

CONSUMER PRICE INDEX ESTIMATES, NATIONAL AND GCC AGGREGATES

GCC Inflation 2010 – 2015

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Experimental Aggregate GCC Consumer Price Change Estimates

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Abstract

The Statistical Center for the Gulf Cooperation Council (GCC-Stat) and the six member states are engaged in a project to harmonize the conceptual and methodological basis for measuring changes in consumer prices in the region. While currently all member states compile Consumer Price Indices (CPIs), there are some significant methodological differences that make precise country comparisons and regional aggregation difficult, especially in the short-term and at the more detailed level. In addition, internationally recognized best practice methodologies are not fully followed in compilation of national CPIs. This paper constructs a monthly series from 2010 onwards based on all 12 main COICOP groups apart from the housing component, and proposes this methodology for an experimental aggregate GCC measure of consumer price change as a temporary measure while at the same time an appropriate harmonized index methodology based on uniformly implemented national harmonized CPIs are developed. For country weights the proposed aggregate GCC price change measure uses Purchasing Power Parity (PPP) adjusted actual household consumption expenditure weights based on the 2011 round of International Comparison Program (ICP). The national CPIs are recalculated without the housing component due to significant methodological heterogeneity used to compile this component across countries. Otherwise, the aggregate price change measure combines the current member country CPI methodologies and, hence, does not have a fully consistent conceptual basis.

Keywords: Consumer Price Index, CPI, PPP, Regional Harmonization

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ABBREVIATIONS

COICOP	Classification of Individual Consumption According to Purpose
CPI	Consumer price index
CSS	Current Status Survey
GCC	Gulf Cooperation Council
GDP	Gross Domestic Product
HFCE	Household Final Consumption Expenditure
HICP	Harmonized Index of Consumer Prices
HIES	Household Income and Expenditure Survey
ICLS	International Conference of Labour Statisticians
ICP	International Comparison Program
ILO	International Labour Organization
IMF	International Monetary Fund
KSA	Kingdom of Saudi Arabia
NPISH	Non-Profits Institutions serving Households
OECD	Organisation for Economic Co-operation and Development
PPP	Purchasing power parity
SNA	System of National Accounts
UAE	United Arab Emirates
WEO	World Economic Outlook
WGPSI	Working Group on Price and Short-term Indicators

I. INTRODUCTION

This paper discusses a methodology of compiling a temporary aggregate regional measure of consumer price change for the six Gulf Cooperation Council (GCC) member states: United Arab Emirates, Bahrain, Saudi Arabia, Oman, Qatar and Kuwait. The objective is to propose a temporary aggregate price change methodology that, while not strictly comparable across countries, would give a useful idea of regional overall inflation based on the six national CPIs. The paper proposes country weights based on actual household consumption expenditures at purchasing power parities (PPP), while not changing the national CPI compilation methodologies. The coverage of the proposed experimental measure excludes the housing component due to inconsistent treatment of owner-occupied housing expenditure and rental survey methodologies across countries. In country comparison context the international statistics community also endorses this exclusion when making such cross-country comparisons¹. For a separate key project, GCC-Stat is currently developing methodology for a harmonized measure of GCC consumer inflation. A well-specified and coherent Harmonized GCC Index of Consumer Prices is arguably a prerequisite for meaningful monitoring of regional monetary policy in the context of a already agreed GCC monetary union, as well as for use as a key macroeconomic indicator in its own right for various national and regional decision-makers. This paper does not propose the methodology for the harmonized index, but emphasizes the importance of this harmonization work. Rather, in order to serve the immediate user needs while the harmonized measure is being developed, the paper proposes to compile a timely aggregate series for non-housing inflation in the GCC using the current national CPIs.

As indicated by the Current Status Survey² (CSS) and already discussed within the GCC Working Group on Price and Short-term Indicators (WGPSI), currently the national indices lack conceptual clarity. They do not follow any common international standard household expenditure coverage.³ The primary use of the national CPIs and the methodological implications deriving from this, particularly manifested in the expenditure scope, are not explicitly stated. Instead, the national CPIs adopt the expenditure scope directly from the Household Income and Expenditure Surveys (HIES) carried out mainly as source data for compilation of national accounts. With some differences in treatment of institutional households, all national HIESs include domestic final consumption expenditure of resident households and excludes tourists expenditure. The expenditure includes imputed rental equivalent estimates for owner-occupied and in some cases employer provided housing, which are used for the CPI weights as given in most countries. Further, a clear residency concept in line with international recommendations and a relevant transaction population regarding cross-border transactions have not been clearly defined in the GCC countries.

¹ International Labour Organization (ILO) Resolution on Consumer Price Index (2003).

² Current Status Survey was a commissioned external assessment that evaluated in detail the current national practices in various statistical domains in order to assist the GCC-Stat to derive a long-term strategy for to fulfill its mission in supporting statistics development in the GCC region. Price indices was one of the topics covered.

³ The two main alternative concepts of total final consumption are “domestic” and “national”. The domestic concept refers to consumption on the economic territory, including the consumption of visiting foreign households but excluding the consumption of resident households when abroad. The national concept used in national accounts refers to the consumption of all the residents of the country, whether at home or abroad, the consumption of non-residents being excluded.

