2016.

One problem has been residential construction, moribund for the better part of six years. Monthly private residential permits have been mostly less than \$10 million per month since 2009. Only recently has there been an uptick.

But, residential development will see a boost from the county's decision to relax the constraints from the residential workforce requirements. Likewise, the issuance of water meters will help. About 1,400 residences are planned for Waikapu and A&B has plans for 1,600 units at various locations.



**CHART 9 - MAUI BUILDING PERMITS, CONSTRUCTION JOBS, 2007-15**



There is some concern that commercial development will create more space than can be supported by present absorption rates. Vacancies and the resulting rents will keep a lid on commercial development payoffs.

The county's effort to improve infrastructure is continuing, focusing on roads and parks. Wastewater treatment is receiving attention and consolidation of the county base yards is moving ahead. The county purchased 4.1 acres in the Maui Business Park to consolidate services and get out from under lease costs.

State infrastructure also supports construction. Phase I of the new airport access road opened in July. Phase II is projected to be finished by January 2016. The airport car rental facility is a three-year, \$340 million project that should be underway this fall. Electrical upgrades at Maui County airports have been a \$27 million project and have already yielded significant energy savings.

At some point, private activity will have to pick up to fill in for the completion of public projects.

### RETAILING REMAINS A TOUGH BUSINESS

Maui's retail sector is seeing increased consumer choice and competition as large-box retailers vie for the market with specialty shops and brands. The opening of TJ Maxx in Maui Mall and Target at Puunene are two recent examples. Small retailers are seeing flat sales except for electronics. Niche players that appeal to both locals and visitors can do well. Maui Brewing at the Kihei High Tech Park is a good example.

### REAL ESTATE REFLECTS ECONOMY

The real estate recovery from the Great Recession is almost complete, especially for the condominium market. One indicator of strength is membership of the Realtors Association of Maui, up from 1,380 last year to 1,440.

Condo sales (Chart 10, on page 4) recovered to their 2007 levels back in 2012. Single-family unit sales grew smartly through 2013, leveled off in 2014, but are on the upswing again in 2015. Reflecting strong market demand, real estate prices (Chart 11, on page 4) have

*(Continued on page 4)*

**MAUI COUNTY** (Continued from page 3)

also recovered well from the 2011 low. While prices have not yet returned to 2007 levels, the increases have been steady and solid.

The Realtors Association of Maui also reports that distressed sales have steadily declined since 2011 to about 12% of all sales. While 2015 is expected to be a good year for the single-family market, there are concerns that the condominium market will soften due to declining demand from Canadian buyers whose purchasing power is being eroded by the strong U.S. dollar.

New Maui Lani residential properties are building out and moving. The Tradition project by D. R. Horton is almost sold out. The Parkways Phase I sold all 40 units, and Phase II has 45 units of which a third have been sold. Maui Lani will start grading another 45 acres for 500 units that are 51% affordable.

A&B's residential project in Kihei will start with an increment of about 170 affordable units to reach market in 2018. This project will build out to over 600 units. At Wailea, A&B will commence sales later this year for their Keala O Wailea project, 70 condominiums priced in the high \$800,000 to low \$1 million range.

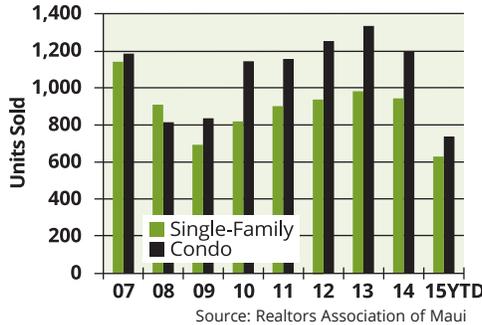
Commercial real estate is also doing well. A&B Properties has seen brisk sales at strong prices (\$40 per square foot) in the Maui Business Park South project. Maui Lani is finding strong demand for its office and warehouse properties.

Rising property values have helped the County of Maui. Property tax revenues (Chart 12) are reaching an all-time high of \$238 million in fiscal 2015 and growth is expected to accelerate.

