

EXECUTIVE SUMMARY: RESEARCH AND DEVELOPMENT OF A HIGHER EDUCATION PRICE INDEX FOR SOUTH AFRICA

1. INTRODUCTION

Price inflation happens continuously with the result that the prices of commodities, goods and services changes continuously. The Ministerial Committee for the review of the funding of universities indicated in this regard that such price increases have a strong impact on higher education institutions, and here especially in light of the fact that price increases at higher education institutions are often higher than the general CPI.

Price indices are being used worldwide to determine price inflation or deflation on various commodities, products and services. Such price inflation or deflation is brought about by a large number of factors which could be broadly classified into two main categories, namely (1) *demand driven* price inflation and (2) *supply driven* price inflation. Universities are subject to both demand and supply driven price inflation or inflation, i.e. supply driven price increases resulting from higher rates and taxes and demand driven inflation resulting from paper price increases due to higher consumer demand for paper driving up prices. Upon determining price increases or decreases by higher education institutions, the question could be asked as to which price indices should be used to determine the velocity of such increases. The one option is to use the national consumer price index (CPI). This could, however, be problematic due to the fact that a specific higher education institution's price growth could be substantially higher or lower than the CPI. The other option is the praxis option where price increases are determined solely by supply and non-supply driven increases or decreases in the prices of commodities, goods and services used by higher education institutions. This could be problematic due to the fact that the praxis option often gives rise to diminished market share due to service prices increasing quicker than market clearing prices. With this in mind the study under discussion focused on determining the actual price indices of the various higher education institutions in South Africa to determine the level thereof as well as whether such increases are higher, lower or equal to CPI increases in South Africa.

2. OBJECTIVE

In terms of the Terms of Reference Provided by Higher Education South Africa (HESA) the aim to be achieved by the Higher Education Price Index was to have a higher education price index which could be used by HESA when negotiating with government *“the funding needed to deliver the same level of services as before”*.

3. METHODOLOGY

In order for the information needs of HESA to be addressed and for the price index to be acceptable to the relevant fiscal and educational authorities the final price index has to comply to four basic minimum guidelines, namely:

- It has to be compiled in terms of the ILO Consumer Price Index manual.
- Each higher education institution’s expenditure data has to be obtained at a sufficiently detailed level.
- The expenditure groups have to be reconstructed from the line item data provided by the different higher educational institutions according to the Classification of individual consumption expenditure according to purpose (COICOP) structure.
- The expenditure and price definitions used in this study are based on the System of National Accounts (SNA).
- The resulting index has to be econometrically identified against other available price statistics to ensure an end result of greatest likelihood.

As indicated above the methodology used in the proposed index construction was based on the ILO (United Nations) price index construction methodology as described above. This methodology was operationalised in this study by firstly obtaining the detailed expenditure figures from all the higher education institutions in South Africa for 2011, 2012 and 2013 as well as budgeted figures for 2014. Such data was perused and cleaned for modelling purposes. By May 2014 the analysis of such data and composition of a Higher Education Price Index, based on the data received, was completed. The results were presented to the HESA Financial Executive Committee meetings for feedback and approval.

4. THE EXPENDITURE BASKET STRUCTURE OF HIGHER EDUCATION INSTITUTIONS IN SOUTH AFRICA

Based on the results of the data that the responding higher education institutions provided to the BMR it was calculated that their total expenditure in 2013 was R31 768 billion (see table 1). It appears from this table that 6.1% of their expenditure was on non-durable goods, 1.9% on semi-durable goods, 1.9% on durable goods, 25.9% on services, 3.8% on fixed capital formation, 53.5% on staff expenses and 6.9% on other goods and services. While the average score for staff expenses as a percentage of total expenditure was at 53.5%, the staff expense shares for the responding higher education institutions differed between 28.1% and 78.4%. Of these institutions 38.9% showed staff expense to expenditure ratios below 0.6, 44.4% showed staff expense to expenditure ratios between 0.6 and 0.7, and 16.7% showed staff expense to expenditure ratios above 0.7.