There are significant conceptual issues that need clearing prior to basing decisions on the cross-country aggregates, especially at the more disaggregated level where specific policy areas may be of interest. As already mentioned above, the methodologies and practices within the housing component of national CPIs vary particularly significantly. The housing expenditure includes imputed owner-occupied and employee-provided in all but one country. Given measuring monetary inflation as the conceptual basis for the harmonized GCC index, a clear and comparable treatment of owner-occupied housing across member countries needs to be agreed. The estimation methodologies for the price evolution of actual rents also differ widely and are not comparable across countries. Similarly, the transport and communication sub-indices likely exhibit large differences in quality and source data as well as in the statistical techniques used to compile time series. Aggregating over heterogeneous, loosely defined measures leads, at best, to an indicative overall measure. Hence, this paper advises the proposed aggregate index to be used as such – an indicative aggregate non-housing inflation measure for national or regional monitoring and decision-making. A particular use of the regional aggregate index was officially proposed related to the GCC monetary union. The GCC Supreme Council (26th session, Abu Dhabi, December 2005) approved a set of criteria for achieving economic convergence and financial and monetary stability that included inflation. The inflation criteria, inspired by the European inflation convergence criteria, was later specified as ‘average GDP-weighted inflation plus 2%’ without further specifying the methodologies⁴. For this particular purpose of regional inflation measure in particular, more comparable and methodologically sounder indexes should be used.

II. GCC INFLATION

This paper does not attempt to solve the inconsistencies within the national CPI expenditure weight structures, nor the conceptual differences in expenditure estimates between the GCC member state CPIs. Instead, the author uses the national expenditure weight structures as currently employed in each member state. In addition to proposing a harmonized methodology for a regional index, defining the conceptual basis for each country and bringing the national methodologies closer to international standards is a key development project for GCC-Stat. The methodology in this paper is not meant to replace this work but to serve the users’ immediate needs for an approximate regional aggregate while methodological improvements are being developed and implemented in the medium to long term.

Other international organizations also compile similar regional aggregate inflation measures using the national CPI data. For the *World Economic Outlook* (WEO) the International Monetary Fund (IMF) prepares

⁴ The GCC Financial and Economic Cooperation Committee approved the standards for monetary and financial convergence in May 2007. The envisioned common currency for the Monetary Union of four out of six GCC countries has not been introduced yet.

global and regional inflation estimates⁵. For global, regional or country group CPIs, the IMF weights the national CPI estimates using GDP estimates valued at purchasing power parities (PPP) as a share of world total or country group GDP. The GCC countries are presented within the regional aggregate of *Middle East and North Africa*. Annual inflation rates are simple percent changes from previous years, except for emerging market and developing economies, where the rates are based on logarithmic differences. This exception to the methodology only applies for the inflation series and only whenever a group comprises countries belonging to the emerging market and developing economies group, such as the MENA group. Given the lack of globally available more detailed and comparable data, the basis for selecting GDP weights valued at PPP can be seen as a practical choice rather than a conceptual one. The potential downside of pairing GDP estimates with household consumption expenditure breakdown is that large structural differences between economies, e.g. the large oil and gas sector in the GCC, may erroneously distort the aggregate.

The Inter-Agency Group on Economic and Financial Statistics (IAG) compiles an aggregate all item CPI for the Group of Twenty major economies, the G-20 countries. This measure was first compiled after the 2008 financial crisis based on the recommendations from the G20 Finance Ministers and Central Bank Governors within the so-called G20 Data Gaps Initiative. The G-20 CPI is calculated by aggregating the national CPIs, and Harmonized Index of Consumer Prices⁶ (HICP) in case of European countries, in each period using Household Final Consumption Expenditure (HFCE) and Final Consumption Expenditure of Non-Profits Institutions serving Households (NPISHs) as weights. The relevant country expenditure data are converted into a common currency (US dollars) using PPPs, which are estimates of the rates of currency conversion that eliminate the differences in price levels between countries. Using these country weights, the national all item CPIs are aggregated as a chain-linked Laspeyres-type index.

When aggregating the European Monetary Union aggregate inflation estimates Eurostat uses the Euro-nominated nominal national monetary household final consumption expenditure (HFCE) estimates, directly consistent with the national HICP weights. This follows from the HICP's primary objective to measure monetary inflation. The emphasis reflects the European Central Bank's objective of price stability and the view that the HICPs are the most appropriate price measure for assessing price stability and convergence. To estimate larger country groups within Europe, Eurostat accounts for the price level differences by weighting countries by HFCE measured in PPPs.

As with other international organizations, there are various ways of aggregating the national CPIs to form a regional GCC aggregate index. The practical ones are all weighted central tendency estimates, means or medians, of national CPIs. The ones that make most conceptual sense for national Laspeyres-type indices retain a similar weighting basis for the aggregate. Theoretically, the most appropriate might be to compare national quantities in real time together with corresponding prices and compute a chained superlative index that reflects the changes in the consumption patterns. In practice, this is not feasible as such data will not be available comprehensively. Population and GDP estimates, while available, are not

⁵ The WEO database contains selected macroeconomic data series from the statistical appendix of the World Economic Outlook report, which presents the IMF staff's analysis and projections of economic developments at the global level, in major country groups and in many individual countries.

⁶ HICP is an official, harmonized index compiled by all European Union member countries.

consistent with the CPI scope and should not be used if better alternatives are available. Nominal or price level difference adjusted household consumption expenditures would better reflect the national CPIs. This paper argues that PPP adjusted HFCE provides the most meaningful feasible weighting structure between countries, as it is conceptually coherent with the national index weight structures.

Apart from the housing services, as explained below, the national CPI weight structures are not adjusted in any way to account for coverage and scope differences. Given the different estimation methodologies in national household expenditures in National Accounts across GCC countries, this paper proposes the use of Actual FHCE estimates valued at common PPP currency, as published by the International Comparison Program (ICP) 2011 round for Western Asia Region. This arguably provides the most comparable estimates. The country weights used in the calculations are each GCC member country's expenditure as a share of total GCC expenditure at PPP. Detailed data on the country level ICP are not available, so only national total household expenditure level weights are used. For final 2007 index base year index the ICP 2011 weight estimates, were not price adjusted backwards to reflect the relative changes in national FHCE Estimates from 2011 to 2007. This was done purposefully since comparable group level CPI data, while with 2007 index base, was available only from year 2010 onwards. As a possible improvement for the country weights, annual updates and annual chain linking could be applied to the aggregate measure.

