



مركز الإحصاء
STATISTICS CENTRE

Construction Cost Index

Tower buildings projects

2015

Quarter (1)

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Introduction

The Construction Cost Index (CCI) is an important statistical indicator for the purposes of planning and research in various disciplines. Statistics centres and agencies in different countries consistently compile these indices, based on the prices of a group of building materials and construction services commonly used during the construction process of tower buildings. The figures thus calculated constitute a time series that provides a measure of changes in the cost of construction over time.

Therefore, Statistics Centre - Abu Dhabi has always taken interest in collecting the prices of those materials and services on a regular basis and publishes the indicators derived from this data, following the methodologies adopted internationally in this field.

The Price Indices Section at the Statistics Centre - Abu Dhabi compile the CCI to be calculated according to the ten main groups of the construction cost index basket with a base year of 2013. To represent all regions of the Emirate, the selected sample of items included in the Construction Cost Index basket uses actual data collected from the Contractors' Association in Abu Dhabi. The sample of sources (building materials and construction service providers) were selected in such a way to represent the market condition across the Emirate of Abu Dhabi.

It is worth mentioning that this publication covers only the relative importance of each one of the main construction groups for towers, and will subsequently develop the index and add the rest of the construction sectors, according to the construction classification used in the Emirate of Abu Dhabi.

Key Points

This publication provides an analysis of the results of the CCI for the first quarter of 2015 compared with the first quarter of 2014, where 2013 is the base year. In addition, the publication provides a comparison between the fourth quarter of 2014 and first quarter of 2015. The main findings of this analysis are outlined below:

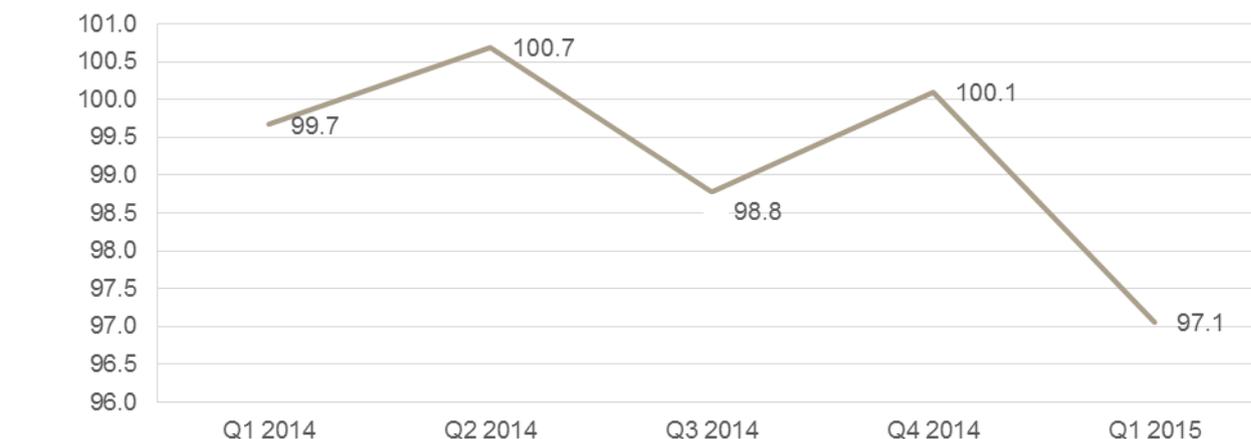
- The CCI decreased by 2.6% to 97.1% in the first quarter of 2015, compared with 99.7 in the first quarter of 2014.
- The CCI decreased by 3.0%, from 100.1 points in the fourth quarter 2014 to 97.1 points in the first quarter 2015.

Table 1 : Construction Cost Index

| Year | Q1 | Q2 | Q3 | Q4 |
|-----------------|-------|-------|------|-------|
| | CCI | | | |
| 2014 | 99.7 | 100.7 | 98.8 | 100.1 |
| 2015 | 97.1 | - | - | - |
| | — % — | | | |
| Relative change | -2.6 | - | - | - |

Source: Statistics Centre - Abu Dhabi

Figure 1 : Construction Cost Index, quarterly



Source: Statistics Centre - Abu Dhabi

A. Construction Cost Index (CCI) for the first quarter of 2015 compared with the first quarter of 2014 (2013=100)

Table (2) shows 10 main groups for the building materials and construction services, categorized according to the construction uses. Also, the table shows the weights for the main construction groups. Weight represents the proportion of spending on the group in the project to the overall spending on all groups. Moreover, the table shows the relative change for the first quarter of 2015 compared with the first quarter of 2014, while contribution reflects the proportion of each group's contribution to the overall change (-2.6) in the prices of all groups for the first quarter of 2015 compared with the first quarter of 2014.