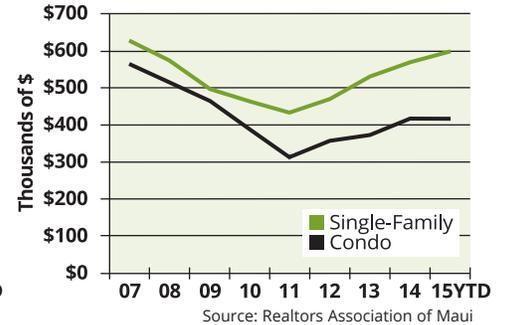
**CHANGES IN ELECTRICITY INFRASTRUCTURE**

The normally mundane business of supplying energy to the county has attracted a lot of interest with the potential sale of Hawaiian Electric Industries to NextEra. Added to the controversy associated with rooftop solar, wind and grid stability, electricity is a hot topic. Power use as reflected in Maui Electric

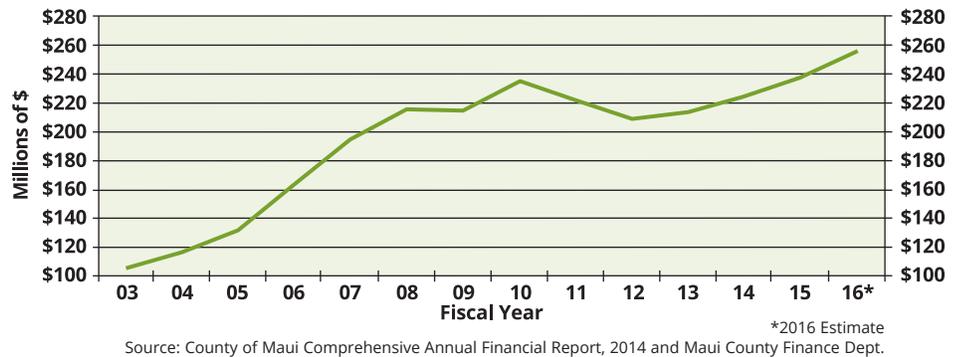
**CHART 10 - MAUI REAL ESTATE UNIT SALES, 2007-15**



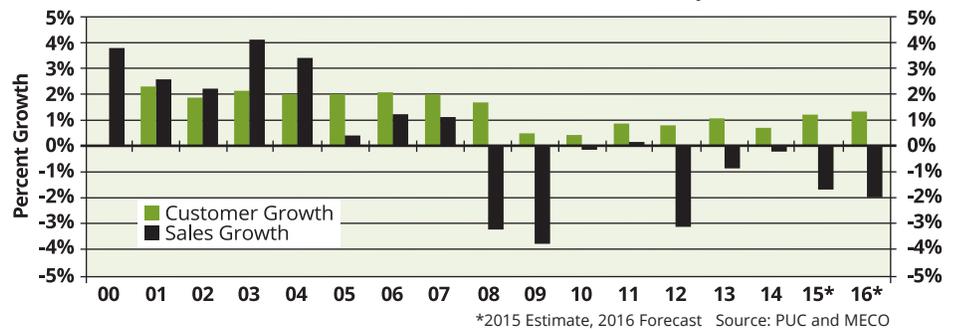
**CHART 11 - MAUI REAL ESTATE MEDIAN PRICES, 2007-15**



**CHART 12 - COUNTY PROPERTY TAX REVENUE, FY 2003-16**



**CHART 13 - GROWTH IN MECO CUSTOMERS, MWH SALES**



(MECO) sales used to be a good indicator of economic activity. No more. As we see in Chart 13 MECO's sales have actually declined since 2008 even as customer counts have grown. This reflects lower demand due to the slow economy, as well as greater customer efficiency and market penetration of distributed generation. Chart 14 (on page 5) shows the increase of solar installations and installed capacity between 2008 and 2014.

Rooftop solar penetration is starting to affect grid stability, according to MECO. The long-run impact of alternate energy is difficult to foresee with precision.