III. HOUSING SERVICES

A key objective for development of price statistics at the GCC-Stat is to develop a methodologically sound, comparable measure of consumer price change for the member countries and for the GCC as a whole. This paper argues, supported by the CSS findings that the current CPIs significantly differ from each other. The differences are various and their quantitative impact is hard to evaluate. As expressed in the CSS, the conceptual basis for the national indices is not clear to start with. The national indices scope and coverage of both expenditure weights and prices vary and are not well defined. In addition, the methods of adjusting for quality changes, how new items are included, how seasonality is dealt with, etc. vary from country to country. With the benefit of some insight to the countries' detailed compilation practices, the measurement differences in the housing component seem to have particularly large and potentially significant differences impacting the aggregate. The expenditure weights that include imputed rents make the housing component by far the largest main group. With the globally and regionally volatile housing markets, both the methodology and actual country differences can have a significant effect for the aggregate index. Above all, the rental indices that dominate the housing services group⁷ have significant methodological differences and make country comparisons rather meaningless. For example, some countries rental index is based on new rental contracts during the reference period, as reported by real estate agencies, while others conduct a rental survey on an outdated sample of rental units. Given the differences in methodology, as well as the significant structural differences of population composition and

⁷ Housing services include actual and imputed rents, as well as expenditure on house maintenance and repairs, electricity, water and gas. Further expenditure breakdown is not readily available for all countries.

housing markets between the GCC countries, this paper argues that for the aggregate proxy index the housing part should be dropped out to make the rest of the index more comparable. For the future harmonized index, the comparability of both rental surveys and inclusion of owner-occupied housing approach needs to be agreed upon.

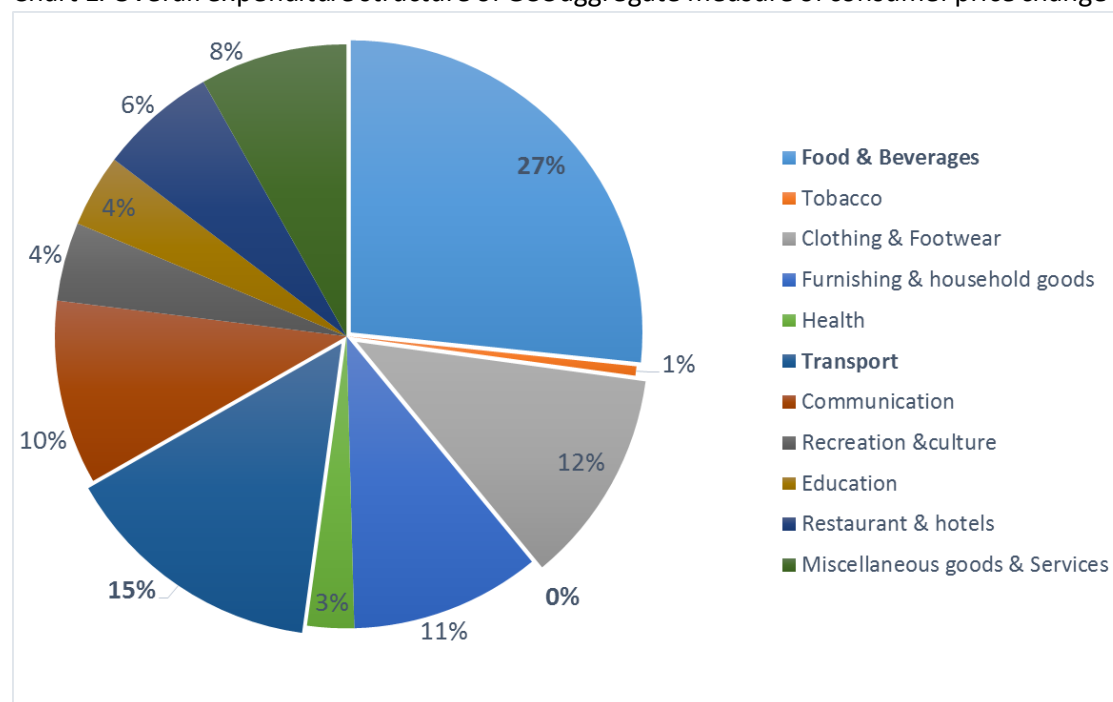
Housing is arguably the mostly debated area of the CPI internationally. The international resolution on CPI adopted by the Seventeenth International Conference of Labour Statisticians (ICLS) (Geneva, 2003) concludes in paragraph 80 on international comparisons and dissemination of CPI data:

Comparing national CPI movements across countries is difficult because of the different measurement approaches used by countries of certain products, particularly housing and financial services. The exclusion of housing (actual rents and either imputed rents or acquisition of new houses, and maintenance and repair of dwelling) and financial services from the all-items index will make the resulting estimates of price change for the remaining products more comparable across countries. Therefore, in addition to the all-items index, countries should, if possible, compile and provide for dissemination to the international community an index that excludes housing and financial services. It should be emphasized, though, that even for the remaining products in scope, there can still be difficulties when making international comparisons of changes in consumer prices.

While the country weights only have an impact for relative importance between countries, they also affect the overall GCC expenditure structure due to national differences in expenditure distributions. Generally, the overall structure of the proxy aggregate is not very sensitive to the country weights.⁸ Chart 1 summarizes the derived COICOP main group weights for an aggregate GCC measure, excluding housing.

⁸ When alternative weighting structures to the PPP adjusted HFCE were assessed, significant differences in the Food and beverages group's share of the total were observed, likely reflecting the level differences in average incomes between countries, but the most notable difference was in the clothing and footwear group.

