جمهورية العراق
وزارة التخطيط - الجهاز المركزي للإحصاء
CSO
Central Statistical Organization IRAQ

Index Numbers
For the Building & Construction sector
For the year 2017

Index numbers Department

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Introduction

The construction sector considered the important sector in the economy it constitutes the main weight in the early stages of development as it provides the foundations of the infrastructure of the national economy, so it was preparing a report indices of the construction sector for the year 2017 basis 2012, including the price indices types, the wages of workers, the cost of construction.

Note that the calculated of indicators do not include the Kurdistan region.

All years (2008-2013) which have been calculated by 2007 as a base year are included in this report in the last table, that is, all indices are actual based on 2007.

Methodology

Here comes the methodology of composition indices for building and construction sector.

First: Base year

It has been updated indices construction sector considering the year 2012 as the base year.

Second: Commodity basket in the building & construction sector

Classified groups involved in the calculation indices public and private sectors to 14 Major group in turn to several types include detailed value (number) and the value of each type in the main group as follows:

1. Public sector: included a number of (89) type of (99) within (14) major group represents the percentage (90%) of the total number of types for the year 2012 as base year.
As for the value represents a percentage (99.998%) from the sum of the values of the types.

2. Private sector: included a number of (69) type of (74) into (14) major group representing (93%) of the total number of types for the year 2012 as base year.
As for the value represents a percentage (69%) from the sum of the values of total types.

Type (other) inside within (14) major group in the public and private sectors in the year 2012 as base year, which did not enter the calculation of the index were excluded for Instability of the specifications and sometimes Lack of availability of the quantities and values.

Third: Types of records in the construction sector and the mathematical Formulas used in calculated:

1. The price indices of species used in the construction sector:

Considers the prices of types and its specifications used in construction of the main factors that affect the cost of construction, the volume of demand significantly affect the prices rise or fall, and that the purpose of calculating the price indices of the types is to see the change in the prices of these types, and for calculating the index of construction costs in the construction sector (total).

The (price type) = (The value of each user type is included in the calculation of the index) / (The amount used from it)

It was used the weighting law with fixed weights (Laspeyres' formula) in the calculation of the indices in the public and private sectors, and then the total (Public and private), Taking into consideration the groups involved in the formation of each sector, as follows:

$$I_P = \frac{\sum_{i=1}^{n} \frac{P_1}{P_0} \times W_i}{\sum_{i=1}^{n} W_i} \times 100 \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (1)$$

Whereas:

I_P : It represents a record for the price

P_1 : It represents the price in the comparative year

P_0 : It represents the price in the base year

w_i :It represents the weight of the type, which relies species used in

construction values in calculating the weights of the weighting fixed as follows:

$$\text{Wight Type (w)} = \frac{\text{Value of the type used in base year}}{\text{Total of the type used values in base year}} \text{ x } 100$$

To calculate the index in the construction sector, counted a record number to the price of each type selected in the sample as follows:

$$\text{price index type} = \frac{\{(\text{Price index type in public sector x weight}) + (\text{price index type in private sector x weight})\}}{100}$$

Where that weight type in the public and private sectors is calculated as follows:

$$\text{weight type in the sector} = \frac{\text{Value of the type used in the sector in base year}}{\text{Total of the type used in both sectors in base year}} \text{ x } 100$$

And then it calculates the index in the construction sector (total) using the formula (1) above.

2. records of wages paid to workers in the construction sector:

Considers workforce (employees) of the basic elements in the production process, and the index of wages is one of the most important economic indicators in the analysis of cost elements and to compare wages in different economic sectors during the periods of time and to prepare a record of the cost and also to learn about the entry of workers and fits in with the general level of prices.

For the weight of wages: Mark (number of workers in the base year) {static} as a weight for each set of classes of employees, where they were weighted {(wage rates in the comparison year in each category) X (number of workers in the base year of that class)}

Include items as follows:

A. Types of professions the public sector and include six varieties they:
Engineers, technicians, administrators, workers, drivers and car drivers
And machine operators and machinery, guards, cleaners and other Employees.

