



Talha KHALID¹

Fuel subsidies to curb cost-push inflation: a case study of Pakistan to assess the impact of untargeted subsidies on fiscal space and current accounts

ABSTRACT: The rapid surge of global oil prices, on account of the pent-up demand after COVID-19 and the Russian-Ukraine war, has significantly contributed to the cost-push inflation as well as twin deficits, predominantly in developing economies. Motivated by the intention to curb the inflation, governments of several oil-dependent economies have rolled out fiscal measures to provide immediate relief to households through subsidizing the fuel component of the consumption basket. This paper provides a case study of Pakistan, wherein the effectiveness of untargeted gasoline and diesel subsidies has been gauged against alternative direct disbursement mechanisms. The analysis reveals that under the price-control based indirect subsidy disbursement mechanism, only 11% of the total domestic subsidies were directed to the poorest 40% of the households, whereas approximately 55% of the total subsidies were allocated to the 20% of the most liquid household segment. The case study analyzes the performance of alternative direct subsidy disbursement mechanisms which transpires into the potential fiscal savings of PKR 74.63 billion, while providing coverage to 40% of the lowest household segment. The study also evaluates the implication of the pass-through of the true prices on the national consumption of gasoline and diesel in the short-term, which reveals the sharp reduction of petroleum consumption in the total bill from 37% to 23%, thereby providing substantial relief to the current account balance. The finding provides key insights for economies to

✉ Corresponding Author: Talha Khalid; e-mail: talha.ee@hotmail.com

¹ Policy and Planning, Central Power Purchasing Agency, Pakistan; ORCID iD: 0000-0001-6519-5601; e-mail: talha.ee@hotmail.com



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institutionalize the necessary social protection system and progressively transit to the direct subsidy disbursement mechanism while striving to contain the cost-push-based inflation triggered through the rapid movement of global oil prices.

KEYWORDS: inflation, subsidy, distribution incidence analysis, fiscal consolidation, current account

Introduction

Crude oil consumption is a key driver of economic activity and significantly fuels economic growth (Park and Yoo 2014; Bashiri Behmiri and Pires Manso 2013; Choi and Yoo 2016; Waheed et al. 2018). The consumption of crude oil has increased manifolds over the years and the consumption plateau may not be achieved in the next five to ten years (Geopolitical Intelligence Services 2022; Reuters 2021; International Energy Agency (IEA) 2021). Consequently, the movement of global oil prices has a notable impact on inflation (Liu et al. 2022; Kpodar and Liu 2022), the exchange rate (Wang et al. 2022), and the fiscal balance of the economies (Eregha et al. 2022; Majumder et al. 2022). According to the estimate of the World Bank, a 10% increase in oil price has the effect of increasing consumer price inflation (CPI) in the band of 0.2–0.6% and 0.8% in the wholesale price index (WPI) in South Asian Economies (World Bank 2022a).

In the last two and a half years, the global commodity market, including the energy markets, has witnessed abrupt volatility in prices and demand (Canuto 2022). The Russian-Ukraine crisis has further fueled the volatility in prices of energy commodities. The phenomenon can primarily be attributed to, inter-alia, a pent-up demand post COVID-19 recovery, supply shocks, and supply chain constraints (Ozili 2022; Melnyk and Nehoda 2022; Benton et al. 2022; ORHAN 2022).

The recent shock to the oil market as a result of the invasion of Ukraine by Russia that commenced on February 24, 2022 has severely impacted the macroeconomic indicators of different economies. The extent of the impact on each macroeconomic indicator is not uniform for all economies and differs on account of the respective resource characteristics (Liadze et al. 2022; Shah et al. 2022; Congressional Research Service 2022; Altunusch Meliha Benr 2022). Such a shock has impacted inflation, the balance of payments, the fiscal account, and the resultant increase in monetary policy rates to contain inflationary pressure (Khudaykulova et al. 2022; World Bank 2022b; Adeosun et al. 2022; Nazeeruddin 2022; World Economic Forum 2022; CNBC 2022; Business Recorder 2022).

To curb the immediate impact of cost-push inflation transmitting through the pass-through mechanism of oil prices, most economies have devised measures through tax cuts, price controls, direct cash transfers, etc. for alleviating the impact of dramatic fuel price increase (OECD 2022). As a result, the magnitude of pass-through of international fuel prices has reduced in 2022 compared to the percentage of pass-through in 2021 (IMF 2022; Bloomberg 2022; S&P Global 2022).