Chart 1. Overall expenditure structure of GCC aggregate measure of consumer price change



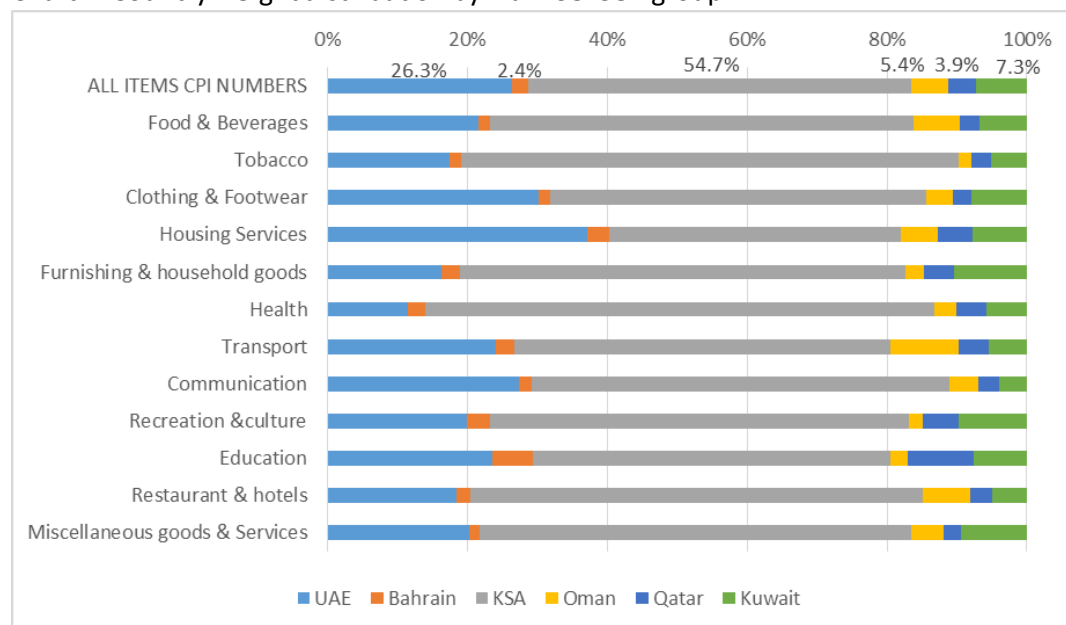
The proposed overall GCC expenditure structure, employing the broadly comparable household expenditure estimates valued at PPP from the ICP, and national expenditure breakdowns excluding the housing component, is presented in Table 1 below. Food and beverages is the largest component with 27% share of total expenditure, followed by Transport and Clothing with 15% and 12% shares, respectively. The biggest individual country-group is the Food and Beverages group in Saudi Arabia, with almost 15% of the total aggregate.

Table 1. National – Consumption group weight distribution

	GCC	UAE	Bahrain	KSA	Oman	Qatar	Kuwait
ALL ITEMS CPI	100%	26.3%	2.4%	54.7%	5.4%	3.9%	7.3%
Food & Beverages	26.6%	6.8%	0.5%	14.9%	1.8%	0.8%	1.9%
Tobacco	0.5%	0.1%	0.0%	0.3%	0.0%	0.0%	0.0%
Clothing & Footwear	11.9%	4.1%	0.2%	5.8%	0.4%	0.4%	0.9%
Furnishing & household goods	10.5%	2.0%	0.3%	6.3%	0.3%	0.5%	1.2%
Health	2.6%	0.4%	0.1%	1.8%	0.1%	0.1%	0.2%
Transport	14.6%	4.1%	0.4%	7.1%	1.4%	0.7%	0.8%
Communication	10.2%	3.3%	0.2%	5.6%	0.4%	0.3%	0.4%
Recreation & culture	4.4%	1.0%	0.2%	2.4%	0.1%	0.3%	0.4%
Education	4.0%	1.1%	0.3%	1.9%	0.1%	0.4%	0.3%
Restaurant & hotels	6.5%	1.4%	0.1%	3.9%	0.4%	0.2%	0.3%
Miscellaneous goods & Services	8.2%	2.0%	0.1%	4.7%	0.4%	0.2%	0.8%

Between the main expenditure groups, the country contributions vary significantly, reflecting both actual consumption differences but also the differences in national methodologies. Chart 2 illustrates this point, also including the housing component.

Chart 2. Country weight distribution by main COICOP group



IV. AGGREGATION

Division level data for the 12 COICOP main group aggregates have been recompiled on a monthly basis from January 2010 based on the country data without the housing group. In some cases at the beginning of the period, this involved regrouping or estimating the national classification to fit the current international classification standard, COICOP. By now, all member countries have adopted to the COICOP classification during their latest index revisions. This improves the comparability of group level data towards the end of the period, although significant differences still exist in both coverage of more detailed sub-group and product level (e.g. exclusion of accommodation services in a country) as well as in compilation methodologies.

During the moderate inflationary period from 2010 onwards, the detailed main group inflation does not exhibit any surprising movements. In Chart 3 below, all countries' national non-housing inflations remain within a 2-3% interval for the latter half of the period. The relative volatility of the Tobacco stands out somewhat in Chart 3 and Table 2 below, but the group has a small overall expenditure weight and does not have a significant impact on the overall index. The shades of blue and red in Table 2 indicate the magnitude of decrease and increase.

