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"Blanket" Fuel and Electricity Subsidies Did Not Offer Much Benefit to Zambia's Poor

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1. Introduction

For a long time the Zambian Government ran a number of consumption and production subsidy programmes. These programmes[1] came under considerable strain in 2015 when Zambia experienced a significant economic downturn. In that year, the real Gross Domestic Product (GDP) growth rate fell to 2.9%, from an impressive 7.7% over the ten years before (2005-2014). By the time the 2015 downturn had fully set in, the country was running a budget deficit of nearly 10% of GDP and had raked up a public debt stock of over 50% of GDP (IMF, 2016). With the combined cost of debt service interest payments and arrear payments rising from 17% of the National Budget in 2016 to 23% in 2017 (Cheelo, 2017), the Government was readily hemorrhaging money in the aftermath of the mini-crisis. Zambia could no longer afford the multiplicity of subsidies it had been maintaining and seriously contemplated abolishing some of them.

Box 2.1: Cursory estimate of total cost of electricity subsidy

Item	*Unit costs ($/KWh)*
1. ZESCO purchase from IPPs* (cost)	0.11
2. ZESCO avg. retail tariff (price)	0.06
3. Government subsidy cost (item 2 – 1)	-0.05
* Purchase price of electricity from Independent Power Producers (IPPs) used as proxy for production cost.	

Year	*Total domestic supply of electricity (KWh)*	*Revenue lost from subsidy** ($)*
2014	13,744,290,000	(687,214,500)
2015	12,818,090,000	(640,904,500)
** Calculated as total electricity supplied multiplied by Government subsidy cost (US$0.05 per KWh)		

The policy intentions of the Government were met with strong anti-abolition sentiments with some stakeholders asserting that the removal of subsidies on fuel and electricity would cause pump-price and electricity tariff escalations. The worry was that these price hikes would hurt Zambia's poor and vulnerable groups most of all. Generally, these sentiments were not backed by analysis and empirical evidence; they were subjective and had the potential to misinform public policy.

This paper offers an alternative perspective to the above motion on *anti-abolition of subsidies*. We argue that during their existence, the fuel and electricity subsidies had benefitted the poor far less than they had done any other social groups in Zambia. Likewise, the abolition of the subsidies affected the poor less than it did other social groups.

Of course, we have to bear in mind that most commentators will generally argue that any additional adverse effect on the poor, no matter how marginal, should be judged as worse than any effect on the non-poor, simply by virtue of the poor already being is a state of poverty and vulnerability. This is however a philosophical issue that is outside the scope of this paper. In this paper, we focus on the measurable impacts and find little additional direct adverse effects on the poor relative to the non-poor, mainly on account that the poor were largely already excluded from the benefits of the subsidies to begin with.

Ultimately, we recommend a permanent replacement of the poorly targeted, broad-based or "blanket" fuel and electricity subsidies with well-targeted subsidy measures that reach specific poor sub-groups of the population. In particular, we argue for specific subsidies targeted towards social protection or *poverty alleviation*[2] interventions.

1 Some of these include fuel subsidies, electricity subsidies through the national power utility ZESCO, subsidies under the Farmer Input Support Programme (FISP) and Strategic Food Reserve (SFR) programme, and social protection and empowerment subsidies; Social Cash Transfer (SCT); Food Security Pack; Public Welfare Assistance Scheme; Women's Development Programme; Youth Empowerment programme, Citizenship Economic Empowerment, etc.

2 We argue for poverty alleviation and not poverty reduction per se because, while social protection subsidy programme can help households to cope with poverty (or alleviating their suffering), they cannot be expected to take people permanently out of poverty; they cannot reducing poverty except perhaps in the medium to long-term.

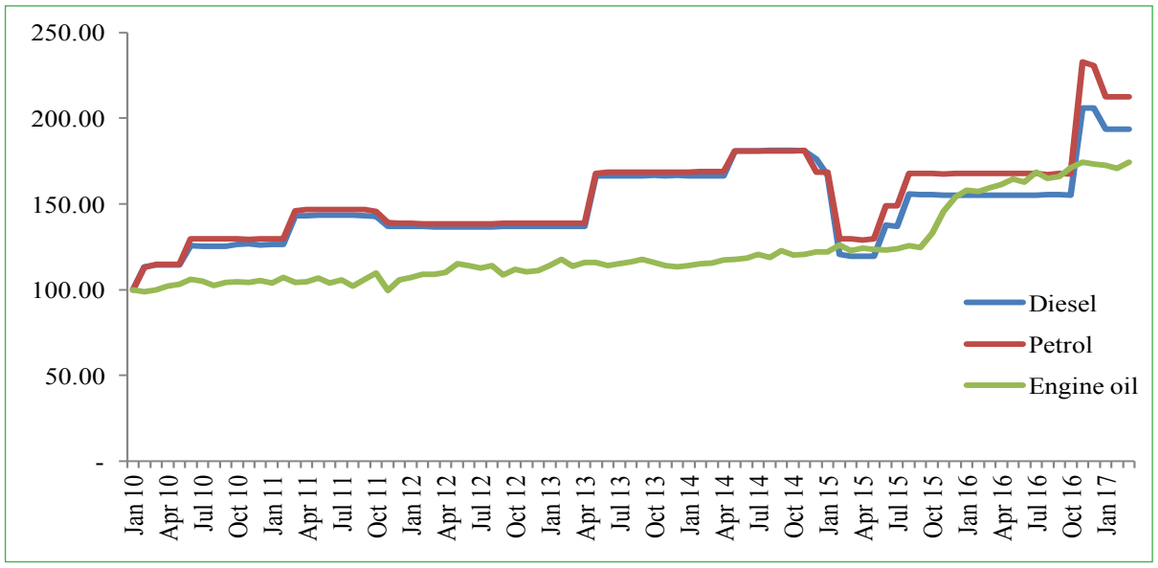
The rest of this paper is structured as follows: Section 2 explains the origins of the subsidy removal problem in more detail and also compares the effects of subsidies across studies done elsewhere on subsidy removal; Section 3 uses simple descriptive statistics to highlight the relative budgetary allocations to some of the main public sector subsidies in Zambia, and also examines how these programmes have fared in securing releases in the recent past; Section 4 presents the household level evidence that Zambia's poor benefit the least from fuel and electricity subsidies because of the skewed consumption distribution of the related services; Section 5 offer a graphical illustration of correlations between various commodity prices and fuel and electricity prices as well as indices of changes in macroeconomic factors; and Section 6 offer our conclusion and makes some policy recommendations about how to improve the transfer of public resource benefits to the poor and vulnerable in Zambia.

2. Zambian Context of Potential and Realized Subsidy Removal

As earlier indicated, the pressure to remove the large subsidies in fuel and electricity stem from the economic slowdown of 2015 and the fiscal (or budgetary) constraints this imposed on the Government. As the economy slowed from a peak real GDP growth rate of 10.3% in 2010 to 2.9% in 2015, the Zambian economy's ability to generate domestic revenue faltered continuously (see also, Cheelo, 2016). With the budget deficit and public debt both mounting rapidly, the Government readily came under pressure to find avenues for reducing public spending. The larger consumption fuel and electricity subsidies became viable candidate. Box 2.1 presents a quantitative example of the cost of electricity subsidies based on actual domestic supply data. The subsidy costs were about US$687 million and US$641 million in 2014 and 2015, respectively. In contrast, the budgetary allocations to the Social Cash Transfer (SCT) programme in 2014 and 2015 were a meager K199.2 million (US$32,000) and K180.59 (US$20,500), respectively.