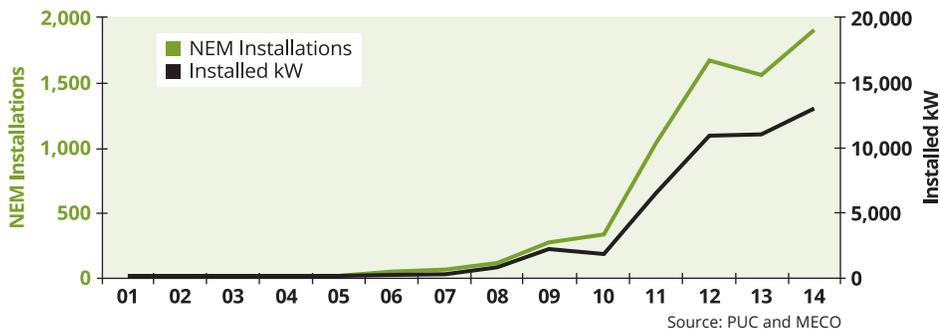
Technology changes in power generation, storage and usage will be disruptive. Add to this changes in utility ownership and regulatory postures, and predictions become particularly hazardous. In such an environment, flexibility is paramount.

**MAUI COUNTY AGRICULTURE**

Maui Agriculture has become increasingly controversial but remains an important part of the county's economy.

On Maui Island, 2014 was a challenging for HC&S as wet weather kept the sugar yield down to 172,000 tons, less than the hoped

**CHART 14 - MECO NET ENERGY METERING**



for 190,000. With rain levels at 170 – 180% of the norm, 2015 will also be below the 190,000 goal. Sugar prices have been helped by countervailing duties imposed by the U.S. International Trade Commission on Mexican sugar imports, but U.S. prices remain at about \$.24 per pound. Employment at HC&S stands at 750, down from 800 about a year ago, mostly due to attrition of older workers who have not been replaced.

The impact of HC&S goes beyond direct employment. They have recently started an outreach program called the HC&S Community Initiative, which last year provided \$100,000 in grants to 19 Maui charitable organizations. HC&S used to obtain significant revenue from selling electricity to MECO; however, with current PUC rules and the underlying economics of sugar farming, HC&S will become only a standby generator.

The seed corn companies continue to be major contributors to the economy. While these companies were successful in fighting off restrictive legislation at the state level, the outcome of county level initiatives is in the hands of the courts. The supply chain infrastructure created by the seed companies also benefits diversified agriculture in the county. For example, extension services estimate there are about 50 full-time vegetable farmers growing everything from sweet potatoes to zucchini.

**OTHER ECONOMIC DRIVERS**

**Maui Memorial Medical Center** is the second largest employer in the county. After years of financial woes, new legislation may allow privatization. If it does become privately operated there will be relative

financial stability, which will allow for expansion of services and even job growth. The Maui community as a whole needs a reliable modern medical infrastructure. Without it, Maui becomes a much less attractive place to live and invest.

**UH Maui College** continues to fulfill a crucial role in providing well-qualified, creative graduates to Maui’s workforce. Enrollments are down slightly as the labor market has improved. Along with other neighbor island community colleges, UHMC is seeking approval for a new undergraduate program in creative media. Leveraging local advantages, UHMC has opened the Daniel K. Inouye Allied Health Center housing the dental hygiene program, and is moving ahead on its Food Innovation Center and Hotel Ha, a teaching hotel for visitor industry students. Extramural funding from grants and contracts accounts for about one half of UHMC’s revenues, equaling funds from tuition, fees and general funds.

**Haleakala Observatory and Maui Research and Technology Park:**

Haleakala observatories involve seven mountaintop facilities. According to the UH Institute for Astronomy the annual operating budget of Maui facilities is about \$40 million, supporting about 170 county-based staff.

The Daniel K. Inouye Solar Telescope is a \$340 million project with a 2019 completion date. Since 2012, it is estimated that \$40 million has been spent in Hawaii and an additional \$160 million elsewhere for structures and equipment. It is now half completed, and once finished the annual operating budget will be \$13 million in today’s dollar values with 35 local staff.

However, uncertainty hovers around this project in the form of two pending Supreme Court cases.

