



COMMONWEALTH OF  
PUERTO RICO

Government Development Bank  
for Puerto Rico

January 2015

# Economic Activity Index (“GDB-EAI”)

# Special Comment - March 2015

## Benchmark Revision of Payroll Employment

In March 2015 there was a major benchmark revision of the payroll employment data for 2014, significantly different to the ones observed in previous years.

- Every March the BLS publishes the benchmark revision of the payroll employment. Each revision changes the employment figures for the previous 21 months.
- The revision released in March 2014 increased the 2013 average level of payroll employment by 21,275 employees with respect to the previous employment estimates published until December 2013.
- However, the revision released in March 2015 decreased the 2014 level of payroll employment by 17,333 jobs with respect to the estimates released until December 2014.

Calendar Year	Average Total Payroll Employment (Previous)	Average Total Payroll Employment (Revised)	Change in the Number of Employees
2005	1,019,871	1,043,822	23,952
2006	1,041,574	1,042,833	1,259
2007	1,027,833	1,028,767	933
2008	1,004,635	1,009,975	5,340
2009	967,642	961,133	-6,508
2010	929,683	926,842	-2,842
2011	918,550	922,617	4,067
2012	916,800	935,233	18,433
2013	904,575	925,850	21,275
2014	924,833	907,500	-17,333

# Special Comment - March 2015

## Benchmark Revision of Payroll Employment (2)

The benchmark revision had impacts on year-over-year (y-o-y) growth rates for 2014.

- The payroll employment benchmark revision not only impacted the average level of payroll employment, it also changed its average growth rate for previous years.
- Notice that from a 1.3% decline during FY2014, the revised figures now reflect a 2.2% decrease; and from a year-to-date (July-December) contraction of 0.0% in FY2015, the revised numbers show a year-to-date drop of 1.8%.

**Payroll Employment before the benchmark revision**

	2010	2011	2012	2013	2014	2015
<b>FISCAL YEAR</b>						
AVERAGE	943.3	923.6	931.3	937.4	924.9	
DIFFERENCE	-52.8	-19.7	7.7	6.1	-12.5	
%CHANGE	-5.3	-2.1	0.8	0.7	-1.3	
<b>JUL-DEC</b>						
AVERAGE	950.1	926.8	928.1	945.8	922.6	922.5
DIFFERENCE	-61.4	-23.3	1.2	17.7	-23.2	-0.2
%CHANGE	-6.1	-2.4	0.1	1.9	-2.4	0.0
<b>CALENDAR YEAR</b>						
AVERAGE	931.6	924.2	940.2	925.9	924.8	
DIFFERENCE	-33.7	-7.4	15.9	-14.3	-1.0	
%CHANGE	-3.5	-0.8	1.7	-1.5	-0.1	

**Payroll Employment after the benchmark revision**

	2010	2011	2012	2013	2014	2015
<b>FISCAL YEAR</b>						
AVERAGE	943.3	923.6	931.3	937.2	916.8	
DIFFERENCE	-52.8	-19.7	7.7	5.9	-20.4	
%CHANGE	-5.3	-2.1	0.8	0.6	-2.2	
<b>JUL-DEC</b>						
AVERAGE	947.8	924.9	927.7	943.2	921.3	904.4
DIFFERENCE	-59.5	-22.9	2.8	15.4	-21.9	-16.8
%CHANGE	-5.9	-2.4	0.3	1.7	-2.3	-1.8
<b>CALENDAR YEAR</b>						
AVERAGE	931.6	924.2	940.2	926.0	907.5	
DIFFERENCE	-33.7	-7.4	15.9	-14.2	-18.5	
%CHANGE	-3.5	-0.8	1.7	-1.5	-2.0	

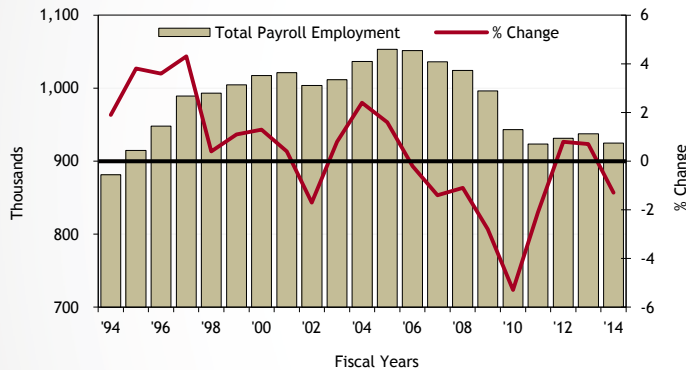
# Special Comment - March 2015

## Benchmark Revision of Payroll Employment (3)

Below are the impacts of the benchmark revision on payroll employment.