B. Varieties professions private sector includes three varieties they:
Skilled workers, semi-skilled workers, unskilled workers.

It was used the weight law with fixed weights (Lasper) in calculating the indices of the wages of workers in both the public and private sectors, as follows:

$$\text{Price index payments in the sector} = \frac{\text{Total (Wage rate in comparison year x the number of workers in base year)}}{\text{Total wages in base year}} \text{ x } 100$$

And because of the different occupational classification of workers in the public and private sectors it was the index is calculated for the total construction sector (total) using the relative importance (weight) of the wages for both sectors in the base year, as follows:

$$\text{Price index wages In construction sector} = \frac{\{(\text{Price index wages in public sector x weight})+(\text{price index wages in private sector x weight})\}}{100}$$

Where it calculated the relative importance (weight) wage as follows:

$$\text{Weight wages in the sector} = \frac{\text{Value of the wages in the sector in base year}}{\text{Value of the wages of construction (total) in base year}} \times 100$$

Also, it was awarded a record wage for each of the buildings and the construction unit in the public sector.

3. <u>Indices of the cost of building and construction in the construction sector:</u>

The construction costs are affected by two elements two main types and wages of worker's prices, after that is calculated by record numbers of these two elements (prices and wages) can be installed record numbers for the cost of construction in the public and private sectors and in the construction sector (total) and foundation constant is the year 2012 as follows:

{The construction cost = value of the type used + total wages paid to employees}

Therefore:

$$\text{Types Weight} = \frac{\text{The value of the type used in base year}}{\text{The cost of construction in base year}} \times 100$$

$$\text{Wages Weight} = \frac{\text{Total wages paid in base year}}{\text{The cost of construction in base year}} \times 100$$

So:

$$\text{Price index cost For the construction} = \frac{\{(\text{Price index types x types weight})+(\text{index wages x wages weight})\}}{100}$$

Since then:

The cost of building & construction in construction sector = the cost of buildings in public sector + the cost of buildings in private sector

Then:

$$\text{cost of building In construction Sector} = \frac{\{(\text{cost of building\&construction in public x weight})+(\text{cost of building\&construction in private x weight})\}}{100}$$

Whereas:

$$\text{Sector Weight} = \frac{\text{Cost of building\&construction in the sector in base year}}{\text{Cost of building\&construction in the construction sector (total) in base year}} \times 100$$

Data Sources

Following sources in the Central statistical organization when calculating the indices of the construction sector:

1. Statistics report buildings & construction in the public sector, issued by the Directorate of building & construction statistics.
2. Statistics report private sector buildings, issued by the Directorate of building & construction statistics as well.

Analysis of index number in the building & construction sectors for year 2017 basis 2012

P.S.: (Nineveh, Selah-al Deen and Al-anbar) governorates were not included in collecting data due to extreme conditions in them.

Table No. (4) Shows Index numbers in the building & construction sectors for the following indicators:

1. Prices indices for types:

Index of types increased in the construction sector in 2017 which reached to (145.1) at the increase rate of (69.7%) from 2016, because of the high Index number of types prices in the private sector which reached to (154.6) and at the increase rate of (121.8%) from 2016.

While the index number of types prices in the public sector reached to (115.4), recording a decrease of (15.4%) from 2016.

2. Workers' wages indices:

The index number of workers' wages in the construction sector reached to (93.8) in 2017 in a decrease of (2.2%) from 2016, because of the decrease in index of workers' wages in the public sector which was (71.4) and at the decrease rate of (52.3%) from 2016.

While the index for workers' wages in the private sector increased reaching to (99.5) and increasing at a rate of (21.0%) from 2016.

3. Construction cost indices:

The index of construction sector cost reached to (136.9) in 2017 in an increase of (56.6%) from 2016, because of the increase in index construction cost in the private sector which reached to (145.4) and at the increase rate of (102.5%) from 2016.