Unsurprisingly therefore, as the Government was preparing to launch the 2017 National Budget, in October 2016, it announced that: "in line with the policy decision of 2014, to remove fuel subsidies, and the current policy direction to migrate to cost reflective pricing of energy services and products, the ERB has revised the pump price of petroleum products as follows… effective mid-night on 14th October 2016." Thus, fuel prices were adjusted in October 2016, but were not fully liberalized so that they could be fully market determined. As seen from the price trend in Figure 2.1, fuel (petrol and diesel) prices continued to be controls or regulated by the regulatory authority, the Energy Regulation Board (ERB). Considering that the fuel subsidy works through the Government controlling the sale price without necessarily taking into account the price required for full cost-recovery, the ERB's continued regulation of fuel prices raises a fundamental question about the extent to which the fuel subsidy has truly been removed in Zambia.

Figure 2.1: Selected petroleum product price indexes [100 = Jan 2010]



Source: constructed from CSO data

The status on fuel market liberalization notwithstanding, the decisions to abolish the fuel and electricity subsidies sparked a strong anti-abolition reaction. Many "champions of the poor" emerged, claiming that the fuel price hike and anticipated higher electricity tariffs from the subsidy removals would bring about untold hardships and suffering, especially for the poor and vulnerable in the Zambian society. They therefore called on the Government to reverse its decision of subsidy removal.

Despite these widespread calls for a reversal, on 28th March 2017, the ERB announced that it had received an application from ZESCO Limited to increase electricity tariffs for its various customer categories for the year 2017 (ERB, 2017). According to the ERB, ZESCO proposed to increase electricity tariffs for retail customers (Residential, Services, Commercial & Maximum demand). It proposes a tariff migration path that would be implemented in two phases in 2017, starting with an initial 50% increase effective 1st May, 2017 and an additional 25% adjustment effective 1st September 2017. By the end of 2017, these measures had been implemented, implying a total proposed tariff adjustment of 75% in that year.

The ERB statement indicates that:

In its application, ZESCO proposed to increase electricity tariffs for retail customers (Residential, Services, Commercial & Maximum demand). The ERB will soon embark on a Cost of Service Study to establish the cost of providing electricity to different customer categories. Once the study is completed, all tariffs will be determined based on the results of the Cost of Service study. This study will be launched in April, 2017 and concluded within 12 months (ERB, 2017; p.1)

Although the ERB explicitly stated that it will only determine the tariff revisions based on the results of the Cost of Service study results, nonetheless, the announced tariff adjustment generated renewed debate about the likely impacts of the impending migration to higher electricity tariffs. This paper focuses on the impacts on the welfare of various social groups of the tariff adjustment.

3. Empirical Evidence on Subsidy Application and Removal

Subsidies have been applied and removed in other countries or territories in the recent past. It is therefore instructive to review what subsidy removals have been attempted elsewhere. In particular, in keeping with this paper, it is important to understand what some of the main consequences of subsidy removal have been for poor and vulnerable groups in these countries. In the ensuing paragraphs, we review the evidence from studies done elsewhere on the implications of subsidy removal.

Hakim et al (2016) assessed fuel subsidy reforms in Malaysia, estimating the direct welfare impact resulting from removal of fuel subsidy using a partial equilibrium approach. The study used secondary data from a 2004/2005 household expenditure survey that covered 4,227 households. The assessment segregated the households into three income groups and mathematically measured the welfare impact of the subsidy removal by estimating the real income effect as a result of fuel price increases. The results showed various levels of reduced welfare. It found that the reduction in welfare due to higher price was larger in absolute terms for the middle 40% of households compared to the bottom 40. The study argued that the relative loss was however higher for the lower group in comparison to the middle group once their relatively smaller income was taken into account. The study recommended that reforms should be accompanied by strategies to mitigate the welfare loss in general.

Similarly, Fabrizio and Kpodar (2016) used an excel-based simulation model to study the adverse welfare effect of subsidy removal in Brazil. The study used 2005 household survey data and input-output tables to analyze: both the direct and indirect reform impacts on welfare, the distribution of these impacts across income groups, the share of subsidies accruing to different income groups and the price increase in other sectors of the economy following the increase in fuel subsidies. The direct impact was estimated as the percentage change in real income given by the share of spending on fuel multiplied by the percentage change in the price of the fuel product aggregated for all fuel products. On the other hand, the indirect impact was the budget share of non-fuel goods and services – that is, the budget share of a good or service consumed by households other than fuel – multiplied by the corresponding price change of these goods following the change in fuel prices aggregated for all non-fuel goods and services. Fabrizio and Kpodar used the price shifting model developed by Coady and New House (2006) to estimate the impact on high fuel prices on other goods and services that depend on fuel for production. The model was structured in such a way that the technology of the production was captured by an input-output coefficient matrix. The model was computed using Excel and configured to facilitate the identification of main variables. The parameters of the model then produce results in graphic representation and tables. These results showed that the direct benefits of the subsidies accrued to the non-poor predominantly so that subsidy. The poor receive less than 2% of estimated total direct subsidy benefits. The indirect impact was seen to affect all income groups in a comparably similar manner.

Meanwhile, Yussoff and Bekhet (2016) analyzed the impact of energy subsidy reforms on industrial energy structures using a Computable General Equilibrium (CGE) model and a Social Accounting Matrix for the Malaysian economy in 2005. They used cross-sectional data for 2005 from all sectors of the economy. The simulations were based on different groups of scenarios (removing fuel subsidies, energy tax subsidies and both fuel and energy tax subsidies). The results obtained showed that apart from the removal increasing energy savings and encouraging alternative fuel consumption, it also improved real GDP and fiscal deficit in the government budget. The study did not treat disaggregated welfare effects by socio-economic group status.

Coady et al (2015) assessed the unequal benefits of applying fuel subsidies in 32 developing countries in Africa, Asia, Middle East and Latin America using an Excel simulation model.

They argued that the subsidies not only have negative economic and environmental effects but also bring undesirable equity problems in that they worsen inequalities and were not an efficacious and cost-effective way of protecting the poor. The methodology employed enabled an analysis of the investigation of two channels through which subsidies affect welfare. In the first instance, it used survey data on household expenditure to calculate the budget share of fuel for each household. This was done by dividing the total expenditure on fuel by total household expenditure to obtain the impact of price increase on real income and hence impact on welfare. The second, more indirect channel considered the impact of higher fuel prices on other goods and services using the price shifting model presented by Coady and New House (2006), which assumes that price increases are passed on to domestic prices of goods and services. Estimating the price increases required information on the production structure of the economy based on input-output tables that describe the share of different inputs in the production cost structure. The results revealed that subsidies were badly targeted, mainly benefitting higher-income groups who consumed more energy. In addition, public expenditures on energy subsidies were seen to crowd out more redistributive public spending or required financing through regressive taxation. Moreover, income losses were distributed across income groups irrespective of the relative income sizes. Thus, Coady et al anticipated that more effective policies could be formulated to cushion the most vulnerable social groups more effectively.

Closer to home, CUTS International (2014) carried out a survey on fuel subsidy removal in Zambia. The survey was a "before-after" assessment of expenditures on fuel prior and subsequent to the subsidy removal. Primary data were used to estimate the effect at a micro level by sampling 400 respondents across households, farmers, wholesalers and firms in both rural and urban parts of four districts. The study also involved qualitative interviews with key sector representatives. It revealed that despite the subsidies being removed at a time when Zambia's economy was performing well, the effects on the economy were felt by all groups regardless of their income due to the impact on inflation. It argued that despite the higher income group consuming more fuel, the impact was higher on the low-income groups due to the indirect impact on prices. Low income earners lost about 30% of their average income whilst high income earners lost 12%. The removal also resulted in losses in savings of households of about 19%, affecting investments and hence GDP. It however concluded that a reversal of the removal was "not the best decision" as inflation had eventually stabilizes. Moreover, the fiscal deficit that resulted from subsidies made them unsustainable.