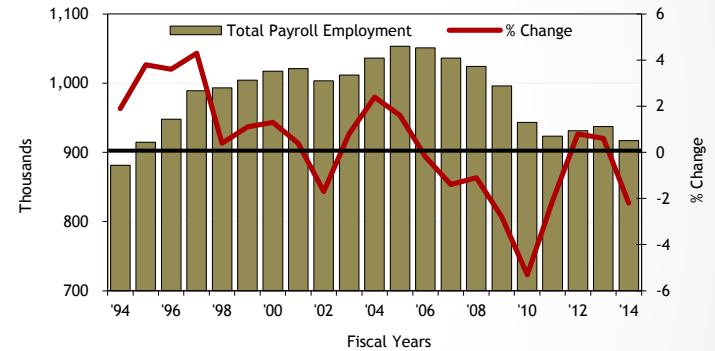
### Before the benchmark revision

Total Non-Farm Payroll Employment

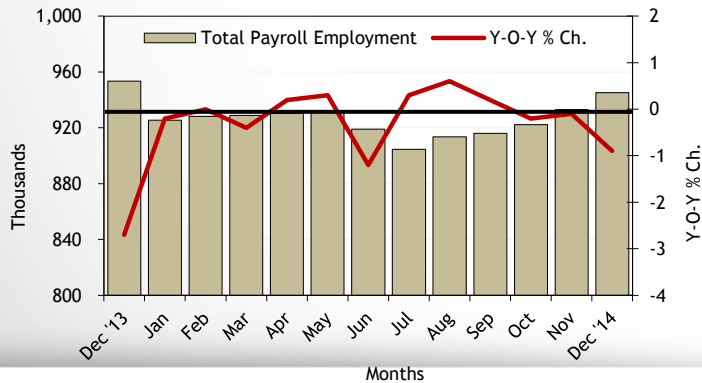


### After the benchmark revision

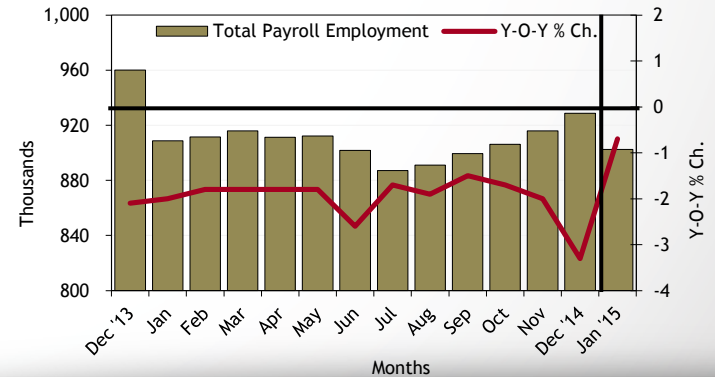
Total Non-Farm Payroll Employment



Total Non-Farm Payroll Employment



Total Non-Farm Payroll Employment



# Special Comment - March 2015

## Benchmark Revision of Payroll Employment (4)

The annual benchmark revision resulted in the adjustment of the GDB-EAI

- Given that the total payroll employment is one of the components of the GDB-EAI, a major change in payroll employment implies a significant change in the Index.
- Prior to the annual benchmark revision, the EAI was declining by 3.0% in FY2014 and by 1.5% in the first semester of FY2015. After the benchmark revision, the reduction in the EAI was of 3.5% in FY2014 and of 2.7% for the first semester of FY2015.

**GDB-EAI before the benchmark revision**

	2010	2011	2012	2013	2014	2015
<b>FISCAL YEAR</b>						
AVERAGE	134.7	130.8	130.9	130.8	126.9	
DIFFERENCE	-7.0	-4.0	0.2	-0.1	-3.9	
%CHANGE	-4.9	-2.9	0.1	-0.1	-3.0	
<b>JUL-DEC</b>						
AVERAGE	136.1	131.4	130.0	132.4	127.1	125.1
DIFFERENCE	-8.3	-4.7	-1.4	2.4	-5.4	-1.9
%CHANGE	-5.7	-3.4	-1.1	1.9	-4.0	-1.5
<b>CALENDAR YEAR</b>						
AVERAGE	132.4	130.1	132.2	128.1	125.9	
DIFFERENCE	-5.2	-2.3	2.1	-4.0	-2.2	
%CHANGE	-3.8	-1.8	1.6	-3.0	-1.7	

**GDB-EAI after the benchmark revision**

	2010	2011	2012	2013	2014	2015
<b>FISCAL YEAR</b>						
AVERAGE	134.8	130.9	131.1	130.9	126.4	
DIFFERENCE	-6.9	-4.0	0.2	-0.1	-4.5	
%CHANGE	-4.9	-2.9	0.1	-0.1	-3.5	
<b>JUL-DEC</b>						
AVERAGE	135.9	131.4	130.4	132.4	127.1	123.6
DIFFERENCE	-8.2	-4.5	-0.9	2.0	-5.3	-3.4
%CHANGE	-5.7	-3.3	-0.7	1.5	-4.0	-2.7
<b>CALENDAR YEAR</b>						
AVERAGE	132.5	130.2	132.3	128.2	124.7	
DIFFERENCE	-5.2	-2.3	2.1	-4.0	-3.6	
%CHANGE	-3.7	-1.8	1.6	-3.1	-2.8	