TABLE 1

EXPENDITURE BASKETS OF HIGHER EDUCATION INSTITUTIONS WITH THE 'OTHER' CATEGORY NOT REDISTRIBUTED TO OTHER EXPENDITURE CATEGORIES AND WITH THE 'OTHER' CATEGORY REDISTRIBUTED

| Expenditure category | HEIs ZAR | With other % | Without other % |
|-------------------------|----------------|-----------------|--------------------|
| Non-durable goods | 1 951 728 269 | 6.1 | 6.6 |
| Semi-durable goods | 597 305 439 | 1.9 | 2.0 |
| Durable goods | 618 888 105 | 1.9 | 2.1 |
| Services | 8 222 151 923 | 25.9 | 27.8 |
| Fixed capital formation | 1 192 879 666 | 3.8 | 4.0 |
| Staff expenses | 17 006 843 695 | 53.5 | 57.5 |
| Other | 2 178 799 764 | 6.9 | |
| Total | 31 768 596 861 | 100.0 | 100.0 |

In table 2 a comparative analysis is being provided between the expenditure structures of households (to which the consumer price index (CPI)) pertain and the expenditure patterns of higher education institutions. It is evident from the figures

provided in table 2 that there are large-scale differences in the expenditure baskets of higher education institutions and households, namely where 38.3% of household expenditure goes to non-durable goods (i.e. food, beverages, household fuel and water, household consumer goods, medical and pharmaceutical products and petroleum goods), the comparative figure for higher education institutions is only 6.3%.

TABLE 2
EXPENDITURE BASKET COMPARISON BETWEEN HOUSEHOLDS AND HIGHER EDUCATION INSTITUTIONS, 2013

| Expenditure category | HEIs (%) | Households (%) |
|-------------------------|----------|----------------|
| Non-durable goods | 6.6 | 38.3 |
| Semi-durable goods | 2.0 | 8.2 |
| Durable goods | 2.1 | 6.8 |
| Services | 27.8 | 39.2 |
| Fixed capital formation | 4.0 | 1.6 |
| Staff expenses | 57.5 | 6.0 |
| Total | 100.0 | 100.0 |

It is interesting to compare the expenditure basket of South African higher education institutions with such institutions worldwide. While staff expenses made up 57.5% of total expenses at South African universities, lower percentage contributions of staff expenditure to total expenditure were found at some international universities, i.e. during 2013 this percentage was 51.3% at the University of Oxford (2014), 49.2% at Macquarie University (2014) in Australia, 44.0% at Cambridge University (2014) and 41.3% at the University of Glasgow (2014). The implication of this is that, with staff expenses being a high price growth item, the price inflation of international universities should be somewhat lower than is the case in South Africa.

On request of the HESA's June 2014 Financial Executive's Forum a comparison was made of small, medium-sized and large higher education institutions. Originally enrolled funded credits with respect to students were considered as breakdown

criteria into small, medium and large institutions. A breakdown of such credits per higher education institution is shown in table 3.

TABLE 3
ENROLLED FUNDED CREDITS BY HIGHER EDUCATION INSTITUTION, 2012

| Code | Higher education institution | Abbreviation | Contact | Distance | Total |
|--|--|---------------------|----------------|-----------------|----------------|
| H01 | Cape Peninsula University of Technology | CPUT | 24 706 | 142 | 24 848 |
| H02 | University of Cape Town | UCT | 19 925 | 0 | 19 925 |
| H03 | Central University of Technology, Free State | CUT | 9 561 | 184 | 9 745 |
| H04 | Durban University of Technology | DUT | 18 159 | 0 | 18 159 |
| H05 | University of Fort Hare | UFH | 9 967 | 0 | 9 967 |
| H06 | University of the Free State | UFS | 20 237 | 3 082 | 23 320 |
| H07 | University of Johannesburg | UJ | 37 349 | 0 | 37 349 |
| H08 | University of KwaZulu-Natal | UKZN | 29 675 | 2 033 | 31 708 |
| H09 | University of Limpopo | UL | 18 678 | 0 | 18 678 |
| H10 | Nelson Mandela Metropolitan University | NMMU | 18 660 | 785 | 19 445 |
| H11 | North West University | NWU | 28 264 | 11 347 | 39 611 |
| H12 | University of Pretoria | UP | 35 272 | 4 871 | 40 143 |
| H13 | Rhodes University | RU | 6 114 | 0 | 6 114 |
| H14 | University of South Africa | Unisa | 56 | 172 248 | 172 304 |
| H15 | University of Stellenbosch | SU | 22 193 | 0 | 22 193 |
| H16 | Tshwane University of Technology | TUT | 35 932 | 919 | 36 850 |
| H17 | University of Venda | UNIVEN | 8 122 | 0 | 8 122 |
| H18 | Vaal University of Technology | VUT | 14 457 | 50 | 14 507 |
| H19 | Walter Sisulu University | WSU | 20 347 | 0 | 20 347 |
| H20 | University of the Western Cape | UWC | 15 366 | 0 | 15 366 |
| H21 | University of the Witwatersrand | Wits | 22 644 | 0 | 22 644 |
| H22 | University of Zululand | UNIZUL | 15 583 | 0 | 15 583 |
| H25 | Mangosuthu University of Technology | MUT | 7 372 | 0 | 7 372 |
| Total | | | 438 639 | 195 662 | 634 301 |
| Note: Contact students at Unisa is Huguenot College students, contract being phased out. | | | | | |