Similarly, PMRC (2017) analyzed the direct and indirect impact of electricity subsidies on small, medium-sized enterprises and poor households in Zambia. It curried out some analyses using data from the Living Conditions Monitoring Survey 2015. The results showed that in terms of the indirect effect, electricity tariff increase has the largest impact on the poorest households due to the erosion of their disposable income by 13% compared to a 6% reduction in the income of the rich. Meanwhile, the direct impact on poor households was 9% compared to only 3% for the rich. Although the results obtained from the study were counterintuitive, PMRC concluded that electricity subsidy removal coupled with some measures to protect the poor households is good because it allows for investments in the energy sector as well as channeling of government funds towards more productive programmes.

Cook et al (2014) examined subsidy removal in Ghana, adopting a partial equilibrium approach due to data limitation. This approach was also seen to be less intensive and could be computed relatively easily. Cook et al explored the direct and indirect welfare impact of subsidies using the price shifting model developed by Coady and New House (2006). The direct effects were calculated for each population quintile by multiplying their respective budget shares for each of the fuel products purchased by the price increase in fuel. The indirect approach was based on the input-output data combined with the formulation of households demand for each product. New poverty measures following the subsidy

removal were then compared to the baseline welfare scenario to measure the impact of price on poverty. The data used was household survey data from Ghana Living Standards Survey (GLSS) and other sources. The results showed that the richest benefit most from fuel subsidies due to the fact that they spend more on fuel. The indirect effect revealed a loss in welfare for all five quintiles varying from 0.81% for the richest quintile and 0.32% for the poorest quintile.

Razak et al (2013) investigated the indirect impact of subsidy removal in Malaysia using the price shifting model (earlier described). The model specified that each non-fuel good was related to other non-fuel goods only through input-output table. The indirect impact of the subsidy was determined by measuring the extent to which the resulting fuel price rise affected the price of each of the non-fuel products. To calculate the budget share of all the goods, the household expenditure survey report 2004-2005 was used (similar to what was done in Hakim (2016) as described earlier). The data were divided into 12 major categories of goods; the expenditure on each of these goods was then divided by the total expenditure to obtain the budget share of each good. To calculate the change in the price induced by the change in aggregate fuel price, the price shifting model involved mapping from the aggregate producer price of non-fuel products. The model assumed that technology of the economy was fully described by the input-output (I/O) matrix, which depicted the use of sectoral inputs in the production of sectoral outputs. The indirect effect was then calculated by multiplying the budget share of each of the goods and services by the percentage increase in the corresponding price of goods and services. The results of Razak et al showed that the subsidy removal was expected to have a huge negative indirect welfare impact on society. This effect was seen to be uniform across different income based segments of households.

Clements et al (2006) looked at the impact of subsidy removal on aggregate price level, real growth and income distribution in Indonesia using a multisector CGE model with a distinct component of price determination mechanism. The model consisted of 10 components of the economy and was estimated using cross sectional data from a Social Accounting Matrix. The results obtained reflect two scenarios in the short term: in the first, the results showed an increase in price level and a decrease in output following removal of subsidies on petroleum products with the most significant effect being on urban households who consume the larger share of petroleum products; and in the second scenario, real output was maintained by higher private sector investment, suggesting that the subsidy removal did not necessarily have harmful effects on growth.

The evidence from other countries therefore generally suggest that subsidies benefit the poor disproportionately less than they do other social groups and conversely. Furthermore, the removal of subsidies tends to affect the poor less given that they are in the first place excluded from the benefits of the subsidies. However, this evidence does not provide sufficient insights for Zambia, particularly in relation to the plight of different social groups, notably the poor in the wake of subsidies and subsidy removal.

4. Burden of Subsidies and Biases in Aggregate Spending in Zambia

In this section, we present descriptive statistical evidence on the nature and magnitude of the fuel and electricity subsidies. We also describe the inherent spatial (rural-urban) biases of Zambia's aggregate spending on major public sector programmes, demonstrating that, over the reference period, the bulk of the country's public expenditure tended to benefit the relatively better off urban dwellers more than it did the rural dwellers.

Table 4.1 presents summary data on planned (targeted) expenditure and actual expenditure (or outturn) on fuel and electricity subsidies over the period 2013-2016. The main take-home

from this data is that subsidies grew considerably between 2013 and 2016, taking up K4.9 billion (or 9.4% of budget expenditure) in 2016 compared to K1.6 billion (3.7% of expenditure outturn) in 2013. Moreover, the variance between the planned expenditures and expenditure outturns were also dramatically large, ranging from 233% for the fuel subsidy in 2016 (the only item in Table 4.1 with a target) to infinity for both fuel and electricity in all other cases (reflecting that subsidies were generally not targeted or planned for during 2013-2016).

Table 4.1: Government expenditure on fuel and electricity subsidies

		Fuel subsidy (incl. payment arrears)	*ZESCO electricity subsidy*	*Subsidies, total*	*Subsidies (% of Total Govt. Expenditure)*	*Total Govt. Expenditure*
2013	Target (K millions)	0	0	0	0.0%	31,685
	Prelim. Outturn (K millions)	1,610	0	1,610	4.8%	33,790
	Variance (%)				n.a.	6.6%
2014	Target (K millions)	0	0	0	0.0%	41,049
	Prelim. Outturn (K millions)	307	0	307	0.8%	38,542
	Variance (%)				n.a.	-6.1%
2015	Target (K millions)	0	0	0	0.0%	44,815
	Prelim. Outturn (K millions)	2,713	364	3,078	6.0%	51,685
	Variance (%)				n.a.	15.3%
2016	Target (K millions)	1,156	0	1,156	2.3%	50,412
	Prelim. Outturn (K millions)	3,845	1,014	4,859	9.4%	51,827
	Variance (%)	232.8%		320.5%	n.a.	2.8%

Note:

= Infinity; this essentially imply the absence of a budget target (or planned expenditure) against the outturn in question such that the mathematical operation of dividing the outturn by zero (0) results in an undefined infinite number.

n.a. means the calculation is not applicable.

Variance was calculated as (Outturn – Target)/ Target*100; a positive implies that the Outturn > Target or expenditure above budget (or unplanned spending, overspending, budget overrun, excess expenditure, etc.).

Source: constructed from Annual Economic Reports (various) and 2017 Mid-Year Economic Review

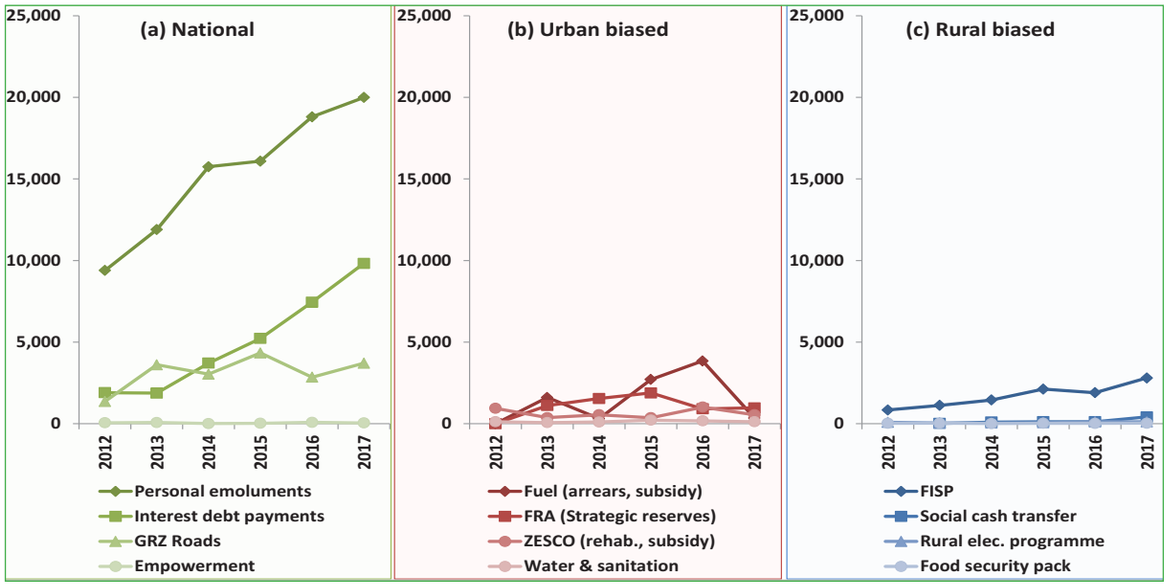
Arguably, Zambia's aggregate public expenditure on the major programmes, including spending on fuel and electricity subsidies, has a notable pro-urban and therefore pro-non-poor bias. Figure 4.1 shows the total planned (target) expenditures for selected major programmes in Zambia for the period 2012-2017. Four programmes are represented in each panel, with: Panel (a) depicting what we assessed and labelled as national programmes with limited inherent spatial biases; Panel (b) capturing programmes that we classified as having an urban bias; and Panel (c) capturing inherently rural-biased programmes (see also, Annex 1).