The Research and Technology Park at Kihei complements the activities on the mountain. The super computer center is being administered by UH under a transition contract through October 2015, with indications that this will be extended an additional year. The center employs 43 people and has an annual budget of \$11 million.

**Lanai and Molokai:** Developments on Lanai are closely watched in terms of both the level of activity and how development can be done with community sensitivity. Pulama Lanai, the operating company for Lanai’s owner, has focused on renovating the Manele Bay Resort. It was completely closed effective June 1, 2015 in order to focus on common area improvements, including the pool. The strategy is to develop a low-density, high-dollar visitor experience using the Four Seasons brand. The room count at Manele will come down from 248 to 217 when it reopens.

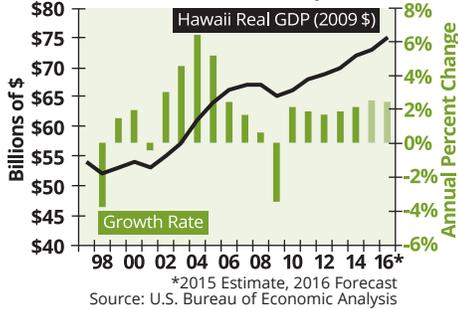
The Lodge at Koele was shut down last January to house construction workers, and it too will reopen in early 2016. By housing workers there, Pulama Lanai is mitigating the impact of 300 construction workers being housed in the small housing base. The company has also renovated 180 rental units for workforce housing and has not laid off hotel staff during construction. Rather, they have reassigned these workers to community service and improvement projects.

Molokai remains a fragile and vulnerable economy. When Molokai Ranch shut down, 120 jobs were lost. If the seed corn companies are driven out by regulatory pressures, 300 more would be lost. The island has embarked on a 10-year community plan aiming to identify sustainable options that leverage its special features. There has been some talk that Molokai Ranch may bring back investors and re-open the Kaluakoi Resort, but nothing definitive has occurred. The biggest step would be a clear signal from the community that investment would be welcomed.

# Tourism Boosts Hawaii's Growth

**D**riven by a robust tourism sector, Hawaii's economy is doing well. 2015 will be the sixth year of Hawaii's GDP growth, leaving the Great Recession as an increasingly remote memory. (See Chart 1) While growth has been positive, and is expected to remain so into 2016, the rates of GDP growth have been modest: in the 2-3% range.

**CHART 1 - GDP GROWTH, 1997-2016**



**Labor market:** As seen in Chart 2, total state jobs have returned to the pre-recession level of 635,000 and the unemployment rate has dropped to 4%. In fact, the tight labor market is now a constraint to growth as employers finding it more difficult and costly to hire.

Not surprisingly, these trends are not uniform among the state's counties. Oahu and Maui have both recovered the jobs lost since the Great Recession. However, on Hawaii Island and Kauai, job growth came to a halt in late 2013 and has only recently rebounded. Total jobs are still 5% below pre-recession peaks on these islands.

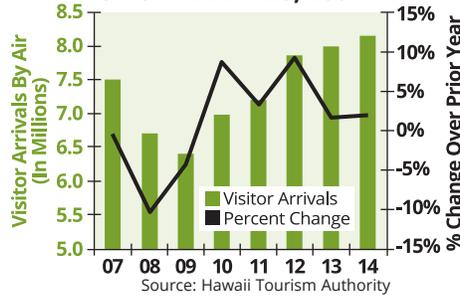
Statewide personal income, adjusted for inflation, has continued to expand and is now 8% above the low point in 2009.

**CHART 2 - STATE JOBS & UNEMPLOYMENT, 2007-15**

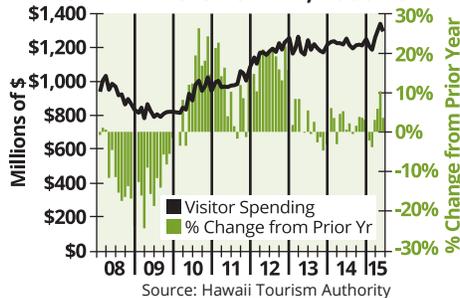


**Tourism:** The health of Hawaii's economy remains tied to tourism. In 2014 tourism growth sputtered early, then came back strong in the second half. As a result, 2014 visitor arrivals grew a modest 2% over 2013, but this represented a record 8.16 million. (See Chart 3.)