Table 2 : Major construction groups by weights, relative change and contribution for the first quarter of 2015 compared with the first quarter of 2014

| Main construction groups | Weight | Relative change % | Contribution % |
|--|--------|-------------------|----------------|
| Construction materials | 13.0 | -1.6 | -7.6 |
| Finishing materials | 26.0 | 2.6 | 25.4 |
| Electrical works materials | 8.0 | -1.1 | -3.3 |
| Mechanical works - plumbing and drainage materials | 4.0 | -0.3 | -0.5 |
| Mechanical works - fire fighting | 3.0 | 0.0 | 0.0 |
| Mechanical works - A/C | 7.0 | 1.0 | 2.8 |
| Equipment | 2.0 | 9.3 | 7.7 |
| Manpower | 29.5 | -11.0 | -123.7 |
| Services | 4.5 | -0.5 | -0.8 |
| Finances and Bonds | 3.0 | 0.0 | 0.0 |
| Total | 100 | -2.6 | - |

Source: Statistics Centre - Abu Dhabi

The above table shows the 'Manpower' group accounted for the largest fall in the index during the first quarter of 2015 compared with the first quarter 2014, contributing -123.7% to the change. This contribution resulted from a decrease of 11.0% in the prices of this group. This main group consists of three sub-groups, which are the project 'Manpower', 'Overhead expenses' and 'Construction supervision' groups. The 'Manpower' group had the greatest impact in reducing the prices of this main group by 13.4%.

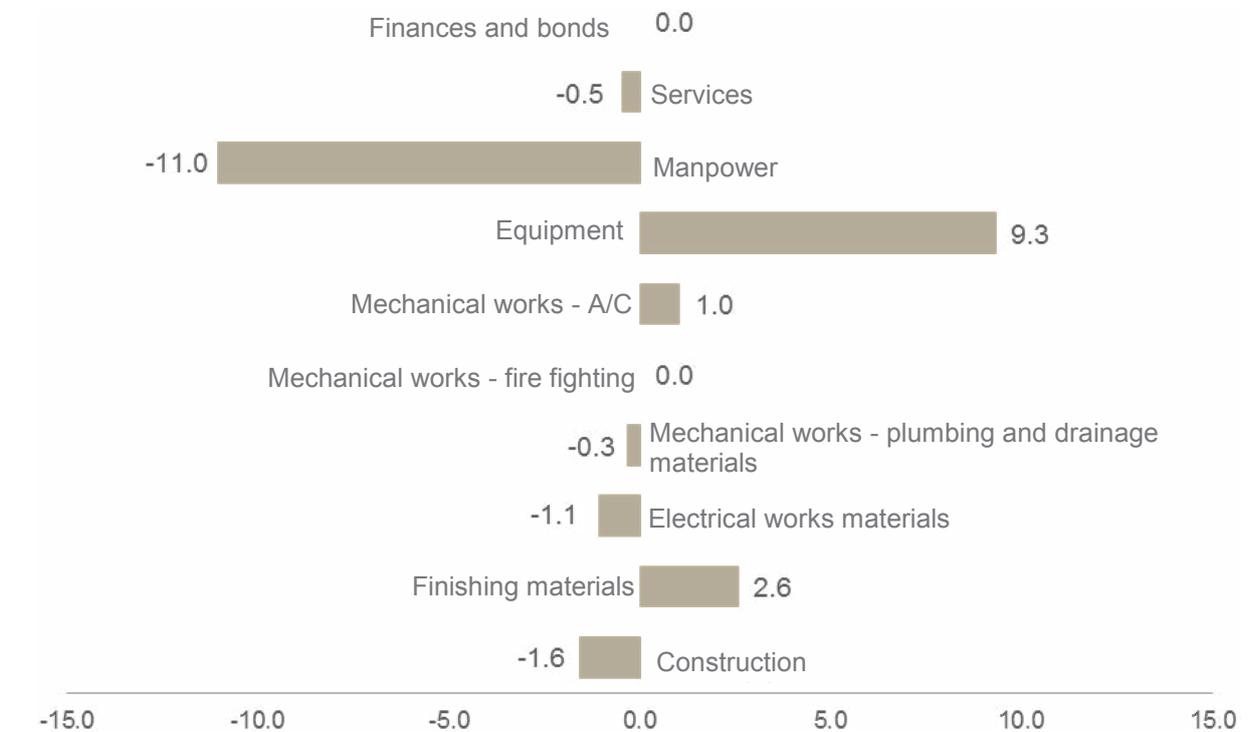
The second highest contributor to the overall decrease in the CCI during the first quarter of 2015 compared with the first quarter 2014 was the 'Construction materials' group which accounted for 7.6% of the overall decrease occurring during the first quarter of 2015 compared with the first quarter of 2014. This contribution resulted from a decrease of 1.6% in the prices of this group. This main group consists of sub-groups, with the prices of the 'Steel Reinforcement' group decreasing by 6.7%, while 'Concrete' and 'Framework Materials' increased by 4.6% and 1.4% respectively.