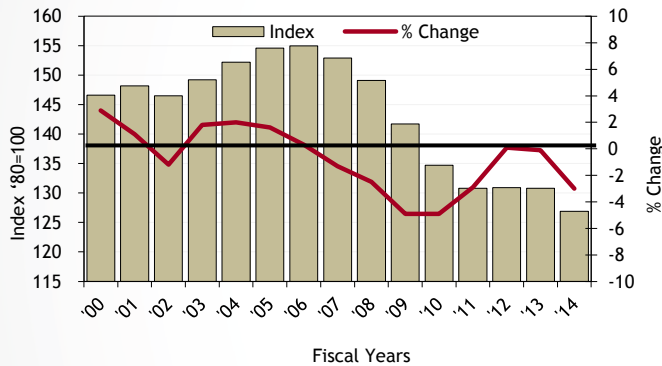
# Special Comment - March 2015

## Benchmark Revision of Payroll Employment (5)

Below are the changes of the benchmark revision on the GDB-EAI.

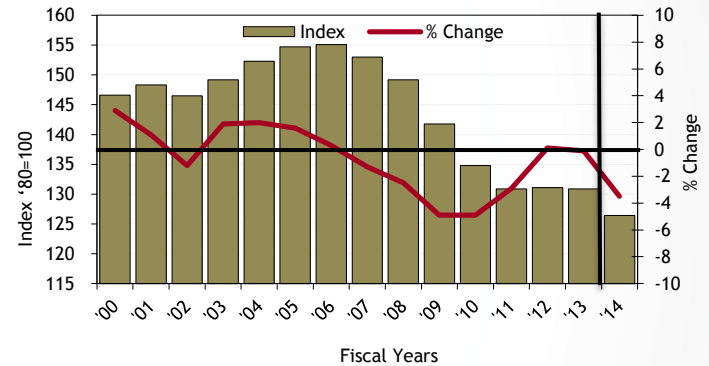
### Before the benchmark revision

GDB Economic Activity Index

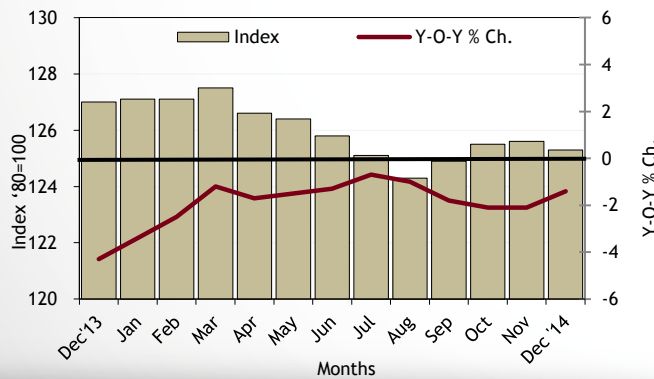


### After the benchmark revision

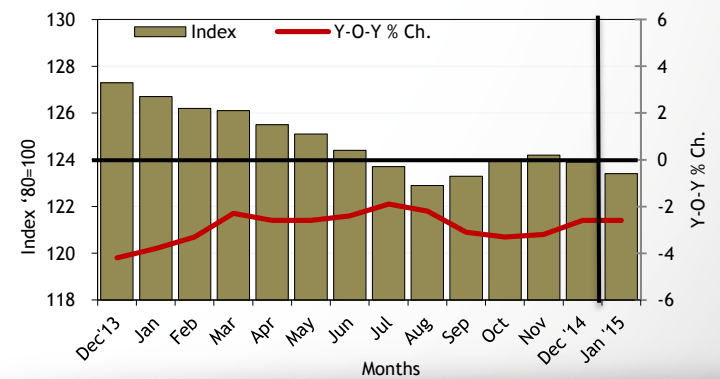
GDB Economic Activity Index



GDB Economic Activity Index



GDB Economic Activity Index



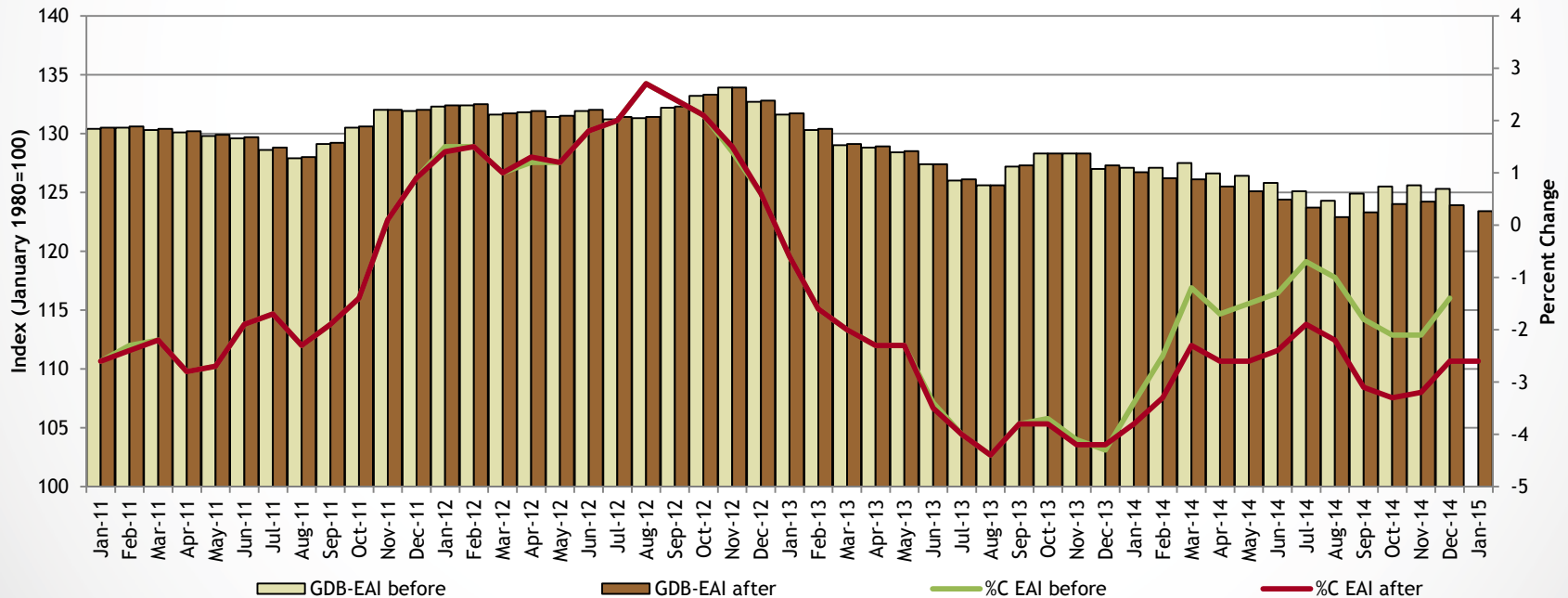
# Special Comment - March 2015

## Benchmark Revision of Payroll Employment (6)

The benchmark revision implies y-o-y reductions at larger magnitudes.

### GDB Economic Activity Index

(Before and After the March 2015 Payroll Benchmark Revision)



# Clarification about the interpretation of the GDB-EAI figures

The GDB-EAI is an indicator of the general economic activity, not a direct measurement of the real GNP. Moreover, the GDB-EAI annual growth rates are not the same as the real GNP growth rates, because the former are more volatile than the latter.

- When it is annualized, the level of the EAI is highly correlated with the **level** of the real GNP (with a Pearson correlation coefficient of 0.9860, for FY1981-FY2013).
- The annual **growth rates** of both variables are also highly correlated (with a Pearson correlation coefficient of 0.9478, for FY1982-FY2013).
- Nevertheless, the annual growth rate of the EAI **IS NOT** the same as the annual growth rate of the real GNP. Being highly correlated does not mean being equal.
- In order to approximate real GNP growth from the EAI annual growth, we estimate a linear regression model relating both variables.
- Plugging in the EAI annual growth rates into the resulting equation we obtain estimates for the annual growth rates of the real GNP.
- This transformation generates an approximation of the actual real GNP growth figures.



# Clarification about the interpretation of the GDB-EAI figures (2)

Here is a comparison of the annual growth rates of the GDB-EAI with the actual real GNP figures. There are also estimates of the annual growth of the real GNP using the figures coming from the GDB-EAI.