**CHART 3 - GROWTH IN VISITOR ARRIVALS, 2007-14**



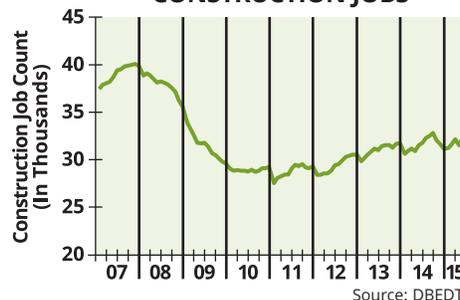
**CHART 4 - HAWAII VISITOR SPENDING GROWTH, 2008-15**



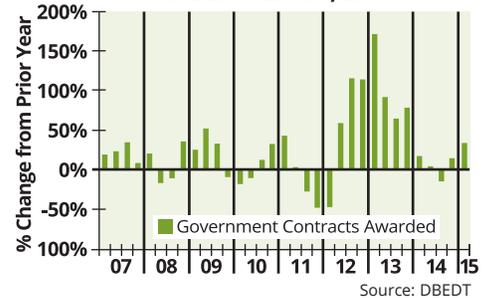
The news for visitor spending was less upbeat. Since 2013, spending growth has been somewhat erratic. (See Chart 4.) Total spending remained relatively flat over the last two years and has not kept up with inflation. Nevertheless, recent months have seen some up-tick in this important metric.

**Construction:** For five years we have been expecting construction to contribute to overall growth. After another year of waiting in 2014, this year shows more promise. Over 12,000 construction jobs were lost after 2007. (See Chart 5.) As of mid-2015 about 6,000 jobs had been recovered. Given the visible signs of construction activity and anecdotal evidence from industry insiders, stronger growth was expected. This proved not to be the case. The construction tax base actually declined for five consecutive quarters starting in July 2013 and only recently returned to positive growth. But there are reasons for optimism. Private construction permits are

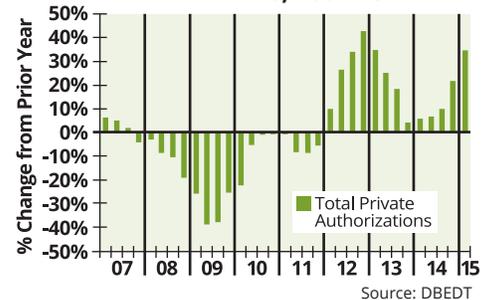
**CHART 5 - TOTAL CONSTRUCTION JOBS**



**CHART 6A - GOV'T CONTRACT AWARD TRENDS, 2007-15**



**CHART 6B - PRIVATE PERMIT TRENDS, 2007-15**



accelerating to their highest growth since 2012. This will help offset slower growth in government construction contracts awarded. (See Charts 6A and 6B.)

More jobs, higher incomes, and favorable financing conditions continue to stimulate demand for housing that is unmet by greater supply. As a result, single-family and condominium sales and prices are up everywhere. The Oahu single-family residential median price rose above \$700,000 in mid-2015, up 10% from the pre-recession peak. Markets on all neighbor islands are also in recovery mode, but have yet to achieve their prior peaks.

**State tax revenues:** The rising economic tide has lifted many boats, including the state's treasury. General Fund tax collection growth has been erratic on a quarterly basis due to swings in economic factors such as tourism spending, but also in tax collection practices such as income tax refund timing. On a fiscal year basis, general fund revenues were up by 10% in FY 2013, down by 1.8% in FY 2014, and up by 6.8% in FY 2015. On average, general fund revenues increased by 4.9% annually for the last three fiscal years. Spending this money will further boost economic activity.

In sum, the neighbor islands will continue to benefit from an overall strong state economy that is in its sixth year of expansion. Tourism is the primary force behind this trend, and construction will make an increasing contribution into 2016.