Pakistan significantly relies upon energy imports to meet the local energy demand of the country. The progressive share of imported fuels in the total energy demand has increased from 30% in FY-05 to 51% in FY-21 as demonstrated below:

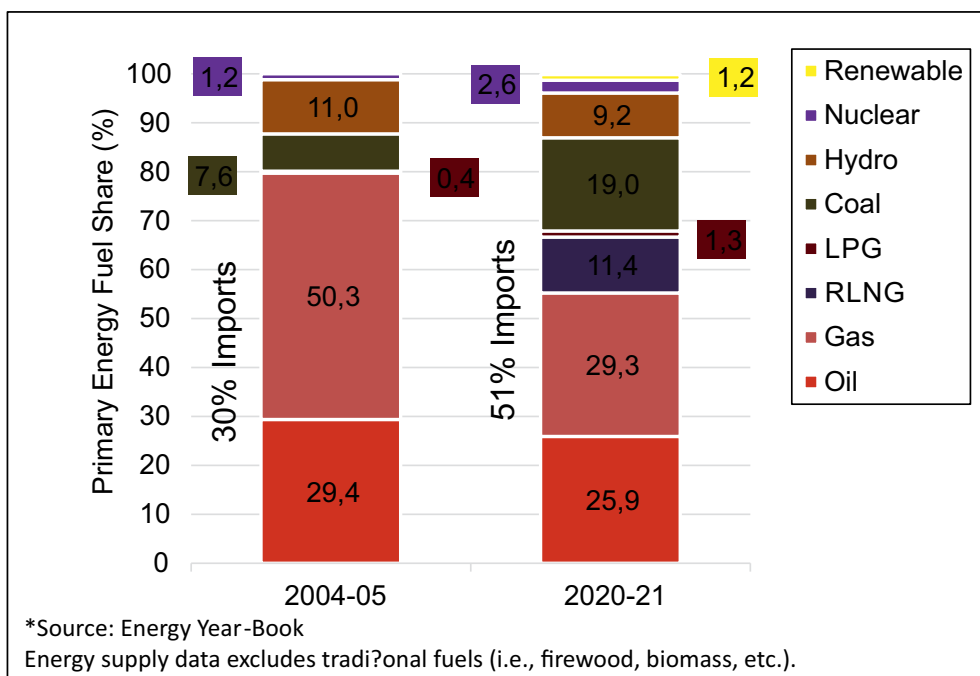


Fig. 1. Pakistan Total Primary Energy Supply by Sources for FY 04–05 and FY 20–21

Source: prepared by the author based on Pakistan Energy Yearbook
(Hydrocarbon Development Institute of Pakistan 2020)

Rys. 1. Całkowita podaż energii pierwotnej w Pakistanie według źródeł w latach 04–05 i 20–21

The growing dependance on imported fuels in total energy consumption has significantly exposed the internal and external accounts of the country to the movement of global fuel prices, inter-alia, crude oil, coal and re-gasified liquified natural gas (RLNG). Accordingly, the unfavorable movements cause deterioration of the trade balance, real effective exchange rate, and overall financial development (Chaudhry et al. 2021). This can be demonstrated through the trend of the progressive exposure of: (i) percentage energy subsidies in the total fiscal budget; (ii) energy imports (Bln. USD) in the total imports of the country for the last seven years (FY-16 to FY-22) as provided in Figure 2. To make the analysis more comprehensive, the average brent crude oil prices for the years under consideration have been included (World Bank 2022c).

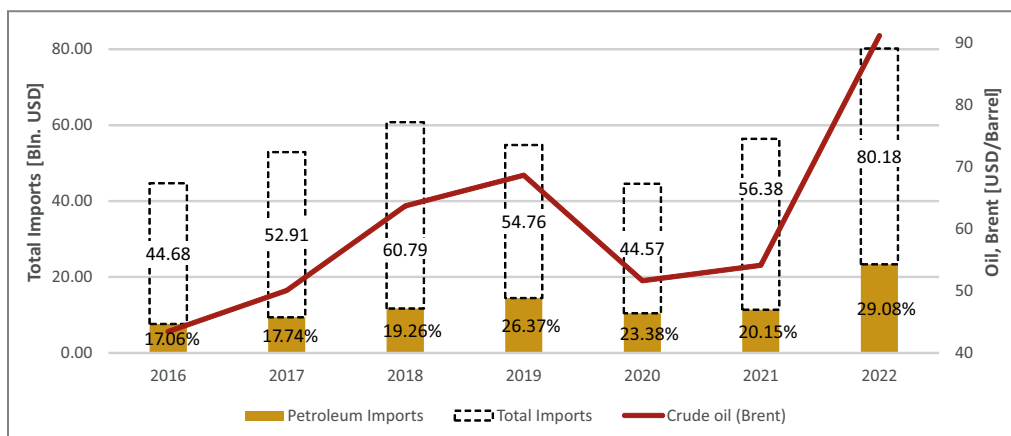


Fig. 2. Share of petroleum imports in total imports of Pakistan from FY16 to FY22
 Source: prepared by the author based on the Pakistan Bureau of Statistics annual report (Pakistan Bureau of Statistics 2022)