While the index number of construction cost in the public sector reached to (109.3) recording a decrease of (20.9%) from 2016, due to the decrease in wages of buildings & construction sectors.

4: Indices of wages of workers in the public sector (buildings & construction):

Index numbers of the workers' wages in the building sector decreased to (67.5) in 2017 in a decrease of (51.2%) from 2016.

Also, index rates of workers' wages in the construction decreased reaching to (74.6) and at the decrease rate of (53.9%) from 2016.

So, the Index of workers' wages in the public sector (buildings+construction) became low reaching to (71.4) and the rate decrease of (52.3%) from 2016, (as in item 2 above).

Changes in indicators above return to the continuous variation in types of used construction materials and due to the demand on them.

Price indices for types in the public-sector and rates of change for years (2016-2017)

Table (1) (2012=100)

The main group	The weight of the foundation in 2012 in the public sector	Price indices for types in the public sector		The rate of change%
		Year 2016	Year 2017	
Bricks	**1.888**	283.7	211.1	-25.6
Blocks	**0.556**	100.5	81.1	-19.3
Rocks	**0.482**	155.0	140.2	-9.5
Sand	**1.542**	76.8	77.0	0.3
Gravel	**2.606**	136.3	106.1	-22.2
Cement	**32.540**	109.0	103.1	-5.4
Gypsum	**0.280**	178.2	159.6	-10.4
Tilles	**2.737**	89.7	80.6	-10.1
Irone	**8.832**	92.2	82.9	-10.1
Doors	**0.500**	108.2	105.4	-2.6
Windows	**0.485**	95.2	98.4	3.4
Establishing healthey	**5.639**	423.6	121.8	-71.2
Electric establishment	**1.453**	101.9	153.6	50.7
Other construction materials	**40.461**	126.7	128.9	1.7
Index number in Public sector	**100.0**	136.4	115.4	-15.4

Price indices for types in the private-sector and rates of change for years (2016-2017)

Table (2) (2012=100)

The main group	The weight of the foundation in 2012 in the Private sector	Price indices for types in the Private sector		The rate of change%
		Year 2016	Year 2017	
Bricks	**13.628**	69.0	47.6	-31.0
Blocks	**2.732**	82.8	75.9	-8.3
Rocks	**1.543**	66.3	264.4	298.8
Sand	**5.747**	60.5	54.8	-9.4
Gravel	**2.645**	85.6	65.4	-23.6
Cement	**11.024**	59.2	36.9	-37.7
Gypsum	**3.213**	146.9	256.9	74.9
Tilles	**2.104**	125.6	557.7	344.0
Irone	**4.875**	91.8	69.4	-24.4
Doors	**3.955**	59.8	66.5	11.2
Windows	**3.633**	61.5	61.7	0.3
Establishing healthey	**2.896**	70.1	70.9	1.1
Electric establishment	**4.224**	87.7	96.7	10.3
Other construction materials	**37.781**	59.4	261.3	339.9
Index number in Private sector	**100.0**	69.7	154.6	121.8

Price indices for types in the construction-sector and rates of change for years (2016-2017)

Table (3) (2012=100)

The main group	The weight of the foundation in 2012 in the construction sector	Price indices for types in the construction sector		The rate of change%
		Year 2016	Year 2017	
Bricks	**10.794**	78.0	54.5	-30.1
Blocks	**2.206**	83.9	76.2	-9.2
Rocks	**1.286**	74.3	253.2	240.8
Sand	**4.732**	61.8	56.6	-8.4
Gravel	**2.636**	97.7	75.1	-23.1
Cement	**16.220**	83.3	68.9	-17.3
Gypsum	**2.504**	147.7	254.3	72.2
Tilles	**2.256**	115.1	417.9	263.1
Irone	**5.831**	91.9	74.3	-19.2
Doors	**3.121**	61.7	68.0	10.2
Windows	**2.873**	62.9	63.2	0.5
Establishing healthey	**3.558**	205.5	90.4	-56.0
Electric establishment	**3.556**	89.1	102.3	14.8
Other construction materials	**38.427**	76.5	227.7	197.6
Index number in Construction sector	**100.0**	85.5	145.1	69.7