Based on the enrolled funded credit information provided in table 3 above it was not possible to conduct a reliable and valid size breakdown of higher education institutions. To affect such a breakdown the 2013 expenditure information submitted by the various higher education institutions was used to affect the following breakdown in terms of size:

- smaller HEIS: annual 2013 expenditure less than R1 billion;

- medium-sized: annual 2013 expenditure of between R1 and R2 billion; and
- large: annual 2013 expenditure exceeding R2 billion.

Based on such expenditure criteria the size by higher education institution expenditure basket distribution as shown in table 4 was obtained. It appears from table 4 that higher education institutions with expenditure above R2 billion per annum spend percentage-wise more on services than small and medium-sized institutions while spending percentage-wise less on staff expenditure.

TABLE 4

PERCENTAGE EXPENDITURE BREAKDOWN BY SIZE OF INSTITUTION

| Expenditure category | Expenditure R0-1 bn | Expenditure R1-2 bn | Expenditure R2+ bn | Total |
|-------------------------|---------------------|---------------------|--------------------|-------|
| Non-durable goods | 5.6 | 6.2 | 6.4 | 6.3 |
| Semi-durable goods | 2.5 | 1.7 | 2.0 | 2.0 |
| Durable goods | 3.0 | 1.8 | 2.0 | 2.1 |
| Services | 17.6 | 18.8 | 32.0 | 27.9 |
| Fixed capital formation | 4.2 | 5.2 | 3.7 | 4.0 |
| Staff expenses | 67.1 | 66.3 | 53.8 | 57.7 |
| Total | 100.0 | 100.0 | 100.0 | 100.0 |

5. HIGHER EDUCATION PRICE INDEX RESULTS

The higher education price index results obtained from the research study under discussion are shown in tables 5 and 6 below. It appears from table 5 that the median price index score obtained for the 18 higher education institutions who provided the BMR with usable 2013 expenditure data was 7.62%, the mean score was 7.73% while the **higher education price index score for these institutions was 7.5%**. This provides a clear reflection that the 2013 higher education price index of 7.5% was substantially higher than the 2013 CPI of 5.7%. It further appears that 64% of the 18 responding institutions showed price index scores between 7.19% and 8.28% which are all substantially higher than the 2013 CPI figure shown above.

TABLE 5

HIGHER EDUCATION PRICE INDEX DESCRIPTIVE STATISTICS

| Statistic | Percentage |
|--------------------|-------------|
| Median | 7.62 |
| Mean | 7.73 |
| Standard deviation | 0.55 |
| 64% minimum | 7.19 |
| 64% maximum | 8.28 |
| HEPI | 7.50 |

A breakdown of the higher education price index mean score and the overall higher education price index score by institution size is shown in table 6 below. It appears from this table that the highest mean scores and higher education price index scores were obtained with respect to smaller higher education institutions where the staff expenditure to expenditure ratios were the highest.