Chart 3. Annual GCC non-housing inflation Jan 2011 to March 2015

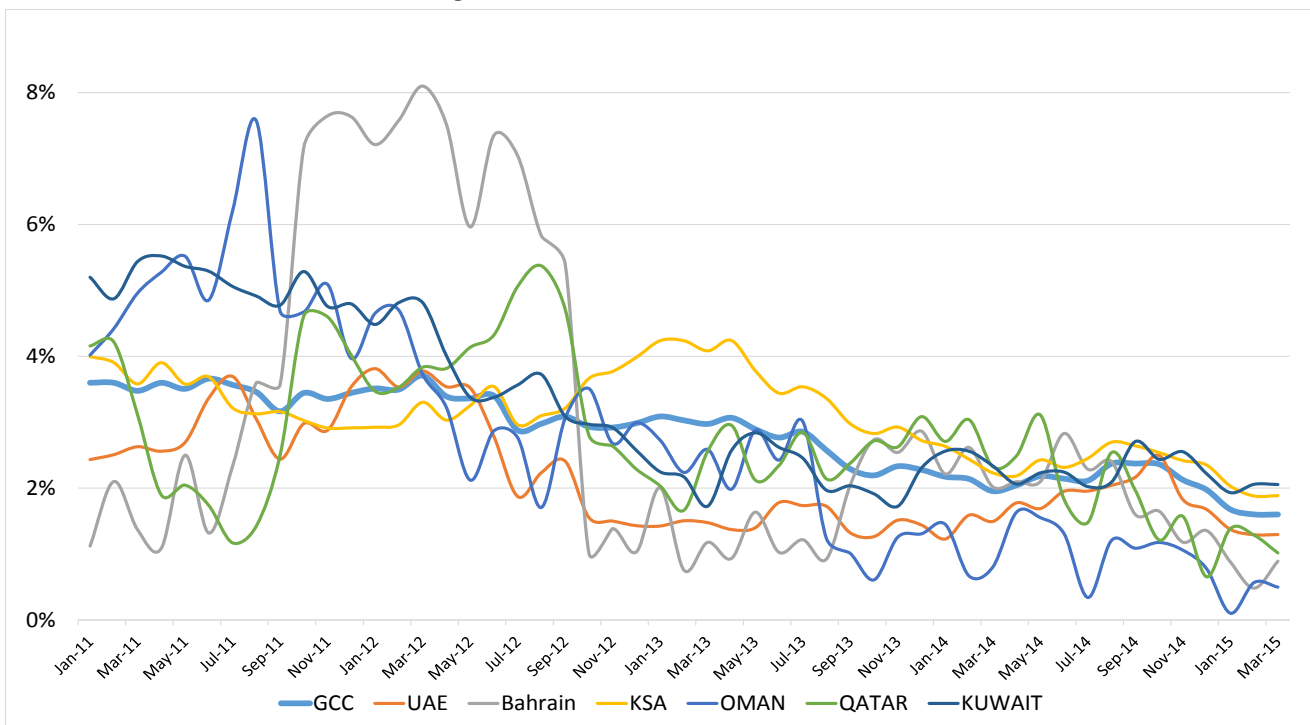
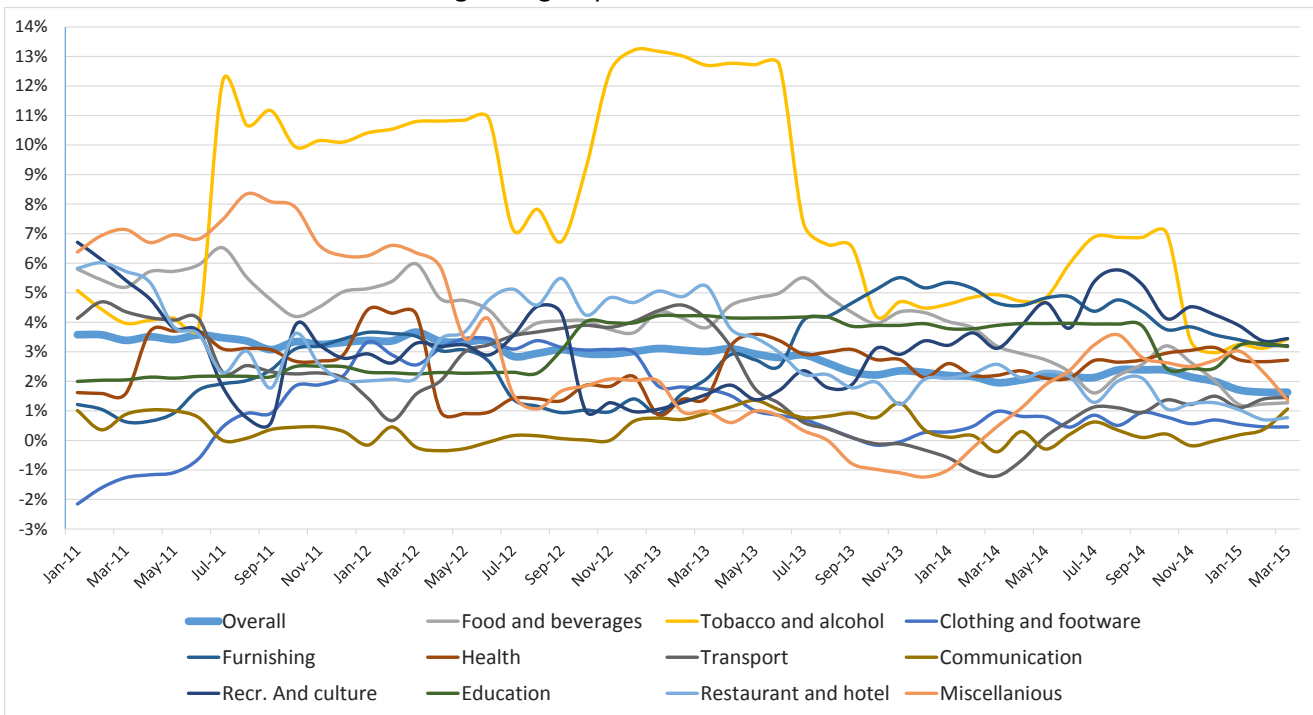


Chart 4. Annual GCC non-housing main group inflation from Jan 2011 to March 2015



The following tables summarize the aggregate GCC inflation contributions by COICOP main group and by member country. The inflation contribution combines the expenditure share and the group inflation, while also accounting for the index level differences. More detailed main group by country contributions are not presented. It is clear that for the period in question the overall inflation in the region, while relatively low, is driven by the food and beverages groups. The food and beverages group's roughly 4.5% average annual changes with 27% expenditure share contribute almost half of the overall 2-3% annual inflation over the period. Transport and Furnishing groups also show high price increases, but are more modest contributors. The Communication group has the biggest downward effect over the 4 years. Table 2 below describes the inflation contributions of the 11 main groups at annual level, while Table 3 does the same for each country.