As seen in Panel (a), Zambia's budgetary allocations to personal emoluments, debt interest payments and to a lesser extent, roads increased significantly over the reference period while empowerment programmes remained relatively flat and small throughout the period. Thus, national programmes dominated the budget allocation.

We assessed fuel subsidies, strategic food reserves by the Food Reserve Agency (FRA), electricity Subsidies through ZESCO and water and sanitation (Panel (b)) as the four main urban biased programmes; and the Farmer Input Support Programme (FISP), Social Cash Transfer (SCT), rural electrification, and food security pack as the main rural biased programme (Panel (c)). Generally, the urban biased programmes were dominant in the budgetary amounts allocated to them compared to the allocations to the rural programmes;

the only exception was the FISP allocation, which showed a healthy and increasing trend in its budgetary allocation. Nonetheless the salient point is that the large-scale subsidies on fuel and electricity (ZESCO), with their urban bias, implied disproportionately more benefits to urban populations and marginal ones to the rural poor.

Figure 4.1: Budgetary allocation to selected major programmes, by spatial category



Source: constructed from MOF Annual Economic Reports (various)

5. Fuel and Electricity Access and Utilization, by Socio-Economic Group

In order to establish the extent to which the poor access and utilize the services that financially benefit from the fuel and electricity subsidies, we chose to analyze access to *transportation services* (for fuel) and *electricity connectivity* among socio-economic groups at the household (family) level. We correlated these with other household level socio-economic variables (including household expenditure, poverty status, and year-on-year progress).

The summary statistics in Table 5.1 forms the main basis of this part of the analysis:

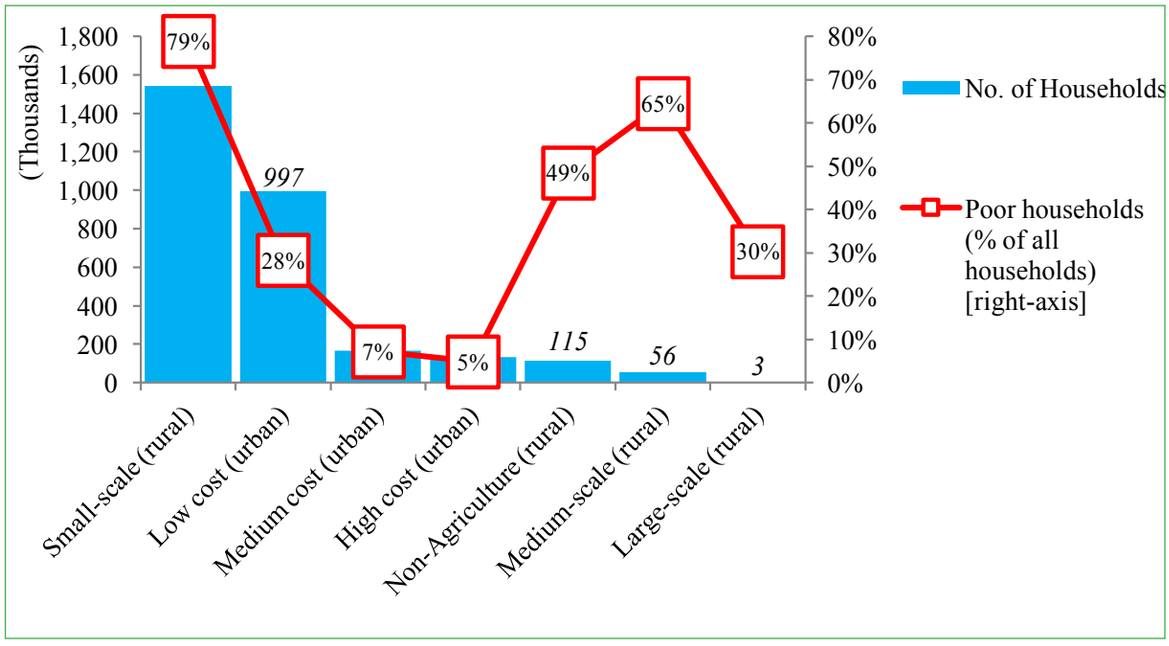
The small-scale stratum – a rural stratum – had the largest number of households in Zambia in 2015, with 1.5 million of them (Figure 5.1). Out of these, 79% were income poor. In terms of numbers, this was followed by the low cost (urban) stratum with 997,000 households, of which 28% were poor. The other urban strata had relatively low populations with very low proportions of poor households. The poverty burden in Zambia was clearly disproportionately heavier in rural areas.

Table 5.1: Selected poverty and socio-economic condition indicators

	No. of House-holds	Poverty status (%)	No. of poor house-holds	Avg. monthly household expendi-ture (K)	House-holds worse off this year (2015) than last (%)	House-holds with electricity (%)	No. of house-holds with electricity	Household transport spending (% of total spending)	Avg. per capita house-hold spending (K)
All Zambia	3,014,000	54.4%	1,639,616	1588	20.0%	31.4%	514,839	6.5%	20.64
Rural Strata:									
Small-scale	1,543,000	78.9%	1,217,427	698	23.0%	2.4%	29,218	3.7%	5.17
Medium-scale	56,000	64.5%	36,120	1454	18.1%	5.2%	1,878	5.2%	15.12
Large-scale	3,000	30.4%	912	3645	22.0%	20.0%	182	15.0%	109.35
Non-Agriculture	115,000	48.6%	55,890	1222	17.3%	29.9%	16,711	6.3%	15.40
Urban Strata:									
Low cost	996,900	28.3%	282,123	1893	19.1%	60.6%	170,966	5.7%	21.58
Medium cost	167,100	7.3%	12,198	4078	11.6%	88.3%	10,771	8.8%	71.77
High cost	133,000	4.9%	6,517	6818	8.8%	91.3%	5,950	10.0%	136.36

Source: constructed from CSO (2016)

Figure 5.1: Number of households and poverty status (%)



As would be expected, household poverty status was generally inversely related to household expenditure (Figure 5.2). Expenditure was also inversely related to household self-assessed perception of being worse off in 2015 than the previous year (2014).