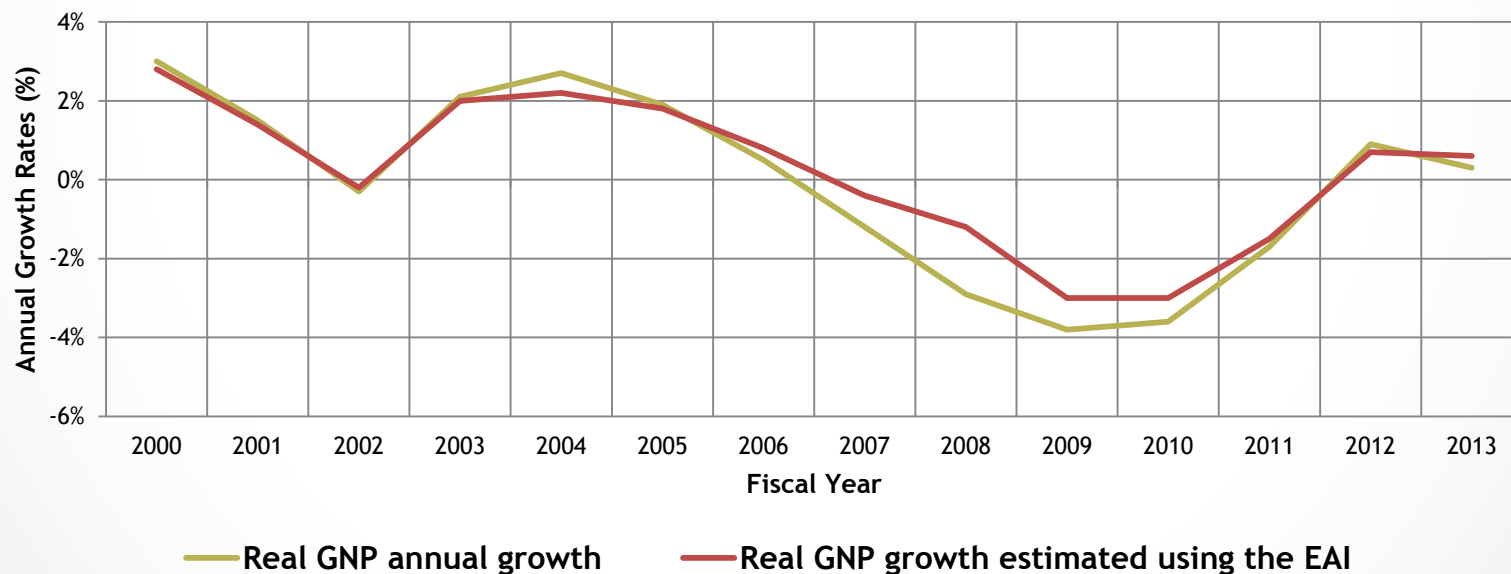
Fiscal Year	EAI annual growth	Real GNP annual growth estimated using the EAI	Actual Real GNP annual growth
2000	2.9%	2.8%	3.0%
2001	1.1%	1.4%	1.5%
2002	-1.2%	-0.2%	-0.3%
2003	1.9%	2.0%	2.1%
2004	2.0%	2.2%	2.7%
2005	1.6%	1.8%	1.9%
2006	0.3%	0.8%	0.5%
2007	-1.3%	-0.4%	-1.2%
2008	-2.5%	-1.2%	-2.9%
2009	-4.9%	-3.0%	-3.8%
2010	-4.9%	-3.0%	-3.6%
2011	-2.9%	-1.5%	-1.7%
2012	0.1%	0.7%	0.9%
2013	-0.1%	0.6%	0.3%

- Notice that the real GNP growth estimates coming from the EAI are relatively close to the actual real GNP growth figures.

# Clarification about the interpretation of the GDB-EAI figures (3)

Here is a comparison graph of the actual real GNP figures and the real GNP annual growth estimates using the figures coming from the GDB-EAI.

**Growth Rates Comparisons:**  
Real GNP and real GNP estimated with the GDB-EAI



# General Commentary - January 2015

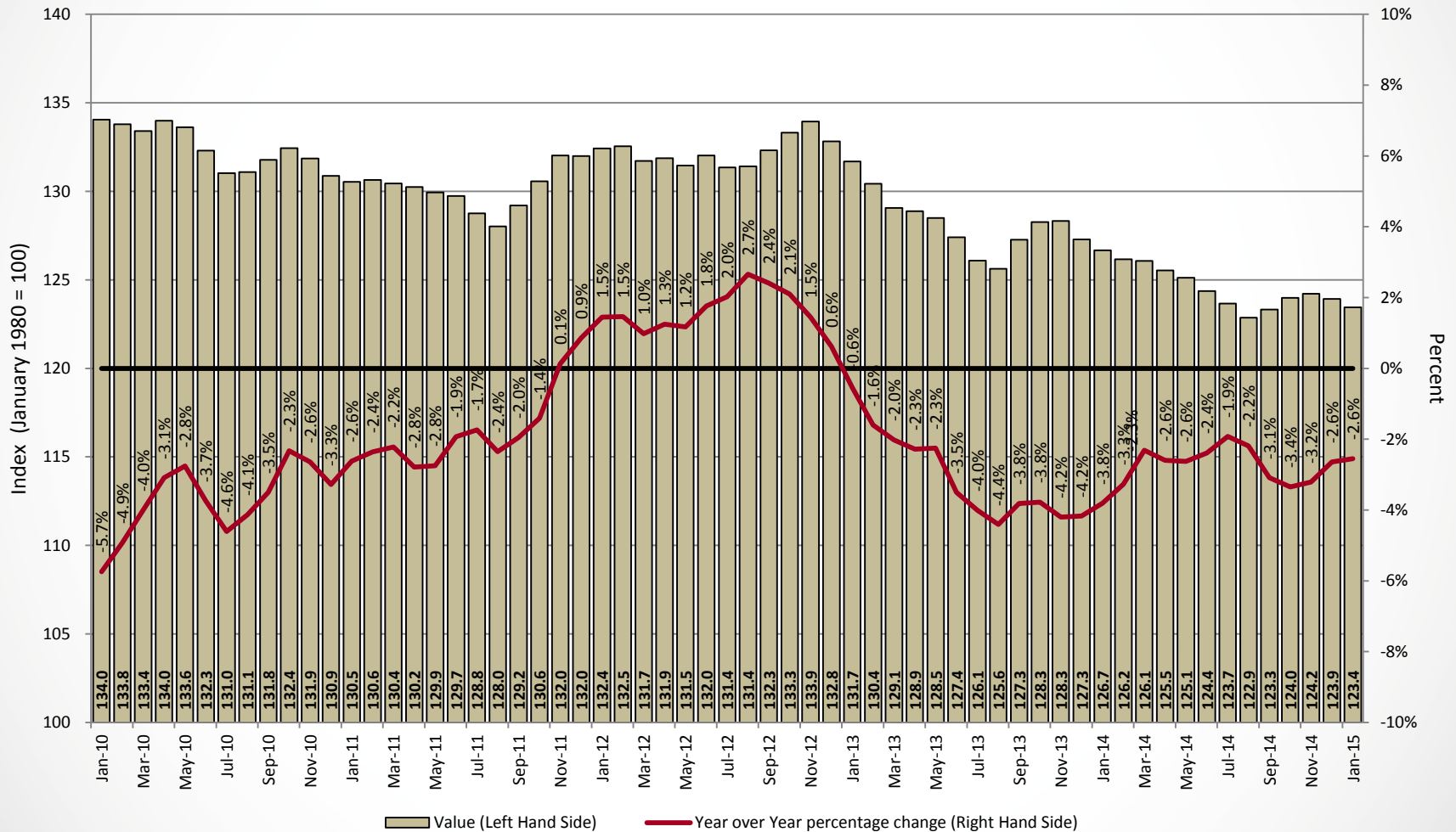
In January 2015, the GDB-EAI registered a 2.6% year-over-year (y-o-y) reduction, and a month-over-month (m-o-m) decrease of 0.4%.