The 'Electrical Works Materials' group accounted for 3.3% of the overall decrease. The prices of this group decreased by 1.1% during the first quarter of 2015 compared with the first quarter of 2014.

At the same time, the prices of 'Finishing materials' rose by 2.6% during the first quarter of 2015 compared with the first quarter of 2014. The prices of the 'Equipment' group increased by 9.3% during the first quarter of 2015 compared with the first quarter 2014, and contributed 7.7% of the overall change during this period. This main group consists of three sub-groups which are the 'Lifts', 'Façade cleaning systems', and 'Garbage chute' groups. The prices of 'Mechanical works - A/C' rose by 1.0% during the first quarter of 2015 compared with the first quarter of 2014.

The prices of 'Mechanical works - fire fighting' and 'Finances and bonds' remained constant during the first quarter of 2015 compared with the first quarter of 2014

Figure 2 : Relative change in CCI for the main groups during the first quarter of 2015 compared with the first quarter of 2014



Source: Statistics Centre - Abu Dhabi

B. Construction Cost Index (CCI) for the first quarter of 2015 compared with the fourth quarter of 2014 (2013=100)

The construction cost index decreased by 3.0% in the first quarter of 2015 compared with the fourth quarter of 2014. This overall decrease in prices between the two quarters reflects the net movement (increases and decreases) of building materials and construction services during the two quarters. The prices of the 'Manpower' group decreased by 11.5%, while the prices of 'Construction materials' and 'Electrical works materials' decreased by 2.7% and 0.6% respectively. In addition, the prices of 'Mechanical works - A/C', 'Services' and 'Mechanical works - plumbing and drainage materials' groups decreased by 0.4%, 0.2% and 0.1% respectively.

The following table shows price changes of the building materials and construction services basket during the first quarter of 2015 compared with the fourth quarter of 2014. It also shows the weights of the construction cost indices for the two quarters according to the main construction groups.

Table 3 : Major construction groups by weights, relative change for the first quarter of 2015 compared with the fourth quarter of 2014

| Main construction groups | Weight | CCI for Q4 2014 | CCI for Q1 2015 | Relative changes of Q1 2015 compared with Q4 2014 (%) |
|--|--------|-----------------|-----------------|---|
| Construction materials | 13.0 | 98.1 | 95.4 | -2.7 |
| Finishing materials | 26.0 | 99.9 | 102.2 | 2.2 |
| Electrical works materials | 8.0 | 102.0 | 101.4 | -0.6 |
| Mechanical works - plumbing and drainage materials | 4.0 | 100.6 | 100.6 | -0.1 |
| Mechanical works - fire fighting | 3.0 | 100.0 | 100.0 | 0.0 |
| Mechanical works - A/C | 7.0 | 101.5 | 101.5 | -0.4 |
| Equipment | 2.0 | 107.5 | 117.5 | 9.3 |
| Manpower | 29.5 | 99.9 | 88.3 | -11.5 |
| Services | 4.5 | 98.7 | 98.5 | -0.2 |
| Finances and bonds | 3.0 | 100.0 | 100.0 | 0.0 |
| Total | 100 | 100.1 | 97.1 | -3.0 |