TABLE 6

MEAN HIGHER EDUCATION PRICE INDEX SCORES AND HIGHER EDUCATION PRICE INDEX SCORES BY INSTITUTION SIZE

| Higher education institution 2013 expenditure category | Mean score | Higher education price index |
|--|------------|------------------------------|
| Expenditure R0 – 1 billion | 7.8 | 7.6 |
| Expenditure R1 – 2 billion | 7.7 | 7.5 |
| Expenditure R2+ billion | 7.6 | 7.4 |
| Total | 7.7 | 7.5 |

Having shown the higher education price index outcomes in the tables above, the question could be asked whether this index result differs from the consumer price index (CPI) which is often used for budgetary purposes. It appears from figures 1 and 2 below that historically there were large-scale differences between the CPI and the higher education price index which in practice meant that should higher education price and subsidy increases have been purely based on the CPI, higher education

institutions would in effect have become much less well funded compared to the situation in 2005. As can be seen from figure 2 compared to 2004 there was already an 18 points (11.3%) price gap between the CPI and the higher education price index. The implication of this figure for higher education institutions is that for each year that the price growth of higher education institutions are in nominal terms higher than the CPI, the CPI-higher education price index gap will keep on widening to the detriment of the financial positions of higher education institutions. Although this funding gap can potentially be bridged by those higher education institutions with divergent and growing alternative income streams, higher education institutions with less divergent and growing alternative income streams will be under mounting pressure.

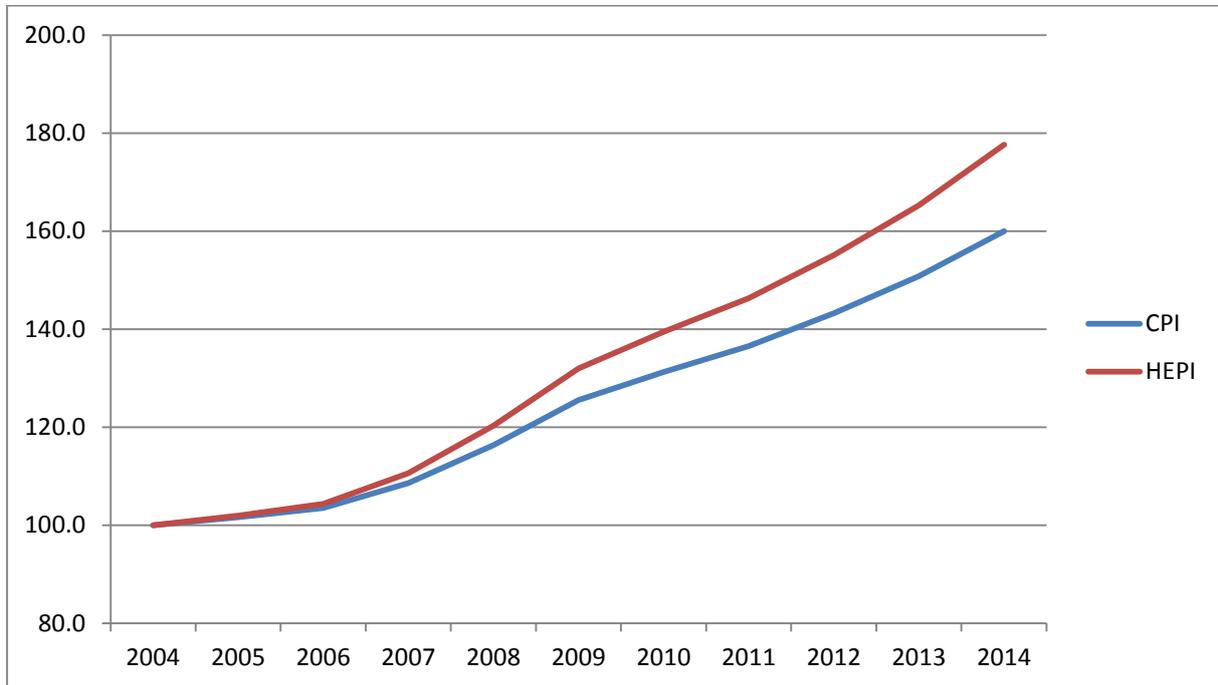
FIGURE 1

CPI AND HEPI OUTCOMES, 2005 TO 2014



FIGURE 2

CPI AND HEPI OUTCOMES, 2004 TO 2014 (2004 AS BASE YEAR = 100)



6. DISCUSSION OF HIGHER EDUCATION PRICE INDEX RESULTS

It is evident from the higher education price index of 7.5 provided for the 18 responding higher education institutions that higher education price inflation is substantially higher than the national 2013 CPI of 5.7. This finding has various important implications for higher education institutions, namely:

- higher education institutions should ensure that their income streams are sufficiently growing and diversified to ensure that sufficient finances are available to cover continuous above CPI price growth;
- given the central place of higher education in the National Development Plan (NDP) to ensure higher levels of employment and economic growth as well as poverty reduction, sufficient financial resources should be provided by the National Treasury to cater for both rapid higher education price and enrolment increases; and

- above CPI price increases at higher education institutions bring about systematic risks which need to be mitigated. The rapid growth in staff expenditure to recurring income ratios at the majority of higher education institutions as well as the decreasing reserve margin between income and expenditure at such institutions are indicative of increasing solvency risks at higher education institutions.