The index numbers in the building & construction sectors and rates of change for years (2016-2017)

Table (4) (2012=100)

Types of the index numbers	sector	The index numbers		The rate of % change
		Year 2016	Year 2017	
Prices of types	Public	136.4	115.4	-15.4
	Private	69.7	154.6	121.8
	Construction	85.5	145.1	69.7
Wages of workers	Public	149.6	71.4	-52.3
	Private	82.2	99.5	21.0
	Construction	95.9	93.8	-2.2
Construction cost	Public	138.2	109.3	-20.9
	Private	71.8	145.4	102.5
	Construction	87.4	136.9	56.6
Wages of workers in the public sector (buildings + Construction)	Buildings	138.4	67.5	-51.2
	Construction	161.7	74.6	-53.9
	Public	149.6	71.4	-52.3

Figure (1) Types prices index number in the building & construction sectors for years (2016-2017) basis 2012

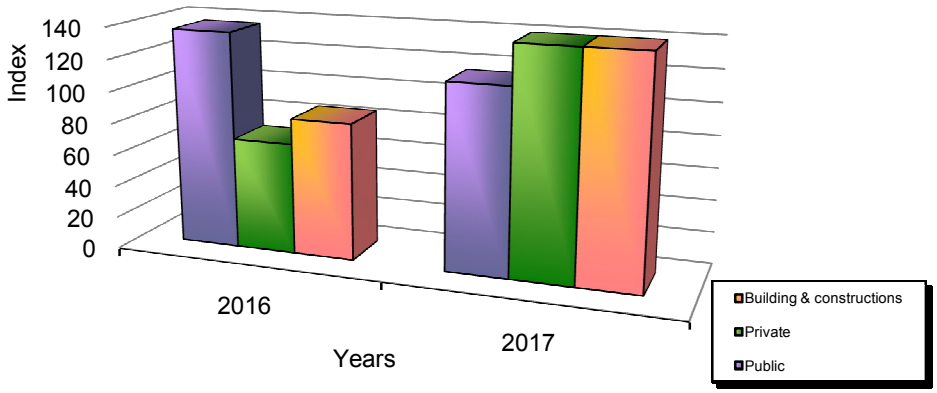


Figure (2) workers' wages index number in the building & construction sectors for years (2016-2017) basis 2012

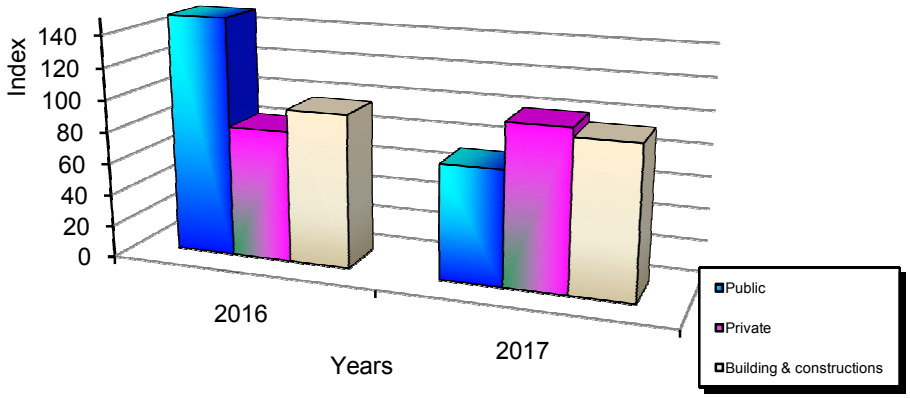


Figure (3) Cost index number in the building & construction sectors for years (2016-2017) basis 2012