# Global Economy Downshifts to Slower Growth Pattern

By Dr. Ken Miller, CFA, Chief Investment Strategist & Director of Investment Services, First Hawaiian Bank

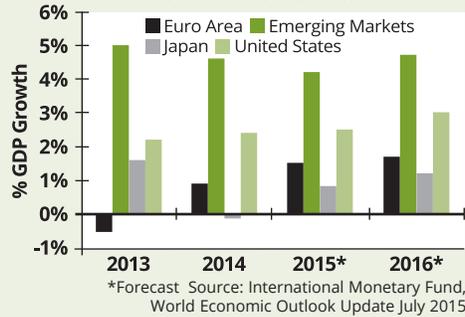
## THE BIG PICTURE: MIXED

The global economy has downshifted into a period of slower growth in the aftermath of the financial crisis. World GDP (Chart 1) expanded at only a 3.4% rate over the past three years, down from a 5.1% rate during the five pre-crisis years, 2003-2007. Growth will be only 3.3% in 2015, according to the International Monetary Fund (IMF). Beyond the residual effects of the financial crisis, the slowdown has been caused by global shocks, including lower commodity prices, as well as varied regional factors. In addition, medium- and long-term trends, such as aging populations and lower productivity growth, are having an effect. Growth should be stronger in 2015 relative to 2014 in advanced economies, but weaker in emerging markets. By 2016, both advanced and emerging economies are projected to show mild acceleration, bringing the global growth rate up to 3.8%

In the developed economies, growth is expected to increase from 1.8% in 2014 to 2.1% in 2015 and 2.4% in 2016. The growth outlook for the U.S. has been downgraded following the weak first quarter, but Europe and Japan have been surprisingly strong. Despite the market turmoil accompanying the Greek bailout negotiations, the Eurozone is seeing quite robust recovery in domestic demand, as Europe's expansionist monetary policy begins to gain traction. Japan is also experiencing stronger growth due to the effects of aggressive monetary policy and the falling yen, which is down some 37% vs. the dollar over the past three years, boosting the performance of Japanese exporters.

The projected 4.3% growth in emerging markets for 2015 marks the fifth consecutive year of decline. Several factors are behind the slowdown. Oil exporters have been hit hard by the falling price of oil, particularly countries like Russia and Venezuela, which were already in turmoil. In addition, the outlook for several other Latin American countries has weakened due to price declines in non-energy commodities. Finally, China, by far the largest developing economy, is experiencing slower growth as it tries to transition to a more sustainable, balanced growth model that is less driven by investment spending. As the impacts of these factors wane in 2016, emerging markets are projected to grow a little faster, at 4.7%.

CHART 1 - WORLD ECONOMIC GROWTH FORECAST

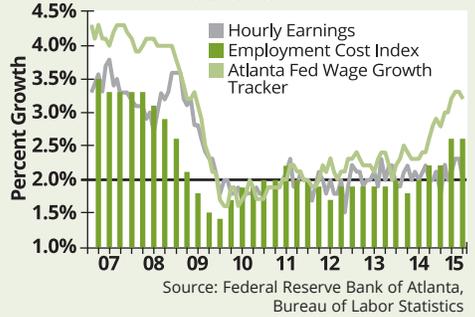


## THE U.S. ECONOMY: STRONGER GROWTH AHEAD

Recent financial troubles in Greece, China, and even Puerto Rico pushed the U.S. economy off the front page. That was a shame, because the news on the domestic economy has been mostly good. After a dismal, weather-affected, first quarter, the U.S. economy began bouncing back. Payrolls are growing at over 200,000 jobs per month, and in June the unemployment rate fell to 5.3%, lowest since 2008. Consumers began to pick up the pace in the spring, at last starting to spend the windfall from lower gasoline prices. Incomes grew a healthy 0.4% in April, May, and June. Importantly, the housing sector is also showing positive signs of recovery.