Figure 5.2: Spending (K), poor households (%) and worse-off households (%)

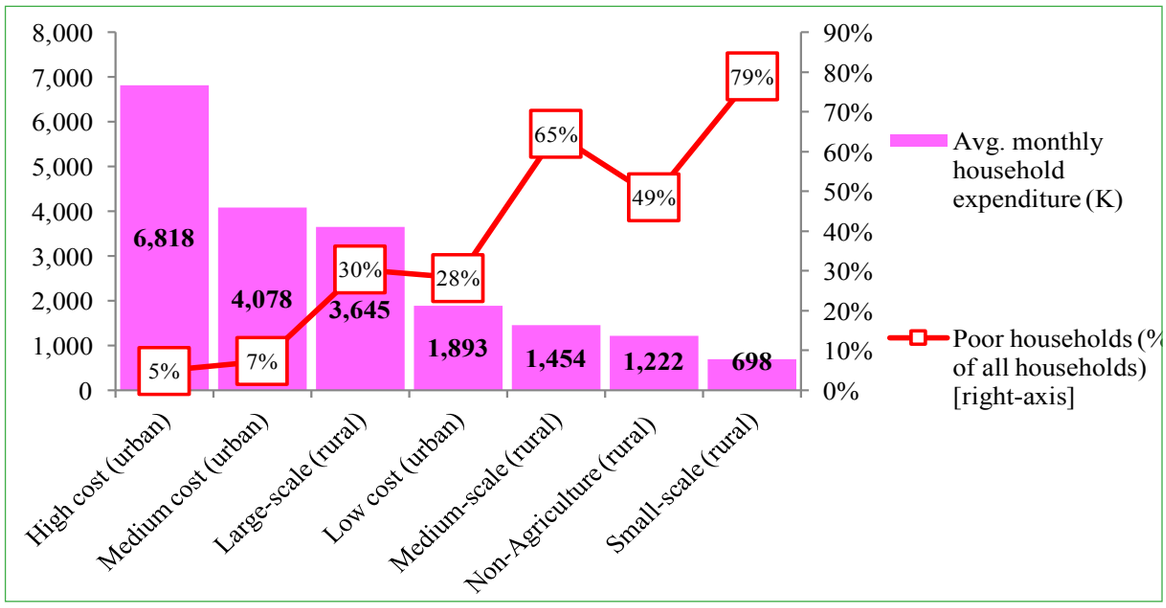
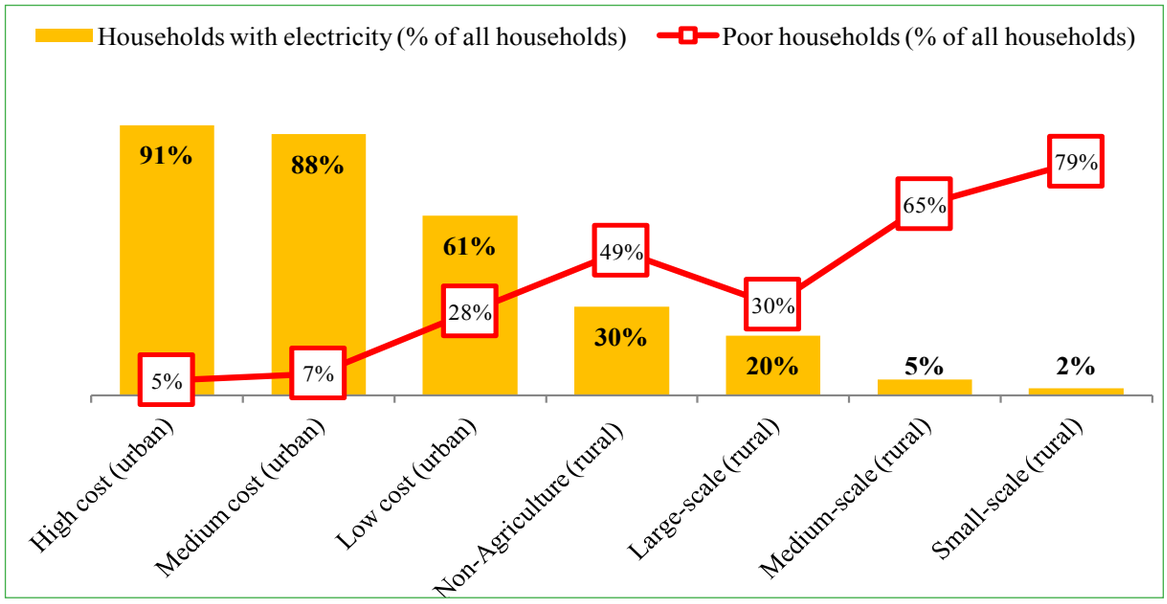


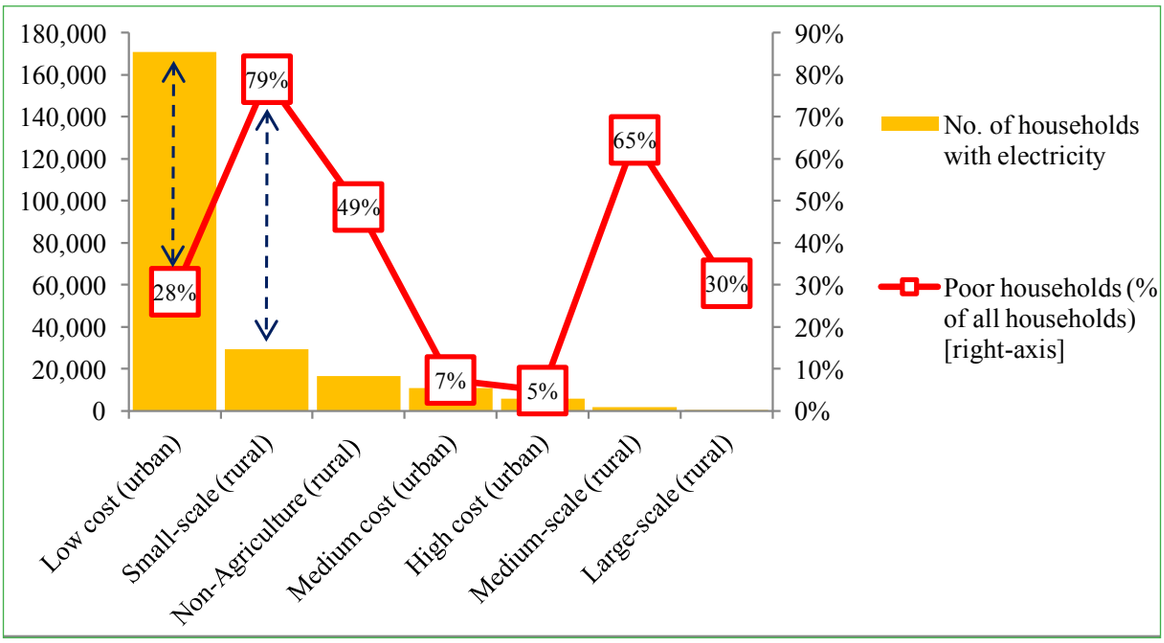
Figure 5.3 shows that clear inverse relationship exists between poverty status and access to electricity. This means higher electricity tariffs due to the removal of subsidies will affect well off people more than they will poor people.

Figure 5.3: Access to electricity and poverty status



Another way of looking at this is in terms of absolute number of households with electricity relative to poverty status (Figure 5.4). The stratum with by far the largest number of households with electricity was the low-income group with 170,000 households, but only 28% of households in this group were classified as poor. On the other hand, in the stratum with the second largest number of households (the small-scale households), 79% of households were poor, but this stratum only had 29,000 households. This implies that very few poor households had electricity and could potentially benefit from the subsidy. In fact, crude estimates from the LMCS data indicate that the maximum number of poor households that could have an electricity connection was 81,903. A targeted poverty-specific electricity subsidy such as *electricity coupons* for poor households with an electricity connection would be more effective than the blanket electricity subsidy that existed before May 2017.