Table 2. Contributions to GCC overall non-housing inflation (% of the total change) by main group and index changes (%)

Overall Inflation	2011		2012		2013		2014	
	Contr.	3.5%	Contr.	3.2%	Contr.	2.7%	Contr.	2.2%
Food & Beverages	45%	5.3%	41%	4.4%	50%	4.5%	39%	2.8%
Tobacco	1%	7.5%	2%	10.1%	2%	9.1%	2%	5.3%
Clothing & Footwear	0%	0.0%	10%	3.1%	3%	0.8%	3%	0.7%
Furn. & household goods	6%	1.9%	7%	2.2%	13%	3.5%	22%	4.5%
Health	2%	2.8%	2%	2.1%	2%	2.5%	3%	2.6%
Transport	13%	3.3%	13%	2.9%	8%	1.6%	2%	0.4%
Communication	1%	0.6%	0%	0.0%	3%	0.9%	0%	0.1%
Recreation & culture	5%	3.6%	4%	3.0%	3%	2.0%	9%	4.3%
Education	3%	2.2%	3%	2.8%	6%	4.1%	7%	3.5%
Restaurant & hotels	7%	3.8%	8%	3.9%	8%	3.0%	6%	1.9%
Misc. goods & Services	17%	7.1%	10%	3.5%	1%	0.2%	7%	1.8%

Table 3. Contributions to overall change (% of total change) by GCC Member State and national non-housing inflation (%)

Overall Inflation	2011		2012		2013		2014	
	Contr.	3.5%	Contr.	3.2%	Contr.	2.7%	Contr.	2.2%
UAE	22.6%	2.9%	22.2%	2.7%	14.9%	1.5%	22.4%	1.8%
Bahrain	2.4%	3.5%	4.0%	5.4%	1.5%	1.7%	2.2%	2.0%
KSA	51.7%	3.4%	54.3%	3.3%	69.2%	3.5%	60.2%	2.4%
Oman	9.0%	5.1%	6.1%	3.2%	4.5%	1.9%	3.1%	1.1%
Qatar	3.3%	3.0%	4.6%	3.8%	3.6%	2.5%	3.7%	2.1%
Kuwait	11.1%	5.1%	8.7%	3.6%	6.3%	2.2%	8.3%	2.3%

It is clear from the expenditure shares alone that the overall GCC inflation is mainly driven by Saudi Arabia and UAE. With the above average overall inflation and largest expenditure weight of some 55% of total GCC, Saudi Arabia also has the largest upward impact on the GCC aggregate. From 50 to 70% of the average 3% annual inflation can be contributed to Saudi Arabia. UAE, with expenditure share of 26 % contributes some 15 to 25% due to below average overall inflation over the period. Kuwait, on the other had also contributed over a tenth in 2011 with a 7% expenditure share. At a more detailed level, however, smaller countries can have a significant impact on the aggregate sub-group level indices. This impact may be caused by a genuine national development or a methodological deviation.

In order to reduce monthly volatility, the following graphs demonstrate the national main group level annual inflation in quarterly terms (compared with the same quarter previous year) for selected main COICOP groups. The quarterly aggregation is done solely for the clarity of presentation and the corresponding monthly series are presented as graphs in the Annex of this paper. Some of the group indices differ from the national dissemination due to different grouping or the introduction of a new classification during the period 2010-2013. Some group-level data not available at the time for 2010 was estimated. The overall volatility and at times opposite directions are somewhat surprising, and the extent to which these differences reflect methodological differences has not been assessed. The main groups themselves consist of a number of individual products and product groups for which both national price evolution and expenditures may significantly differ between countries.

Chart 5. Annual inflation for “Food and Beverages” and “Clothing and Footwear” groups (Quarterly)

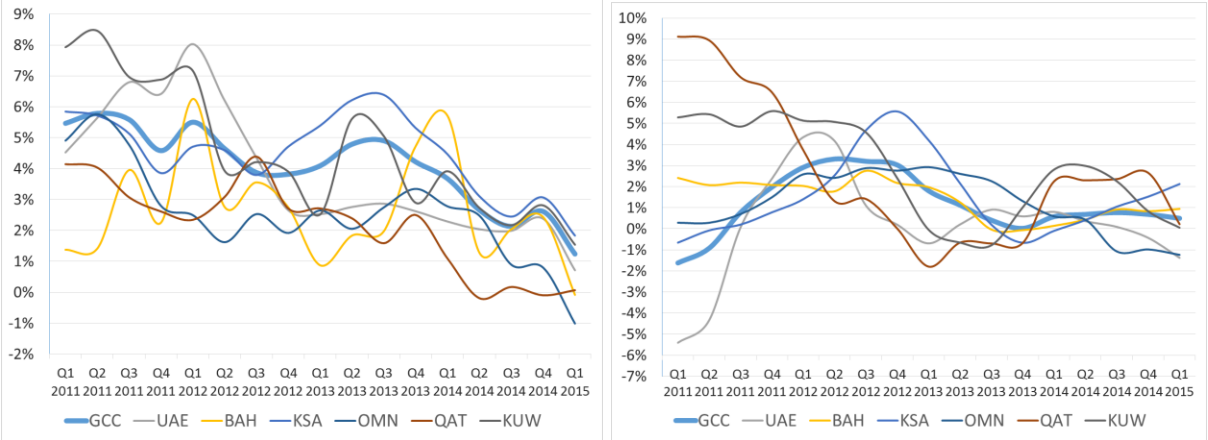
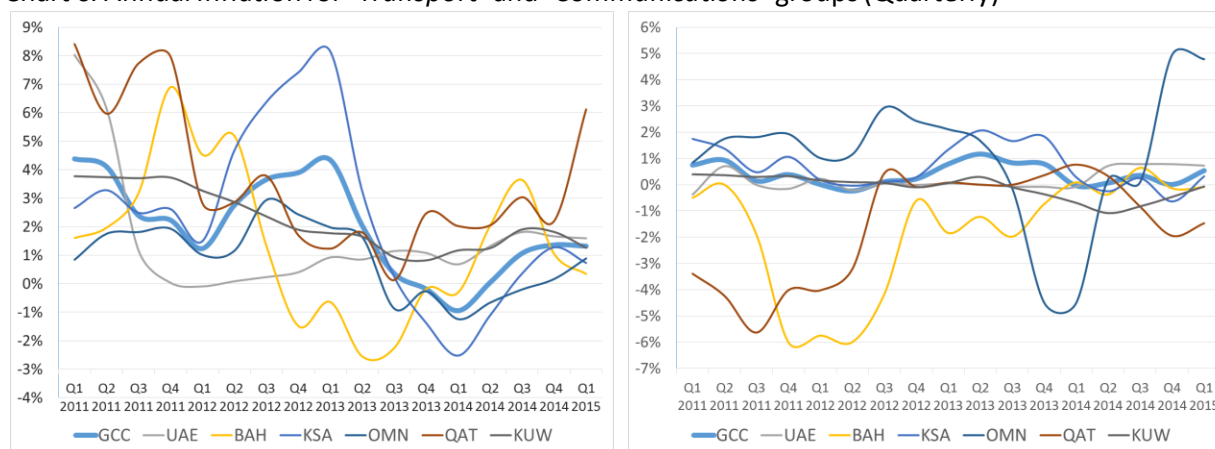