- The January 2015 figure for the EAI was 123.4, a 2.6% reduction compared to January 2014, and a decrease of 0.4% compared to December 2014.
- Total non-farm payroll employment for January 2015 averaged 902,500, an annual decrease of 0.7%.
- Electric power generation for January 2015 totaled 1,636.3 million kWh, an annual decrease of 2.5%.
- The preliminary number for gasoline consumption\* in January 2015 was 83.5 million gallons, 0.8% below January 2014.
- Cement sales for January 2015 totaled 0.99 million bags, registering an annual decrease of 19.1%.

\* The monthly gasoline consumption is estimated by the GDB from the Treasury Department's monthly gasoline excise tax collections paid by importers which are transferred to P.R. Highways and Transportation Authority. These collections fluctuate due to changes in inventories and purchases, which do not necessarily reflect the actual monthly consumption reported by retailers.

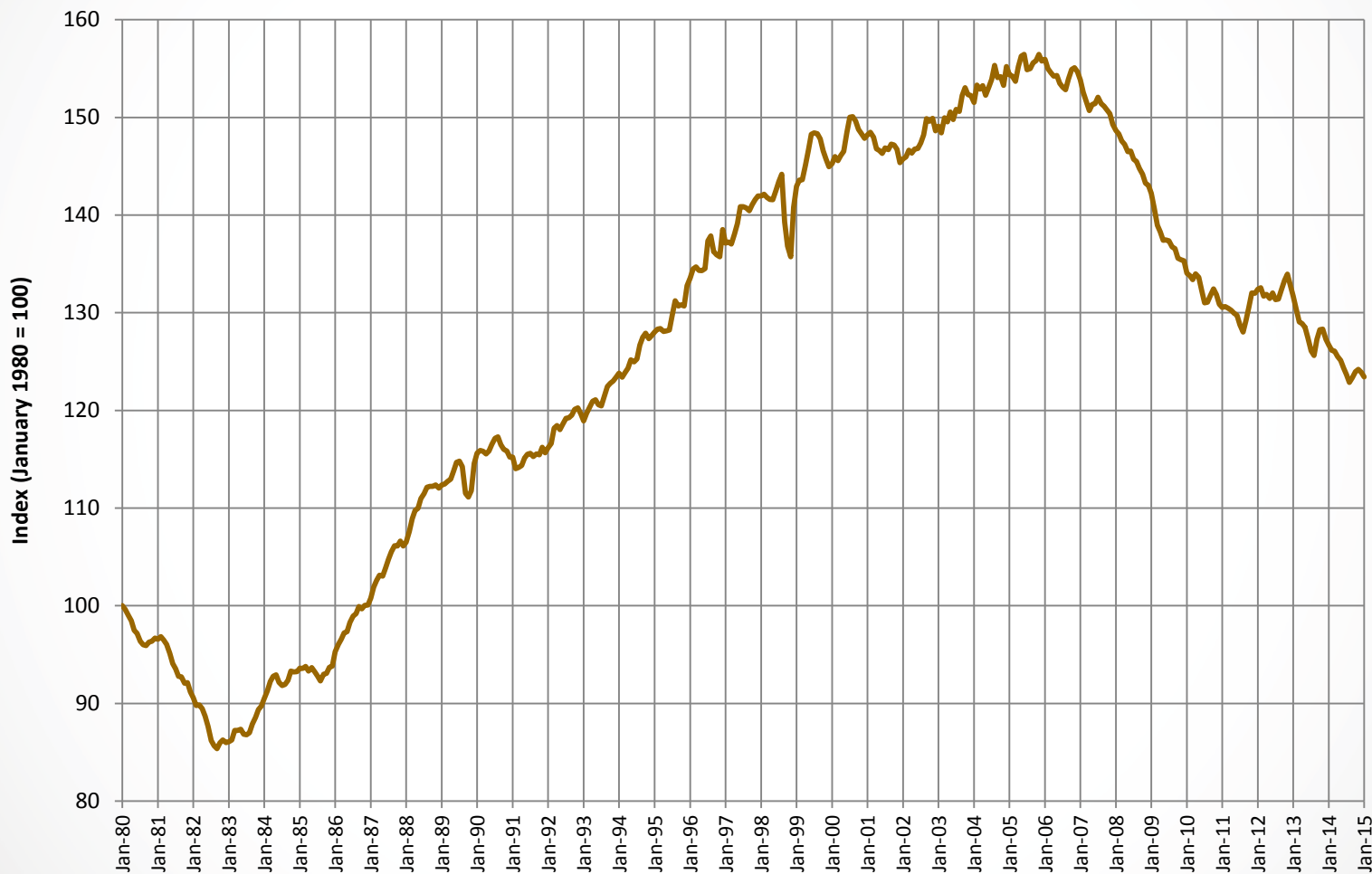
The GDB-EAI registered a 2.6% year-over-year reduction in January 2015, and a decrease of 0.4% compared to December 2014.