Rys. 2. Udział importu ropy naftowej w całkowitym imporcie Pakistanu w latach od 2016 do 2022

As evident from Figure 2, the share of petroleum products in total imports has remained within the band of 17–20% within the exceptional years of FY-19, FY-20 and FY-22 (Finance Ministry of Pakistan 2022). The highest ever share of petroleum imports in total imports for the last decade was recorded for FY-22 to the tune of 29%, with the corresponding annual average Brent crude oil price of USD91.07/barrel. This depicts a high correlation of the percentage of energy import share in total imports with the global movement of crude oil prices. On the fiscal front, the share of energy subsidies in the total budget has remained in the band of 2–5.5% from FY-16 to FY-21. By contrast, the share of energy subsidies (extended by the government) in the total annual budget has dramatically increased from 3.82% in FY-16 to 17% in FY-22 (Finance Ministry of Pakistan 2022), which is the highest recorded subsidy disbursement in a single year of the last decade (Fig. 3).

To curb the prospective cost-push inflation on account of high global oil prices, which soared as high as USD115.59/barrel in March-2022 (World Bank 2022c) as shown in Figure 4, the Government of Pakistan announced a relief package on February 28th, 2022 to additionally subsidize the gasoline, diesel and electricity consumption, which primarily contributed to the disproportionate increase of energy subsidy in the annual budget for FY 2022 as depicted in Figure 3. The relief package for diesel and gasoline was implemented through a price-control mechanism, such that the reduction of Rs.10/liter (5.649 cents/liter at the Pakistan Rupee to Dollar exchange rate of Rs.177/USD) was granted to both diesel and gasoline consumption and the resultant prices were locked until May 26th, 2022 (Finance Ministry of Pakistan 2022). Even after May 26th, 2022, the prices were partially increased, which was not reflective of the full pass-through prices based on the international market prices. It was only after June 16th that the applicable sale prices of petrol and diesel were taken to the level of cost-recovery with no revenue earned by the gover-

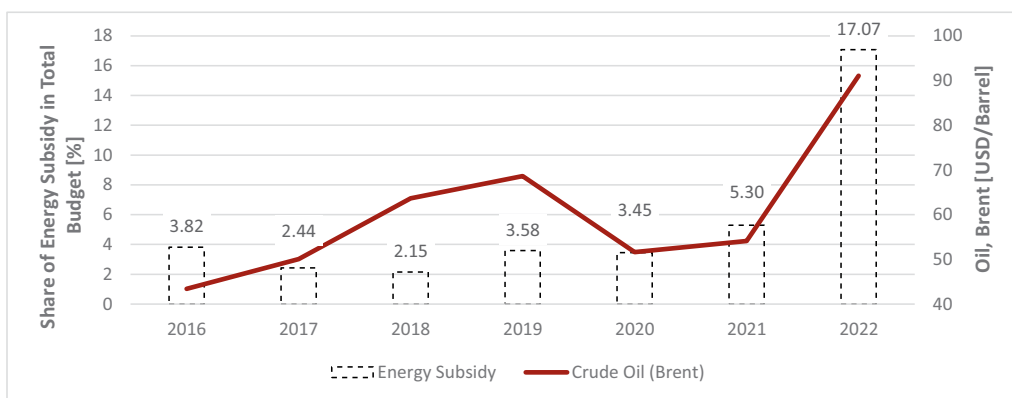


Fig. 3. Share of energy subsidies in the annual budget of Pakistan from FY-16 to FY-20
 Source: Prepared by the author based on Pakistan Ministry of Finance Annual Budget Statements (Finance Ministry of Pakistan 2022)

Rys. 3. Udział dotacji energetycznych w rocznym budżecie Pakistanu w latach 2016–2020