Chart 6. Annual inflation for “Transport” and “Communications” groups (Quarterly)



V. WAY FORWARD

Given the concerns regarding differences between national methodologies, this paper does not advocate further analysis of main group aggregates at this point. The author argues that while the headline level aggregate GCC measure is of indicative value for assessing broad regional inflation development, it is premature to analyze regional inflation components without an assessment of the impact of national methodological differences. To increase the aggregate measure’s usefulness for regional decision-making at any more detailed level, national methodologies should be aligned first.

After reviewing the methodology set out in this paper by the relevant GCC committees and broader consultation with users, GCC-Stat proposes to begin compilation and dissemination of a monthly GCC aggregate measure with household expenditure measured in PPP as the basis for the country weight, in line with this paper but taking into account the user feedback. In particular, the index will exclude actual and imputed rents but may include energy and fuel expenditure of the household. The rest of the national CPI data will be incorporated into an experimental aggregate GCC index. This work will take place in parallel with ongoing work in developing a Harmonized Index of Consumer Prices for all GCC member States. In line with the view of GCC-Stat, this paper promotes a view of the future Harmonized GCC Index primarily as a measure of monetary inflation.

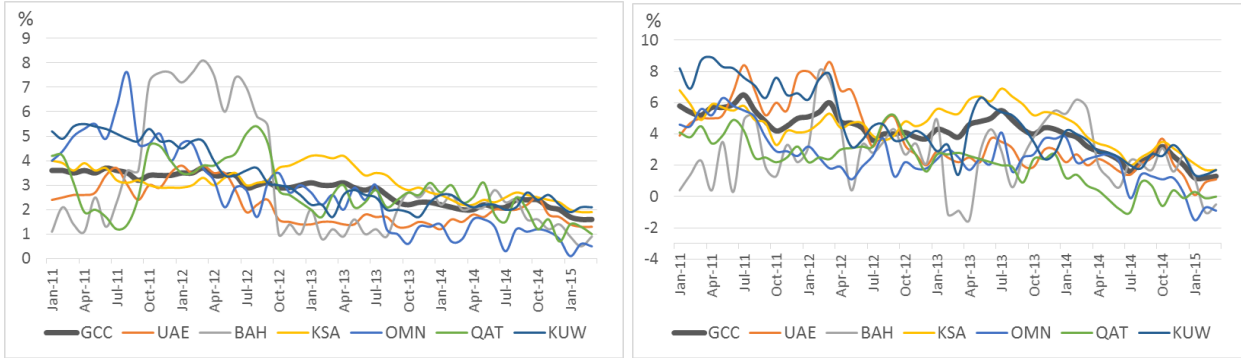
The main objective of the Harmonized Index is to coherently measure monetary inflation in the member states and in the GCC region as a whole, in line with international best practices. This conceptual basis has some significant implications for the methodology to be adapted for the index. The scope of a national inflation index should be all monetary household final consumption expenditure within the borders of the country, also providing an obvious and consistent extension for the regional index. This scope deviates from the aggregate Household sector’s Monetary Final Consumption Expenditure concept somewhat. While the National Accounts covers all expenditures by resident households, an inflation index regards the expenditure of foreigners in the country but excludes resident household’s expenditure abroad. Otherwise the conceptual clarity with National Accounts is intact, particularly the definition of household

consumption. Key issues in the development will be to agree on a consistent compilation of the CPI housing component, to estimate the tourist expenditures and to extend the expenditure coverage to all households. To ensure consistency in the expenditure data, a coordinated future Household Expenditure Survey methodology across the GCC member countries is a prerequisite. Separate documentation will be prepared to describe the proposed methodology in more detail.