Source: Statistics Centre - Abu Dhabi

CPI Methodology

Introduction

Statistics Centre - Abu Dhabi is the sole official body responsible for calculating and publishing the Construction Cost Index (CCI) within the Emirate of Abu Dhabi on a quarterly basis. Working on this project started since 2013 in cooperation with authorities specialized in this field, such as the Contractors' Association in Abu Dhabi, Abu Dhabi Municipality and Department of Economic Development to prepare weights, list of building materials and services. In addition to the classifications adopted in the Department of Economic Development for contractors. This index is calculated starting from the first quarter of 2014. The first quarter of 2015 is the first release of this publication. Further development will be done on the construction cost index in future years to include other categories. This publication includes weights related to tower projects with medium quality, later it will include weights for residential villas, bridges and road projects as a next stage in the development of the construction cost index.

The methodology used in the calculation of the construction cost index is consistent with the international best practices and recommendations in this area.

What is the Construction Cost Index?

The CCI is an index that measures the rate of change in construction costs during two time periods, a base period (2013 in SCAD) and a comparison period for a fixed basket of certain building materials and construction services selected from the construction projects breakdown. Where, the period against which prices are compared is known as the base period and the period under review is known as the comparison period.

Importance of the Construction Cost Index

The CPI provides quarterly estimates on the rate of change in the prices of building materials and construction services basket in the Emirate of Abu Dhabi. Some of the significant uses of the CCI are:

- Assist in the calculation of other data within the Centre such as the national accounts statistics.
- Helps contractors and interested parties in identifying trends in construction costs within the Emirate of Abu Dhabi.
- Helps other government departments such as gaining knowledge about developments in the municipal construction sector.
- Provide general data on construction costs that serve different users of official statistics.

Updating the Construction Cost Index

The Construction Cost Index is updated on a regular basis once the necessary data becomes available. Usually the update takes place through communication with the Contractors' Association in Abu Dhabi to update weights or the sample. The importance of updating the weights of building materials and services involved in construction projects of the Construction Cost Index basket is that these weights should represent the common construction style in the Emirate of Abu Dhabi.

The following points describe the methodology of the Construction Cost Index in the Emirate of Abu Dhabi:

1. CCI Compilation

The CCI is calculated using the Laspeyres method
$$CCI_L = \sum \frac{P_{1i}}{P_{0i}} \times W_{0i}$$

Prices of building materials and services of the CCI basket are collected periodically, except for some sub groups like copper materials and transformers, which are collected on a quarterly or semi-annually basis.

The current CCI uses 2013 as the base year in the Emirate of Abu Dhabi. The current CCI basket consists of 592 building materials and services.

The average item price is calculated at the main group level using the geometric mean of elementary aggregates. The price ratio is calculated by dividing the comparison price by the base price, while the new price is calculated by multiplying the result by the base price.

To calculate the CCI on the sub- group level, the new weight of all goods and services of the sub-group should be added and then divided by the base price of the same group. The CCI of the main groups and the general CCI are calculated using the same method.

2. Weights

The Construction Cost Index is a weighted average of the change in the price of building materials and services of the CCI basket. The weight of the building material or service reflects its relative importance related to the project. Through cooperation with the Contractors' Association of Abu Dhabi relative values of building materials and services were extracted that are involved in projects of medium quality towers in the Emirate of Abu Dhabi for 2013.

Table 4 : Relative importance for ten main groups included in the construction cost index:

| Number | Group Name | weights |
|--------|---|---------|
| 1 | Construction materials | 13.0% |
| 2 | Finishing materials | 26.0% |
| 3 | Electrical works materials | 8.0% |
| 4 | Mechanical works – plumbing and drainage materials | 4.0% |
| 5 | Mechanical works – fire fighting | 3.0% |
| 6 | Mechanical works – A/C | 7.0% |
| 7 | Equipment | 2.0% |
| 8 | Manpower | 29.5% |
| 9 | Services | 4.5% |
| 10 | Finances and bonds (insurance and bonds, finance costs) | 3.0% |
| | Total | 100.0% |

3. CCI basket

After calculating weights and identifying building materials and construction services representing the CCI, 10 main groups, 70 sub-groups and 592 materials and services in the construction cost index basket were identified. The 10 main groups and 70 sub-groups are shown in the following table:

Table 5 : Main and sub groups included in the construction cost index basket - Towers:

| Serial | Group Name | Weight (%) |
|----------|--|--------------|
| 1 | Construction Materials | 13.00 |
| 1.1 | Concrete | 4.50 |
| 1.2 | Steel Reinforcement | 6.60 |
| 1.3 | Formwork Materials | 1.90 |
| 2 | Finishing Materials | 26.00 |
| 2.1 | Blocks | 2.30 |
| 2.2 | Cement | 0.41 |
| 2.3 | Sand & Aggregates | 0.27 |
| 2.4 | Ceramic Tiles | 2.98 |
| 2.5 | Marble Tiles | 2.44 |
| 2.6 | Wooden Doors, wardrobes and Kitchens (FIRE RATED OR NON) | 6.77 |
| 2.7 | Paints & Coatings | 0.54 |
| 2.8 | Suspended Ceilings | 0.81 |
| 2.9 | Water Proofing | 0.54 |

| | | |
|----------|--|--------------|
| 2.10 | Metal Works and Glazing | 8.94 |
| 3 | Electrical Works Materials | 8.00 |
| 3.1 | Distribution Panels Main, SubMain, Final | 1.22 |
| 3.2 | 1600A & 2000A Busbar runs for a typical 20 storey building | 1.63 |
| 3.3 | Wires & Cables | 1.14 |
| 3.4 | PVC Conduits, Boxes & accessories | 0.41 |
| 3.5 | Switching Accessories & Isolators | 0.33 |
| 3.6 | Light Fixtures | 0.57 |
| 3.7 | Transformers/HV gear | 0.41 |
| 3.8 | Metal Trays & Trunking | 0.16 |
| 3.9 | Low Current systems,Tel, FA, SMATV, CCTV | 1.63 |
| 3.10 | Generator system | 0.33 |
| 3.11 | Earthing System / Lightning Protection | 0.16 |
| 4 | Mechanical Works - Plumbing and Drainage Materials | 4.00 |
| 4.1 | 3 inch UPVC Pipes & Fittings Cold Water Riser | 0.17 |
| 4.2 | 2 inch PPR Pipes & Fittings for Internal Water supply | 0.63 |
| 4.3 | 16mm - 2.5mm thk PEX PIPE SYSTEM For water supply in walls | 0.21 |
| 4.4 | 3 INCH GATE Valves,(Strainers & Vents) | 0.13 |
| 4.5 | Water Pumps | 0.51 |
| 4.6 | Water Tanks insulated sectional GRP TANKS 6X4X2 MT | 0.42 |
| 4.7 | Water Heaters | 0.21 |
| 4.8 | Water Filtration system | 0.13 |
| 4.9 | 3/4 Inch Water Meters (3/4 INCH WATER METERS MECHANICAL MADE IN ITALY) | 0.08 |
| 4.1 | 4 Inch HDPE Drainage Pipes & Fittings - Int | 0.76 |
| 4.11 | 4 Inch UPVC Drainage Pipes class 6 & Fittings - Ext. | 0.08 |
| 4.12 | 3 Inch Floor & Gully Traps and Roof drains | 0.51 |
| 4.13 | Manhole Covers & Gratings | 0.17 |
| 5 | Mechanical Works - Fire Fighting | 3.00 |
| 5.1 | FIRE PUMP SET - SUPPLY ONLY | 0.42 |
| 5.2 | stainless steel FF Cabinet & Hose Reel | 0.35 |
| 5.3 | Seamless steel FF Pipes & Fittings | 1.41 |
| 5.4 | Valves,Air vents & Accessories | 0.35 |
| 5.5 | pendant ceiling type Sprinkler Heads | 0.28 |
| 5.6 | 6 kg bcf Portable Extinguishers | 0.11 |
| 5.7 | 3 inch Breeching Inlet | 0.07 |
| 6 | Mechanical Works - A/C | 7.00 |
| 6.1 | 300 Ton Chiller unit - SCREW type (AIR COOLD SCREW CHILLER) | 1.94 |
| 6.2 | 2 ton FCU (FAN COIL UNIT - DUCTED) | 0.74 |
| 6.3 | 18 ton AHUs (AIR HANDLING UNIT) | 0.52 |
| 6.4 | 300 GPM 100 FT head Chilled Water Pumps | 0.15 |
| 6.5 | Sch 40 black steel seamless 4 inch Chilled Water Pipes & Fittings | 0.60 |
| 6.6 | AFICO HD Fiberglass Insulation | 0.22 |
| 6.7 | A/C Duct sheet GI guage 24 (Gi Sheet 4 x 8 x 24g) | 0.74 |
| 6.8 | 25 mm thk fiber glass A/C Duct Insulation | 0.22 |
| 6.9 | Canvas/woven Cloth (FLEXIBLE DUCT CONNECTOR) | 0.07 |
| 6.1 | Adhesive & Coating (TAPES) | 0.37 |
| 6.11 | Dampers & Accessories | 0.22 |
| 6.12 | Pipe & Duct supports | 0.15 |
| 6.13 | Grilles & Diffusers | 0.22 |
| 6.14 | Exhaust Fans (Wall & Window) | 0.30 |
| 6.15 | Roof Fans | 0.07 |
| 6.16 | Thermostats / Controls | 0.22 |
| 6.17 | Aluminium Cladding (Aluminium Sheet 4 x 8 24g) | 0.15 |
| 6.18 | Sound Attenuators | 0.07 |
| 7 | Equipment | 2.00 |
| 7.1 | Lifts | 1.50 |
| 7.2 | Façade Cleaning | 0.30 |
| 7.3 | Garbage Chute | 0.20 |
| 8 | Manpower | 29.50 |
| 8.1 | Over Head expenses | 5.31 |
| 8.2 | Construction Supervision | 5.31 |