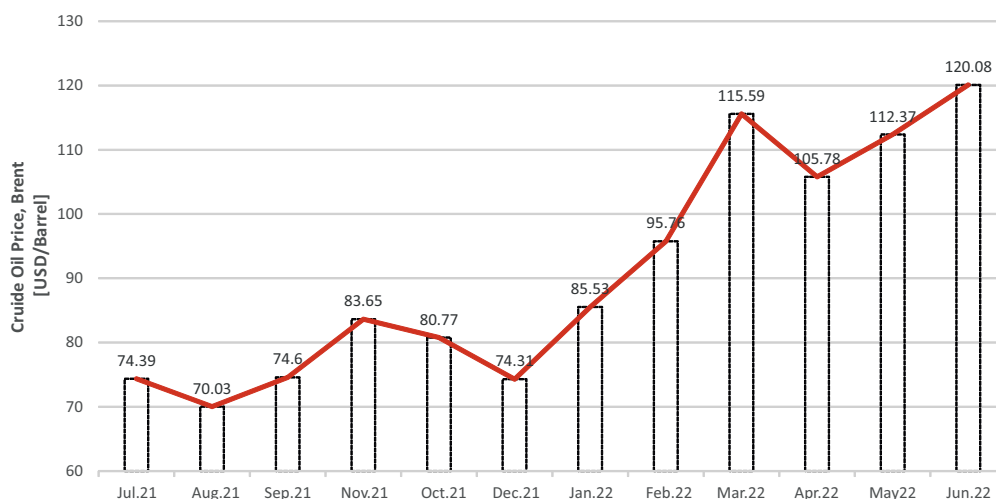


Fig. 4. Crude Oil Prices for FY-22
 Source: prepared by the author based on The Pink Sheet, World Bank Commodities Price Data (World Bank 2022c)

Rys. 4. Ceny ropy naftowej w 2022 roku

nment on account of the petroleum levy and sales tax on petroleum products. The total subsidy disbursed on account of the price control mechanism for diesel and gasoline is estimated to be to the tune of Rs. 296 billion (USD 1.67 billion) for the period of March to June 2022 (Finance Ministry of Pakistan 2023).

This paper serves as a case study to evaluate the effectiveness of subsidy disbursement through price control mechanism, as adopted by the Government of Pakistan, and the prospective fiscal savings that could have been achieved through direct cash transfer based on the available social protection system in the country (Benazir Income Support Programme 2022). Additionally, this case-study evaluates the response of gasoline and diesel consumption at the national level following the abolishment of the untargeted subsidies and the corresponding share of petroleum products in the monthly imports bill, which in turn has significant implications on the current account balance. Driven by the need to optimize the complex transaction of maintaining a fine balance between curbing the inflationary pressures fueled by rocketing oil prices and keeping up with the multi-year fiscal consolidation measures/targets, this case study serves to provide key insights into the designing and institutionalization of policy frameworks for the global economies to effectively achieve the aforementioned balance.

The remainder of this paper is as follows: Section 2 describes the data used, methodology employed, and the model built to evaluate the distributional impact of subsidy allocation among different household quintiles. Section 3 summarizes the main results derived and briefly presents the analysis of the results. Lastly, conclusive remarks are provided along with the identification of necessary policy interventions and mechanisms that may be employed to insulate the lowest consumption quintiles from the global fuel price shocks while imposing minimum constraints on fiscal consolidation targets and the current account balance.

1. Data and empirical methodology

1.1. Data

The primary micro data of the Household Integrated Economic Survey (HIES) 2018–19 has been employed to determine the energy consumption share of different household quintiles of Pakistan (Pakistan Bureau of Statistics n.d.). The Household Integrated Economic Survey (HIES) has been periodically conducted by the Pakistan Bureau of Statistics (PBS) since 1963. The survey has evolved through a series of changes, inter-alia, amendments to adhere to requirements of the system of national accounts, the inclusion of women as enumerators to facilitate the interview process of females, merger/integration with different surveys such as Pakistan Integrated Household Survey (PIHS) in 1998–99 and Household Integrated Income & Consumption Survey (HIICS) for the rebasing of prices in 2015–16.

HIES was recently conducted in 2018–19 and has spanned 24,809 households spread over 1802 primary sampling units (PSUs), providing information regarding socio-economic parameters, primarily annual expenditure, consumption patterns, savings, and liabilities at the national and provincial level with rural/urban segregation. The Classification of Individual Consumption

of Purpose (COICOP) was employed to obtain consumption data of all provinces and regions to carry out computations for the aforementioned parameters.