7. IMPLICATIONS OF HIGHER EDUCATION PRICE INDEX RESULTS

The first implication of the relatively high higher education price index is that something needs to be done to address increasing cost-push risks to higher education institutions in South Africa. The interventions required should come from higher education institutions, the government as well as the interface between higher education institutions and government. An example of this is the fact that while the National Treasury indicated that the University education budget allocation will increase from R30.448 billion in 2014/2015 to R34.616 billion in 2016/2017 (constituting a 13.4% increase over this period), in terms of the higher education price index information shown in this study the increase should have been to R35.186 billion in 2016/2017 constituting a 15.6% increase over this period (National Treasury 2014). The implication of such lower than required provision over the long-term would impact negative towards the attainment of a variety of unemployment reduction, poverty reduction, higher GDP growth, stepped-up human capital formation and a larger highly skilled skills pool in South Africa as envisaged by the NDP.

The second implication is that higher education institutions are increasingly underfunded, creating systemic (political, economic and social) problems for South Africa as a whole, given the pressing need for mass education to urgently address the NDP's triple challenge of poverty, inequality and unemployment. It appears from Statistics South Africa's Quarterly Labour Force Survey (Quarter 2, 2014) that, while the labour market absorption rate of the higher educated was 77.5% in Quarter 2 2014, the comparable figure was 50.4% for people with a matric as highest qualification. This clearly shows the positive impact of higher education on labour

absorption. Among graduates the labour absorption rate was even higher, as is reflected by the very low unemployment rate of about 5% among graduates in 2013.

The third implication is that chronic underfunding could impact negatively on demographic transformation within the higher education sector. While it is widely known that there are still a fairly limited number of black full professors within higher education institutions and the demographic transformation of higher education institutions is being strongly driven by the Department of Higher Education and Training, sufficient funds should be available to boost such transformation. Additional funding in this regard is of vital importance to drive stepped-up skills development, mentorships, cooperative education, exposure to international research opportunities and sitting-by-Nellie human resources practices.

A fourth implication is that chronic underfunding also impacts negatively on innovation activities at universities. In terms of the Industrial Policy Action Plan (IPAP) developed by the Department of Trade and Industry (dti), innovation is of vital importance to ensure commodity beneficiation in South Africa in order to stimulate growth in the manufacturing sector. Innovation and manufacturing have been stagnating in South Africa for quite some time for a number of reasons, including chronic underfunding of higher education institutions giving rise to below-optimal economic and employment growth in South Africa.

The final implication, which links up with recommendations made in the report of the Ministerial Committee for the review of the funding of universities, is that not all universities are equally underfunded. Higher education institutions could be placed on a spectrum from fairly well-resourced universities to completely underfunded universities struggling to survive financially. However, due to the fact that higher education inflation is substantially higher than CPI, as was indicated in this report, some of the more well-resourced universities are slipping on the said spectrum in the direction of underfunding. As pointed out by the DHET the Government budget for higher education as a percentage of GDP was 0.75% during 2011, which is substantially lower than the OECD percentage of 1.21% and the world average of 0.84%. Given the higher education transformation agenda and given the NDP

development imperatives and the role that the higher education sector plays in realising such imperatives, a higher state higher education budget to GDP ratio is of great importance.

Having provided the background to the higher education price index study as requested by HESA, the methodology used as well as the results of this study in this report, the question remains as to the ways in which the information supplied can be useful to higher education institutions. Based on past experience regarding the use of price index information the following can be recommended:

- The final report needs to be submitted to the various higher education institutions, the DHET and the National Treasury for perusal and comment.
- There should be engagements between HESA, the DHET and the National Treasury to ensure that the results of this report find implementation in national budgeting practice.
- Follow-up research should be conducted to monitor the CPI-HEPI gap and the implications of this gap for the financial stability of higher education institutions.