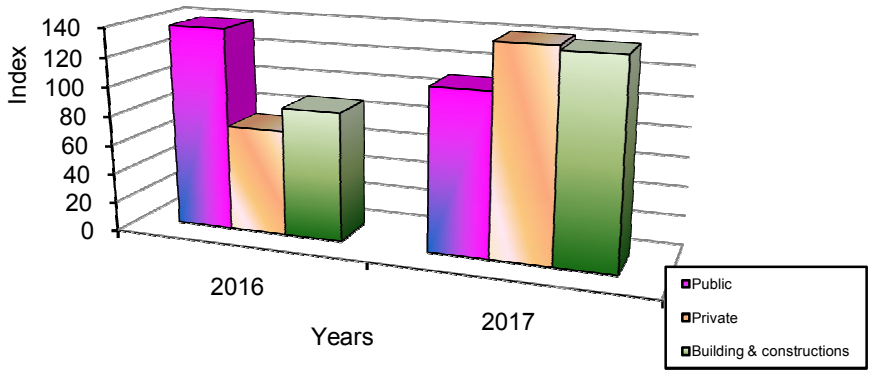
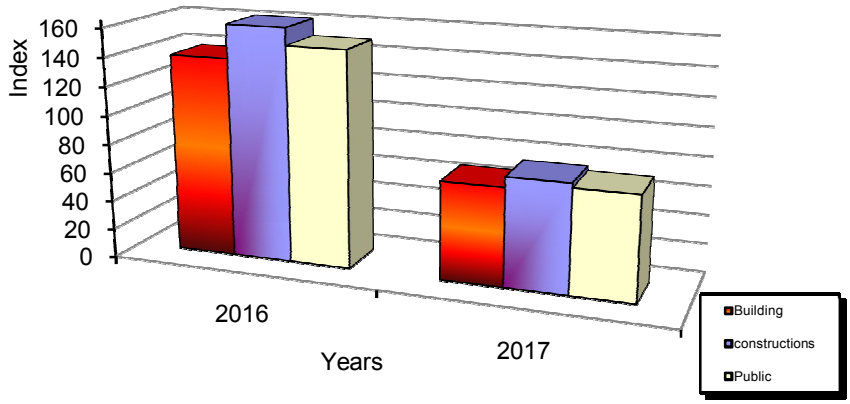


Figure (4) Workers' wages index number in the public sector (buildings+construction) for years (2016-2017) basis 2012



The index numbers in the building & construction sectors for years (2008-2017)

Table (5) (2007=100)

Types of the index number	Sector	Annual indexes									
		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Prices types	Public	111.4	104.7	106.8	97.3	99.3	101.2	150.2	121.7	135.4	114.6
	Private	123.4	103.9	121.3	119.8	129.5	126.8	100.6	84.8	90.3	200.2
	construction	119.9	103.9	118.4	111.7	119.2	118.7	113.8	94.5	101.9	173.0
Wages of workers	Public	105.5	114.4	51.1	135.3	145.7	160.2	170.6	129.2	218.0	104.0
	Private	100.5	103.4	196.0	223.3	310.1	253.6	261.4	284.9	254.9	308.5
	construction	104.0	111.0	95.7	162.4	196.3	189.0	178.6	179.1	188.3	184.1
The cost	Public	110.6	106.0	99.4	102.4	105.5	109.0	154.7	124.4	145.8	115.3
	Private	119.8	103.8	133.1	136.2	158.0	146.8	124.5	110.4	113.4	229.7
	construction	116.6	104.6	121.4	124.5	139.8	133.7	132.5	113.5	122.2	191.4
Wages of workers in the public sector	Buldings	107.0	113.1	126.8	133.1	144.6	164.8	174.0	145.3	200.1	97.6
	construction	104.3	115.4	32.2	136.8	146.1	154.7	167.4	112.3	236.2	109.0
	Public	105.5	114.4	51.1	135.3	145.7	160.2	170.6	129.2	218.0	104.0

Note1: All years (2008-2013) which has been calculated by 2007 as a base year are included in this table, i.e. all indices are actual based on 2007.

Note2: From 2014 above,index numbers will be calculated by linking chains for the base year 2007.