## GDB Economic Activity Index



The complete series of the new EAI, which starts in January 1980, shows the recessions of FY1982 and FY1983, and the mild recession of FY1991, the recession of 2001. It also shows the path of the Index since the beginning of the current recession.

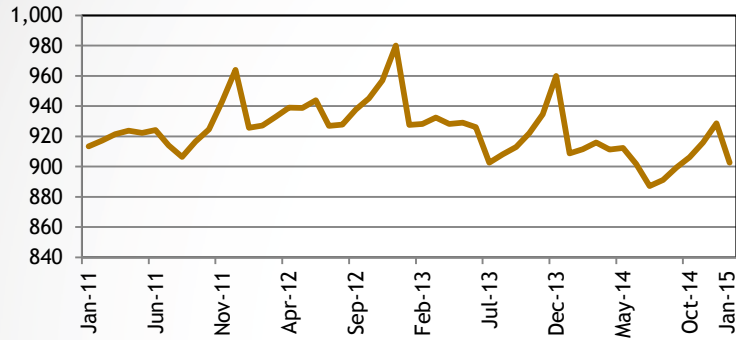
## GDB Economic Activity Index



# GDB Economic Activity Index Components

## Total Non-Farm Payroll Employment\*

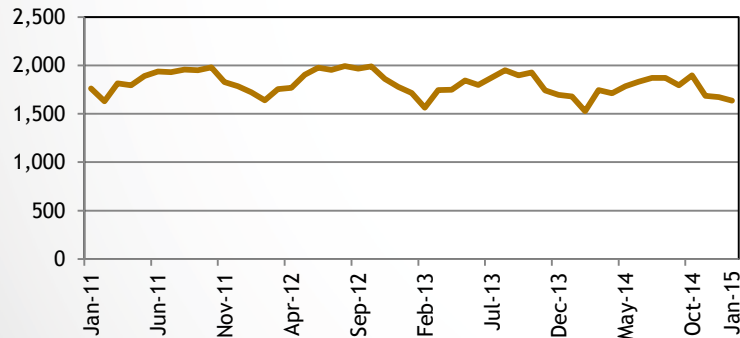
(Thousands of jobs)



- Total non-farm payroll employment for January 2015 averaged 902,500, an annual decrease of 0.7%.

## Electric Power Generation\*

(Millions of kWh)



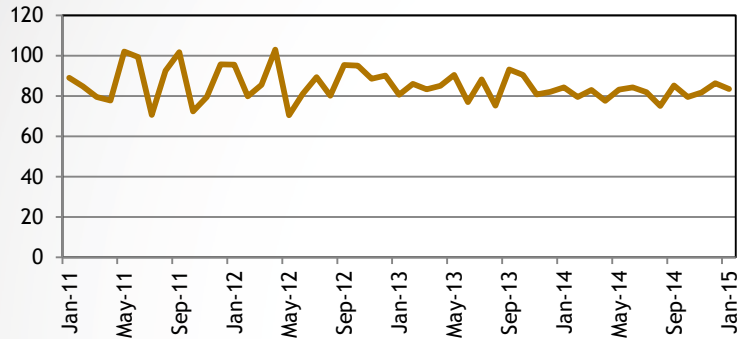
- Electric power generation for January 2015 averaged 1,636.3 million kWh, an annual decrease of 2.5%.

Sources: BLS and PREPA  
\* Not seasonally adjusted.