| | | |
|-----------|---|-------------|
| 8.3 | Project Manpower | 18.88 |
| 9 | Services | 4.50 |
| 9.1 | Plant & Machinery | 3.19 |
| 9.2 | Fuel/Energy | 1.31 |
| 10 | Finances & Bonds (Insurances & Bonds, Finance costs) | 3.00 |

4. Sources of Building Materials and Services

Price data were collected through field visits conducted by a team from SCAD's Prices & Income Section in cooperation with the Contractors' Association and from other approved sources. The team updates these sources on a regular basis if any source closes down or relocates premises. The number of sources is 61.

5. Collection of Price Data

Price data collection is a crucial stage that requires a significant amount of time and effort. The collection of price data is conducted by different communication means like e-mails and through field visits by employees who are well trained. To ensure the accuracy of the collected prices, the price of a sample of building materials and services are reviewed through field visits and by ensuring the availability of the company's seal or signature on the price documents or by email from the person responsible for providing prices.

In order to develop the collection of prices and keep up with advances in information technology mechanism, the center plans to automate the compilation process of the construction cost index as a future step.

6. Publishing

SCAD publishes the CCI on a quarterly basis. SCAD also publish annual CCI results and inflation rates. The Construction Cost Index is available to all interested users after it is released. The CCI can also be provided on CDs upon request.

7. How to read the CCI

The CCI reflects the rate of the change in the prices of a range of specified building materials and construction services between two time periods, the base period and the comparison period. For example, if the CCI of the building materials and services basket during a specified base period is AED 100, and the CCI of the comparison period was 105.0, this means that prices of building materials and services increased by 5%.

8. Terms related to the CCI

| Term | Description |
|-------------------------------|--|
| Price | Price is defined as the value of one unit of a material or service; this means the market value of the material or service. This value is established through the exchange of materials and services in the markets and is equivalent to the benefit achieved by the user. |
| Construction Cost Index (CCI) | The CCI is an index that measures the rate of change in construction costs during two time periods, a base period and a comparison period for a fixed basket of certain building materials and construction services selected from the construction projects breakdown. |
| Towers: medium quality | Building construction of 15-20 stories commonly used in the Emirate of Abu Dhabi composed of medium-quality materials. |
| Weight | Weight is the relative importance of a material or service within the CCI basket compared with all other materials or services. |
| Outlet | Outlets where building materials or services are sold such as building materials companies, factories, ... etc. |
| Periods of collection | Periods of collection are the adopted periods to repeat the survey of all groups in each basket. The period might be weekly, semi-monthly, monthly or quarterly. |

9. Disclaimer

While all care and diligence has been taken with the compilation of official statistics, the Statistics Centre – Abu Dhabi gives no warranty that the information, data or statistics, supplied are free of errors. SCAD shall not be liable for any loss or damage suffered by the user following the direct or indirect use of the statistics supplied in good faith by SCAD. Users of Official Statistics are responsible for determining when and how to use the statistics for specific purposes.

10. Next release

The CCI for Q2 2015 will be released on 15 September 2015. For more information on prices and other official statistics, please visit the SCAD website at: www.scad.ae

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