Figure 5.4: Access to electricity and poverty status, alternative view



Similarly, in relation to transport spending, a clear inverse relationship exists between poverty status and household spending on transport services as a share of total household spending (Figure 5.5). This suggests that poor households tended to allocate a very small proportion of their meager incomes to transportation, opting instead to walk or use other non-paid means of transportation.

In fact, as seen in Figure 5.6 below, most rural households particularly those in the poorest group, spent very little on transport so that any fuel-hike related increase in transport costs would not affect them much. For instance, the small-scale rural farmers spent on average about K26 per month on transport. And this was for a family of about 5 people, implying an average of just over K5 per family member. This implies that the transport expenditures were possibly for emergency needs only.

Figure 5.5: Transport spending and poverty status (%)

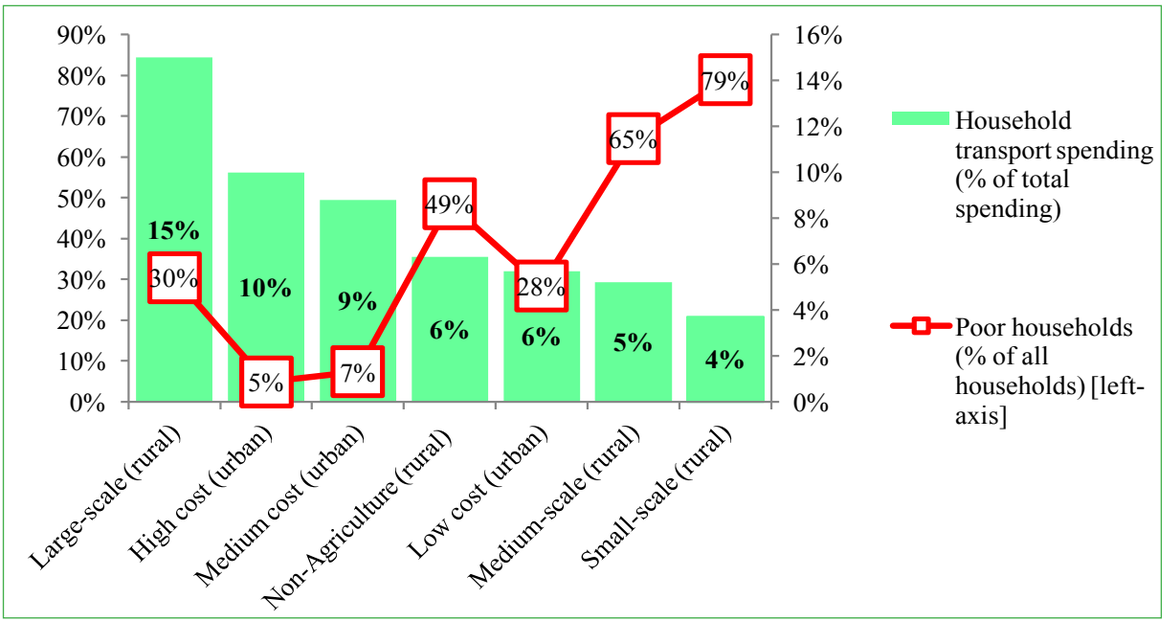
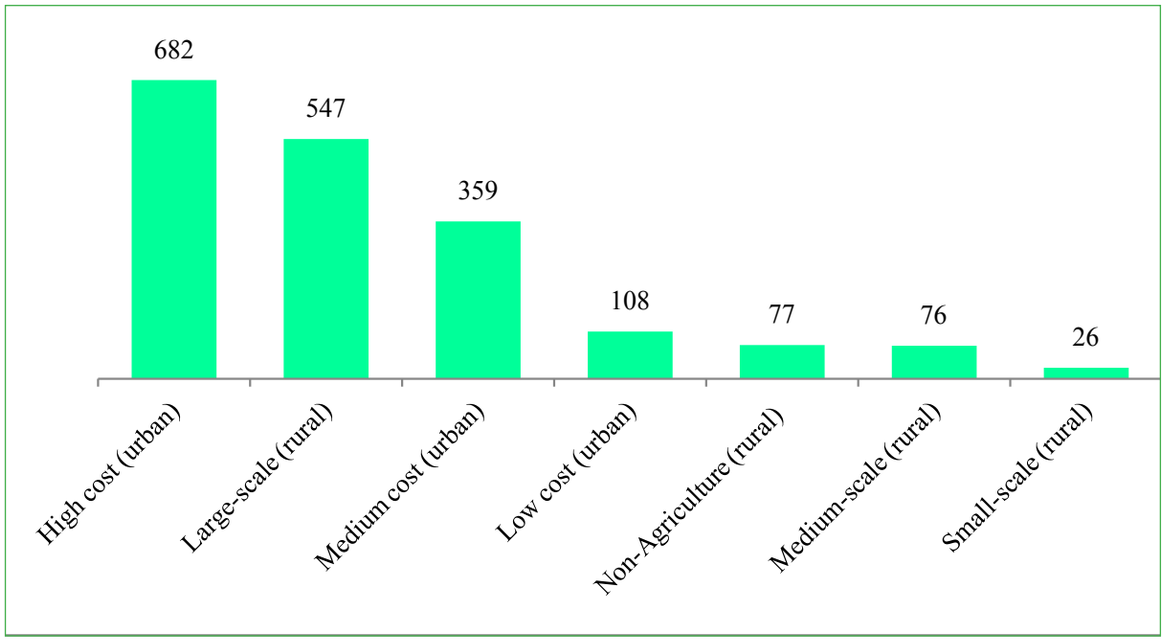


Figure 5.6: Average household spending on transport, per month (K)



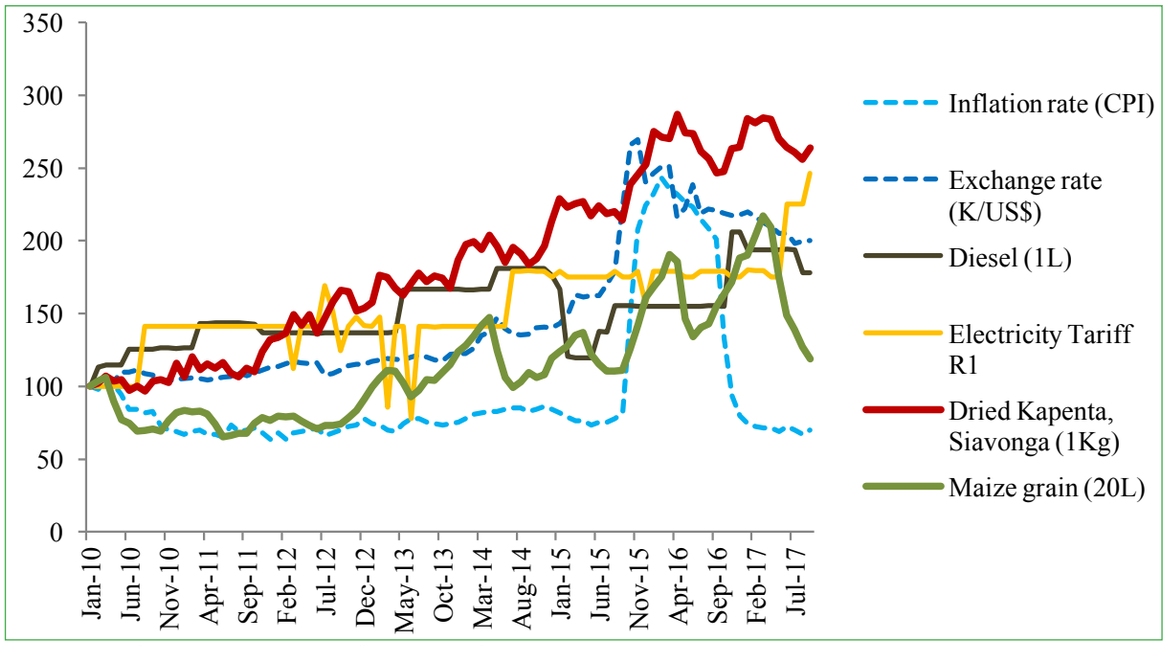
6. Determinants of Selected Commodity Prices in Zambia

In this section, we seek to graphically illustrate the influences of *fuel and electricity price adjustments* on correlated or dependent commodity prices for a range of goods and services, treating fuel and electricity as complementary commodities (explanatory variables). In our graphical analysis, we control for confounding factors, particularly *macroeconomic factors* (exchange rate and inflation) that also have an influence on commodity price movements.