With unemployment approaching steady state, wage growth has assumed outsized importance as an indicator of labor market health. Average hourly earnings have hardly budged during the recovery, showing a 1.8% increase in July, barely above inflation. However, an alternative measure, the Employment Cost Index (Chart 2), which measures both wages and indirect compensation, has been trending upwards. Using a different approach, the Atlanta Federal Reserve looks at year-over-year wage growth for individual respondents to the Census Bureau's Current Population Survey. This "same store" methodology minimizes distortions caused by the changing mix in

CHART 2 - EMPLOYMENT COST INDEX, WAGE GROWTH



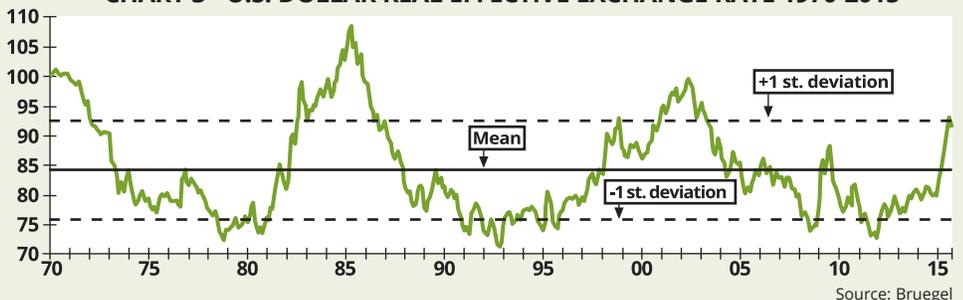
the job market, possibly providing a more accurate gauge of labor market slack, and shows much stronger wage growth of 3.2% in June.

Inflation is still too low for comfort. The Fed's preferred measure of inflation, the core Personal Consumption Expenditure (PCE) price index, was up 0.3% year over year in June, under the Fed's 2% target for the 38th consecutive month. Inflation has also been pushed down by falling prices in non-energy imports due to the strengthening of the dollar. As these effects wane, inflation should move closer to the Fed's 2% target.

Over the next couple of years, increases in consumer spending, business investment, and residential investment should drive the economy back to 2.5-3.0% growth rates. Underlying factors which should support growth in these categories of spending are higher average hourly wages, lower oil prices, and a bounce back in the rate of household formation. On the negative side, a major issue for the U.S. economy is the impact of the stronger dollar, which is already hurting manufacturing and exports. Exchange rate movements are unpredictable, affected for example by China's recent devaluation of the yuan. However, the dollar's rise stalled in March, and there is reason to believe that rapid appreciation will not resume. The dollar has appreciated much faster than

(Continued on page 8)

CHART 3 - U.S. DOLLAR REAL EFFECTIVE EXCHANGE RATE 1970-2015



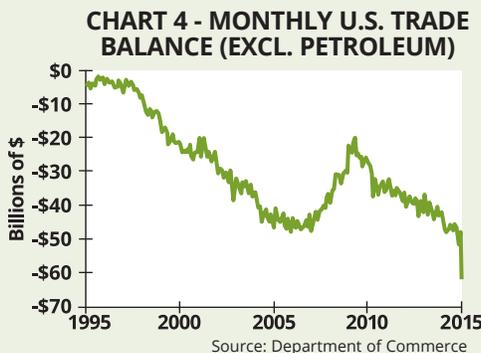
## GLOBAL ECONOMY (Continued from page 7)

would be expected by differences in inflation rates (Chart 3, on page 7). While the dollar is not especially overvalued relative to previous peaks in 1985 and 2002, and certainly could go higher, the persistent trade deficit will tend to push the dollar down. Excluding oil imports, which have plunged, the trade deficit is at record levels (Chart 4).

## ALL THE TROUBLE IN THE WORLD

Another risk to the outlook is potential spillover from the troubled economies of Europe and China. The recent events in Greece could hardly have been more dramatic. Almost literally at the last minute, Greece was able to reach a deal with its creditors to prevent a collapse of the banking system and exit from the euro currency bloc, but only by acquiescing to economic reforms and budget cuts far more severe than those which had been rejected in a national referendum only days before. With street protests in Athens, the implementation of further austerity promises to be anything but smooth, nor does it seem likely that Greece's economy can grow fast enough to meet its debt obligations. Even though the IMF, the European Central Bank, and most economists outside of Germany believe that Greece cannot escape its predicament without drastically modifying the terms of existing debt, any talk of meaningful debt relief remains *verboten*. Nonetheless, if Greece ends up exiting the Eurozone, the damage should be contained, as you might expect for a country that represents less than 2% of euro-area economy. Compared to 2012, when Greece was last on the verge of debt default, today there appears to be much less risk of financial contagion, and the risks to the U.S. economy are pretty small.