# GDB Economic Activity Index Components

## Gasoline Consumption\*

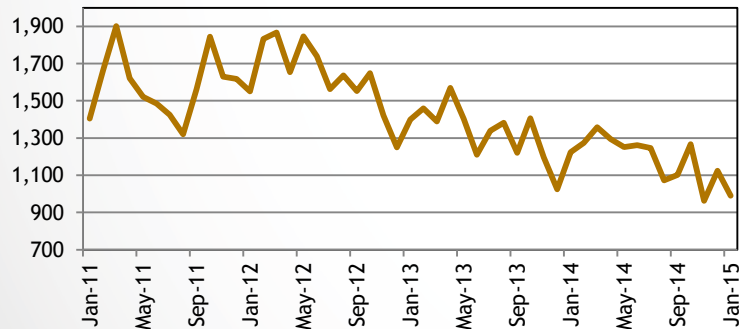
(Millions of gallons)



- The preliminary estimate of gasoline consumption for January 2015 was 83.5 million gallons, for an annual decrease of 0.8%.

## Cement Sales\*

(Cement bags sold, in thousands)



- Cement Sales for January 2015 totaled 0.99 million bags, an annual decrease of 19.1%.

\*The monthly gasoline consumption is estimated by the GDB from the Treasury Department's monthly gasoline excise tax collections paid by importers which are transferred to P.R. Highways and Transportation Authority.

Sources: PRHTA and GDB  
\* Not seasonally adjusted.

# **Description of the GDB-Economic Activity Index**



# GDB-EAI Highlights and Composition

## GDB Economic Activity Index Highlights

### Advantages of the GDB-EAI:

- Readily available
- Highly correlated to Puerto Rico's real GNP
- Reliable tool to monitor actual trend of Puerto Rico economy

### The GDB-EAI is made up of 4 indicators:

- Total Payroll Employment (Establishment Survey/ Thousand of employees)
- Total Electric Power Generation (Millions of kWh)
- Cement Sales (Millions of bags)
- Gas Consumption (Millions of gallons)

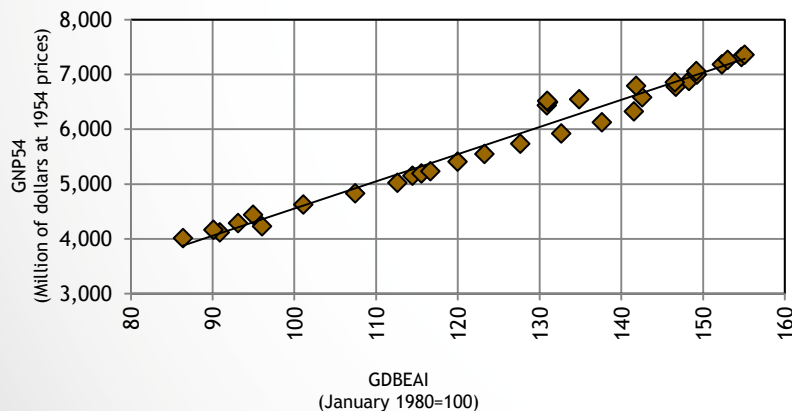
# Description of the GDB-EAI

- The GDB-EAI is a coincident index for the economic activity of Puerto Rico. It is highly correlated to Puerto Rico's real GNP not only on the levels, but also on the annual growth rates.
- This index was developed following the methodology similar to that used by The Conference Board in their coincident index. This methodology follows a standard procedure to adjust the data for seasonality and volatility factors.

## Real Gross National Product as a function of the GDB Economic Activity Index

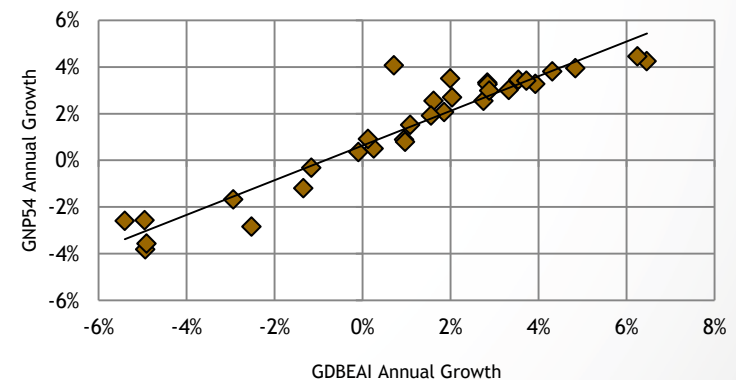
Relationship on the levels: FY1981-FY2013

$$y = 49.619x - 411.49 \quad R^2 = 0.9721$$



Relationship on the growth rates: FY1982-FY2013

$$y = 0.7429x + 0.0063 \quad R^2 = 0.8974$$



Sources: GDB

# Disclaimer

The GDB-EAI and its indicators are subject to revisions. While the information comprising the GDB EAI has been obtained from sources GDB believes to be reliable, GDB is not responsible for any errors or omissions, or for the results obtained from the use of this information.