The analysis is done at a monthly frequency for the period January 2010 to September 2017, using CSO and BOZ data. The approach used is a basic descriptive statistical analysis, with each series indexed at January 2010 = 100 for comparability. Out of over 400 commodities whose prices CSO tracks over time, we purposively choose three pairs of commodities that are likely to be consumed by the poor in rural and/or urban spaces and interact the prices indexes of these commodities with the indexes on diesel prices (proxy for fuel prices changes), electricity tariff (R1) (proxy for electricity price changes), and the nominal exchange rate and inflation (both proxies for macroeconomic stability). The results for the selected commodity pairs and groups are presented in turn below.

To begin with, for two basic food staffs – ***maize grain*** and ***dried kapenta*** – which are readily consumed by rural and urban households, Figure 6.1 shows that both commodities saw consistent price increases over most of the reference period, with kapenta prices rising faster than maize prices. Maize grain prices also reflect a fairly high degree of seasonality in the price variability. Both price trends were noticeably influenced by the macroeconomic instabilities that emerge in September 2015, particularly kapenta. While kapenta was markedly directly correlated with fuel prices and at best, weakly correlated with electricity prices, maize gain was weakly correlated with both fuel and electricity prices. This is plausible because kapenta is harvested or produced in predominantly rural areas far away from urban centres but is sold largely in urban centres, meaning that the commodity is highly transport and thus fuel dependent for its delivery to market. Maize grain has a wider range of decentralized rural and urban spatial markets that rely significantly less on transport than kapenta.

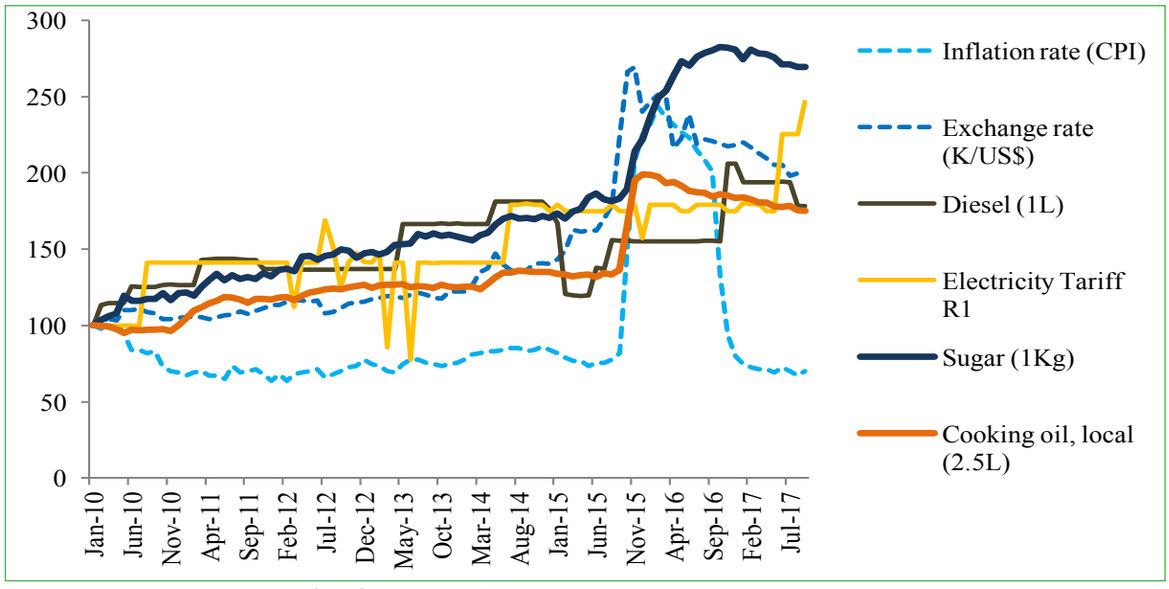
Figure 6.1: Selected basic foods (and other) price indexes [Jan 2010 = 100]



Source: authors' construction from CSO data

Secondly, Figure 6.2 shows that higher-end manufactured commodities – ***sugar*** and ***cooking oil*** – were weakly correlated with fuel and electricity price adjustments, but significantly correlated with changes in the macroeconomic factors. The prices of both commodities escalated markedly in the aftermath of the exchange rate and inflation shocks of September 2015. However, although the shocks dissipated with time, the selected commodity prices, particularly of sugar, remained relatively high. This lends support to the economic notion of prices being *sticky downwards*, and emphasizes the importance of macroeconomic stability to avoid price hikes that end up being permanent features imposing a permanently higher cost of living than before an exogenous shock. More importantly, for this analysis, the periodic fuel and electricity price adjustments seen over the period do not have a significant bearing on the two commodities, suggesting that even the price hikes associated with the removal of underpinning subsidies did not markedly affect the prices on these two commodities.

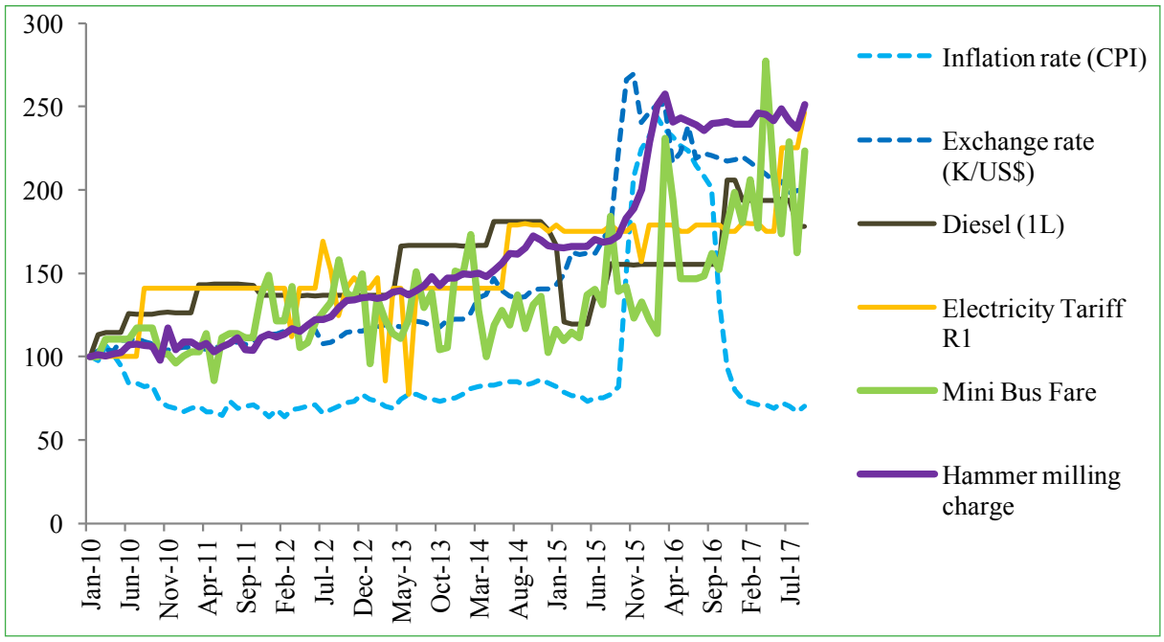
Figure 6.2: Selected manufactures (and other) price indexes [Jan 2010 = 100]



Source: authors' construction from CSO data

Finally, from our pairwise selections, two key services for the poor and low income households are ***mini-bus fares*** and ***hammer milling charges***. As illustrated in Figure 6.3, mini-bus price movements over the period were quite volatile and were significantly correlated with both fuel price changes and macroeconomic factor changes, but were at best, weakly correlated with electricity tariff movements. The price pass-through effects of fuel and electricity subsidy removal to mini-bus fares had a significant bearing on end-users of mini-bus services, including poor and vulnerable people who are able to access the services. Arguably, however, the impact of the price pass-through on rural populations was negligible since, as seen in Section 5, rural populations are grossly insufficiently served with transportation services, especially mini-bus services. The fact that these households were already excluded from the related services meant that they were inherently protected from the adverse price pass-through effects of subsidy removal.