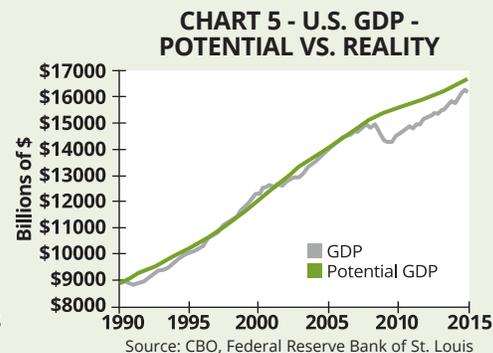
China is a different story. A financial crisis in the world's second largest economy clearly has implications for the U.S., which is why the gyrations of the Chinese stock market are concerning. Since mid-2014, the Shanghai Composite Index increased 150% in less than a year, then fell 30% in about three weeks. These dramatic moves cannot be explained by any fundamental changes in the economic outlook, good or bad, but are instead largely the result of Chinese government policy. Never shy to pull economic levers, policymakers in China have



deliberately set about boosting the stock market through measures such as increasing the availability of margin debt. Their aim has been to bolster economic growth by creating household wealth and by funneling capital to Chinese companies. Going forward, there is no guarantee that policymakers will be able to support the market. However, the wealth effects of the stock market are limited in China, where perhaps 10% of households own stocks, and Chinese companies rely relatively little on equity capital. Thus, we do not anticipate any more than a gradual slowing of the Chinese economy, even with further declines in the stock market. (If we are wrong, and China experiences a "hard landing", there would likely be ancillary benefits to the U.S. in the form of lower commodity prices, which in recent years have been largely driven by demand from China).

## IS ECONOMY UNDERACHIEVING, OR IS POTENTIAL GROWTH LOWER? YES.

"Potential growth" to an economist is the sustainable growth rate of economic output that can be achieved without causing inflation. Potential growth can be seen pretty well in hindsight, but can only be estimated at any point in time. While there is plenty of controversy about the exact level of potential growth, almost everyone agrees that it has been falling, due to slower expansion of the workforce and lower productivity growth (output per hour of work). The Congressional Budget Office (CBO) estimates that potential growth will only be about 2.1% over the next 10 years, down from a long-term average of about 3.3%. Most of the decline is due to slower expansion of the workforce — particularly because we are now past the multi-year demographic shift of women entering the workplace. However, there has also been a puzzling decline in productivity



growth. Part of the problem is that lagging business investment has depleted capital stock. But worn-out factory equipment cannot be the whole story.

Over the past several decades, technological innovation has been the major driver of productivity growth. Could it be that many of today's technological advances (e.g., social networking and mobile apps) are having less impact on economic output? There may be a measurement problem here, as output statistics fail to capture the full value of an increasingly services-based economy. There may also be a matter of timing — perhaps the full productivity benefits of nascent technologies will develop gradually (as has happened in the past).

This is not the first time we have wrestled with periods of slower productivity growth: In the 1930s some economists predicted a weak economy for many years to come due to slowdowns in population growth and technological advance — right on the cusp of a huge economic boom. Oh, well. Accordingly, today in our view, it is much too early to extrapolate from the recent decline in productivity growth, or the failure to identify (yet) technological advances on par with the internal combustion engine or mainframe computers in terms of economic impact.

Nonetheless, absent a sharp increase in immigration, for the next several years it appears that potential growth in the U.S. will be at least 1% lower than in the past. However, the economy can grow faster until the gap between actual and potential output, i.e., economic slack, is closed. Today, the CBO estimates the output gap to be about 4% of GDP (Chart 5), implying that we may have several years of above-trend growth.