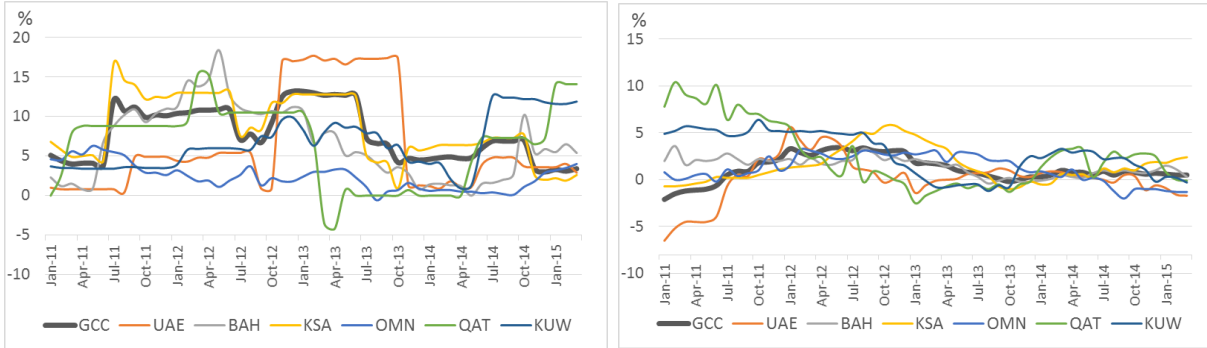
Considered enhancements for the temporary aggregate GCC measure include introduction of chain-linking of national indices instead of fixed country weights, and possible further disaggregation and accompanied harmonization of COICOP division level indices. The harmonized GCC Index of Consumer Prices, once compiled, will replace this proposed temporary aggregate GCC inflation measure.

ANNEX: ANNUAL CHANGES IN MONTHLY CPI SUB-SERIES

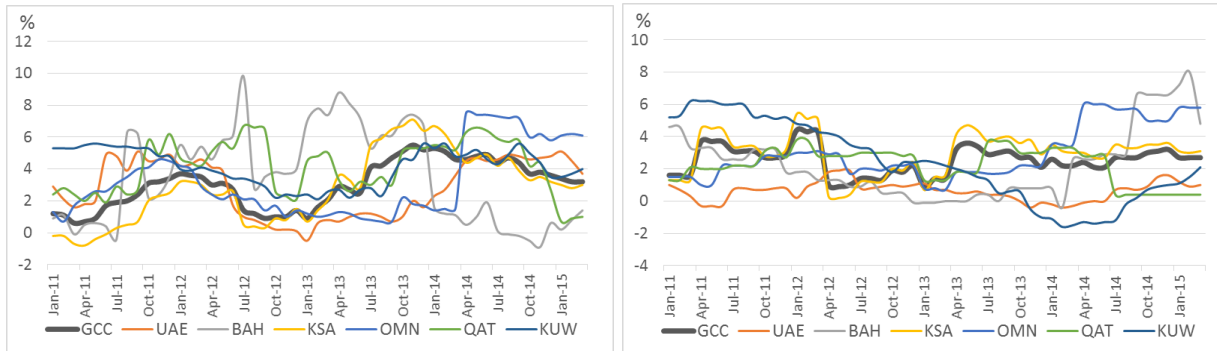
12-month change in Overall CPI and Food and Beverages



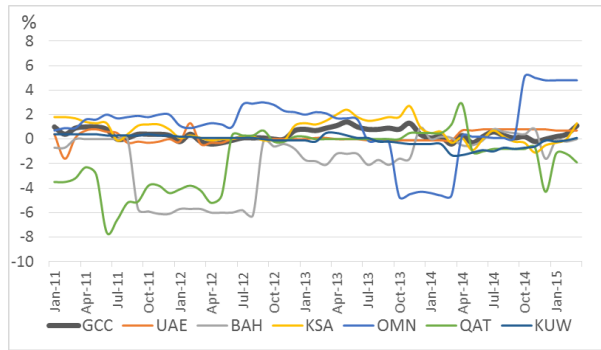
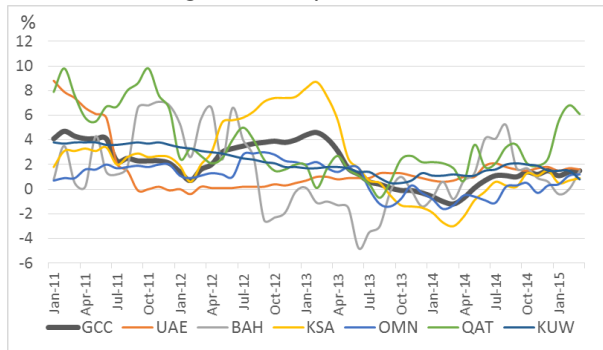
12-month change in Tobacco and Clothing and Footwear



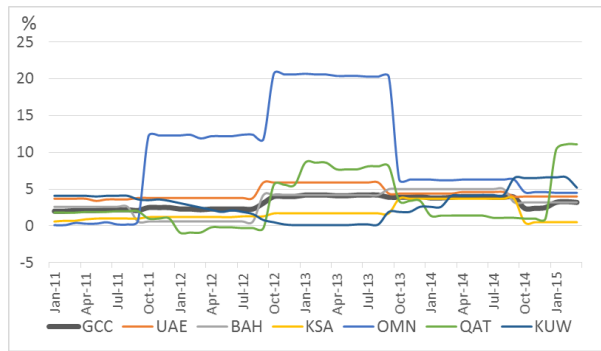
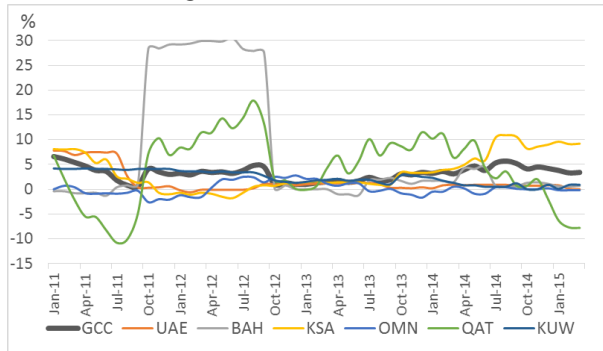
12-month change in Furnishing and Health



12-month change in Transport and Communication



12-month change in Recreation and Education



12-month change in Restaurants and Hotels, and Miscellaneous