Figure 6.3: Selected services (and other) price indexes [Jan 2010 = 100]



Source: authors' construction from CSO data

On the other hand, hammer milling charges were more significantly affected by the September 2015 macroeconomic instability than with fuel or electricity price changes. In fact the influence of fuel and electricity prices was fairly weak, suggesting that any price increases related to the removal of fuel and electricity subsidies had only marginal effects in terms of passing through to consumers, including poor and low income households.

Overall, the price increases from the removal of fuel and electricity subsidies, over the reference period, had far lesser adverse impacts on the prices of the selected (pro-poor) commodities than did the adjustments from the macroeconomic factors. Thus, as far as commodity prices and ultimately the cost of living are concerns, subsidy removal has less of an impact on the poor than unabated exogenous shocks and macroeconomic policy slippages.

7. Blanket Subsidies vs. Targeted Subsidies

From the foregoing, we have established that the fuel and electricity subsidies, which were removed in 2016 and 2017, respectively: were significant drains on fiscal resources; had significant urban biases; were not pro-poor in the benefits they provided to consumers; and had very limited adverse effects on the poor upon their removal. The aspect of limited benefits is mainly because the subsidies were blanket in nature, covering everyone. As a result, those socio-economic groups with better means, including higher incomes, were able to capture disproportionately more of the benefits. Essentially, the problem of the blanket subsidies was one of poor targeting. The subsidies were never designed to be deliberately pro-poor.

Going forward, any subsidy that is meant for social protection or poverty reduction (or alleviation) must ensure to have an inherent mechanism for targeting the poor and those vulnerable to falling into poverty. A simple illustration of FISP is perhaps helpful for driving the point home about targeting. Table 7.1 shows the FISP with two real-life scenarios ((1) and (2)) and two illustrative policy options ((3) and (4)). In 2017, a total of K2.86 billion was allocated to FISP with the intention that these funds would reach one million beneficiaries. This implies a planned per capita payout of K2,856 per beneficiary (under FISP, it is not clear whether eligible beneficiaries are defined as households or individuals in a household). In 2018, the allocation to FISP was reduced and so the per capita allocation for one million beneficiaries reduced to K1,785. Most observers would agree that while K1,785, equivalent to K148.75 (or approximately US$1.49) per month, might be generous as a free gift for helping people to cope with being poor, it is insignificantly for lifting people out of poverty.

Table 7.1: FISP under different (actual and possible) scenarios

FISP planning and budgeting	*Budget amount (K)*	*No. of "beneficiaries"*	*Per capita amount (K)*
(1) Targets in 2017 Budget Address	2,856,400,000	1,000,000	2,856
(2) Targets in 2018 Budget Address	1,785,000,000	1,000,000	1,785
(3) Proposal: increasing FISP gradually (over 10 years; delayed gratification)	1,785,000,000	100,000	17,850
(4) Proposal: using Agric. cooperatives	1,785,000,000	7,900*	225,949
Notes *Registered cooperatives as of 2017			

Source; authors' construction

We might therefore consider two alternative policy scenarios. Firstly, if FISP was targeted to only 100,000 poor but viable farmers each year over a 10-year period (without repeat beneficiation once a beneficiary received input support in a given year), at the end of the 10 years, the programme will have reached the targeted one million beneficiaries. However, gratification for some will have had to be delayed, a tough political choice in terms of whose support to delay. If the decision-makers and policy-makers had the stamina for delayed gratification, in each year they would support the eligible beneficiaries with K17,850, which, if well-used could lift poor vulnerable farmers out of poverty to the extent that after a single year they would no longer need additional public sector/FISP support.

Working on a similar principle, the FISP could be channeled through the existing 7,900 agricultural cooperatives (as at the end of 2017), which already have a track record of viability. Each cooperative would thus receive K225,949, an amount which, arguably, would permanently empower the cooperative to conduct its agricultural business without further need for recourse to FISP support.

In both scenarios, the key would be to ensure reliable targeting of FISP to eligible beneficiaries so that it effectively and efficaciously reaches the intended target groups. Such a simple-to-administer programme that has a narrower scope and targets fewer beneficiaries at a time would be a lot more effective at poverty reduction than blanket subsidies.

8. Conclusion and Recommendations

This paper explores the benefits of "blanket" fuel and electricity subsidies for the poor in Zambia and conversely examines the possible adverse effects for the poor of the removal of these blanket subsidies.

Based on the forgoing results presented in this paper, we offer an alternative perspective debunking the "subsidy anti-abolition" notion, which suggests that the subsidies should have been maintained in the interest of protecting the poor. We show that during their existence, the blanket subsidies conferred very little benefit on the poor. In fact, they benefited the poor, especially those in rural areas, far less than they did other socio-economic groups in Zambia. As such, the abolition of the subsidies adversely affected the poor far less than it did other groups, mainly because the poor were already excluded from enjoying the underlying benefits. Therefore, blanket fuel and electricity subsidies did not offer much benefit to Zambia's poor.

Since the bold policy decision to remove the blanket subsidies was already taken, the authorities must now hold fast to their decision despite the mounting public outcry and pressure from some factions. The subsidies were a considerable strain on fiscal resources and did little for the poor. They should remain permanently gone.

Instead of blanket subsidies, we recommend a permanent replacement of the poorly targeted, blank subsidies with well-targeted (social protection or poverty alleviation) subsidy programmes that reach specific poor sub-groups of the population.

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Annexes

Annex 1: Categorization of National, Urban-Biased and Rural-Biased Public Programmes

The rationale for the categorization employed in Section 4 is presented and motivated here, for each of the three categories in turn:

National programmes:

- Personal employments
- Debt service interest payments
- Government of the Republic of Zambia (GRZ) roads
- Empowerment (economic, youth, women, etc.)

Urban biased programmes:

- In relation to fuel and electricity (ZESCO) subsidies, the justification for this categorization and the associated claim of urban-biases is presented in Section 4.
- On the other hand, FRA strategic reverse expenditures are classified as urban biased because the food security programme is mainly in place to protect urban dwellers from insecurities given that most rural dwellers tend to have an ability to subside on some level of own production consumption.
- We also view water and sanitation spending as urban biased because it is largely spatially directed towards areas where public utility water and sanitation infrastructure and services are already presented. For instance, because 63.5% of households in urban areas have access to a public utility safe water source such as a public tap, an own tap, any other tap (e.g., from nearby buildings) compared to 5% of households in rural areas (CSO, 2016), public expenditure tends to focus on maintaining, repairing and upgrading the water reticulation systems in urban areas, where the basic public infrastructural already exists.

Rural biased programmes:

- Farmer Input Support Programme (FISP),
- Social Cash Transfer (SCT),
- Rural electrification,
- Food security pack

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