For the purpose of detailed analysis, the household data has been distributed into five consumption quintiles, each representing 20% of the total population. Per HIES 2018–19 microdata, the total households of Pakistan have been estimated to the tune of thirty-three million which have been distributed in the quintiles in the following proportions:

TABLE 1. No. of households by quintiles

TABELA 1. Liczba gospodarstw domowych w kwintylach

Quintile	Q1	Q2	Q3	Q4	Q5
No. of households [million]	5.13	5.71	6.48	7.19	8.83
Distribution [%]	15.4	17.1	19.4	21.6	26.5

Source: prepared by the author based on the microdata of HIES 2018–19 (Pakistan Bureau of Statistics n.d.).

As evident, the number of households in each quintile (each representing 20% of the population) increase as we move to the higher consumption quintiles. Thus, the first two consumption quintiles represent 32.5% of the total households whereas 67.5% of the households fall in the remaining three quintiles. This also implies that the higher consumption quintiles have significantly smaller families than the lower quintiles. The national average household size is 6.24, whereas the average rural and urban household sizes are 6.40 and 5.97 respectively. The quintile-wise distribution of households segregated on the basis of the rural, urban and national scale is provided below (Table 2):

TABLE 2. Average household size by quintiles and region

TABELA 2. Średnia wielkość gospodarstwa domowego według kwintyli i regionu

Income Quintile	Rural HH Size	Urban HH Size	Total
Q1	8.04	8.50	8.11
Q2	7.14	7.74	7.27
Q3	6.21	6.89	6.42
Q4	5.52	6.12	5.78
Q5	4.51	4.84	4.72
Total	6.40	5.97	6.24

Source: prepared by the author based on the microdata of HIES 2018–19 (Pakistan Bureau of Statistics n.d.).

The relevant expenditure of each quintile, segregated into national, urban, and rural levels, is provided in Table 3. As shown, the consumption expenditure is higher in urban areas than in

rural areas. Similarly, the difference between the lowest and the highest consumption quintiles is greater than 2.6 times on the national level.

TABLE 3. Average monthly household expenditure by quintiles and region

TABELA 3. Przeciętne miesięczne wydatki gospodarstw domowych w podziale na kwintyle i regiony

Income Quintile	Average Rural Household Expenditure (PKR)	Average Urban Households Expenditures (PKR)	Average Total Household Expenditures (PKR)
Q1	21,412	23,296	21,676
Q2	26,549	29,178	27,118
Q3	29,230	33,051	30,390
Q4	34,436	38,685	36,310
Q5	46,933	64,378	57,941
Total	30,785	47,310	37,063

Source: prepared by the author based on the microdata of HIES 2018–19 (Pakistan Bureau of Statistics n.d.).

The relative consumption of different commodities across the household quintiles is provided in Table 4. The households in the first quintile spend almost 49% of their total income on food which progressively reduces to 28.5% in the fifth quintile. By contrast, the opposite trend is observed for education, housing, recreation and communication wherein the relative expenditure increases with the progressive transition towards the higher consumption quintiles.

TABLE 4. Share of different items in the household consumption basket by quintiles [%]

TABELA 4. Udział poszczególnych pozycji w koszyku konsumpcji gospodarstw domowych według kwintyli [%]

Commodity Group	Q1	Q2	Q3	Q4	Q5
Food	48.84	45.92	43.16	39.22	28.45
Energy	11.16	11.76	11.89	11.95	11.58
Education	1.64	2.27	3.13	4.25	7.23
Health	3.61	3.43	3.38	3.39	2.96
Housing (Rent + Maintenance)	9.09	10.37	11.96	14.24	22.17
Recreation	2.48	2.60	2.77	3.03	3.96
Personal Goods & Services	21.79	22.17	22.17	22.30	21.73
Communication	1.39	1.48	1.55	1.62	1.93
Total	100.00	100.00	100.00	100.00	100.00

Source: prepared by the author based on the microdata of HIES 2018–19 (Pakistan Bureau of Statistics n.d.).

For the purpose of capturing the monthly consumption of refined petroleum products, the monthly data being reported by Oil Companies Advisory Council (OCAC) was utilized. The

OCAC represents the downstream oil industry of Pakistan at various forums and provides statistical analysis for the downstream oil sector (Oil Companies Advisory Council).

For capturing the estimation of subsidy on refined petroleum products, as released by the Government of Pakistan under the price control mechanism over the period of March–June 2022, the respective notifications issued by the Ministry of Finance (Ministry of Finance Press Release) and budgetary documents (Budget 2022–23) were utilized.

1.2. Methodology

A flowchart presenting the methodology adopted in performing this case study is displayed in Figure 5.

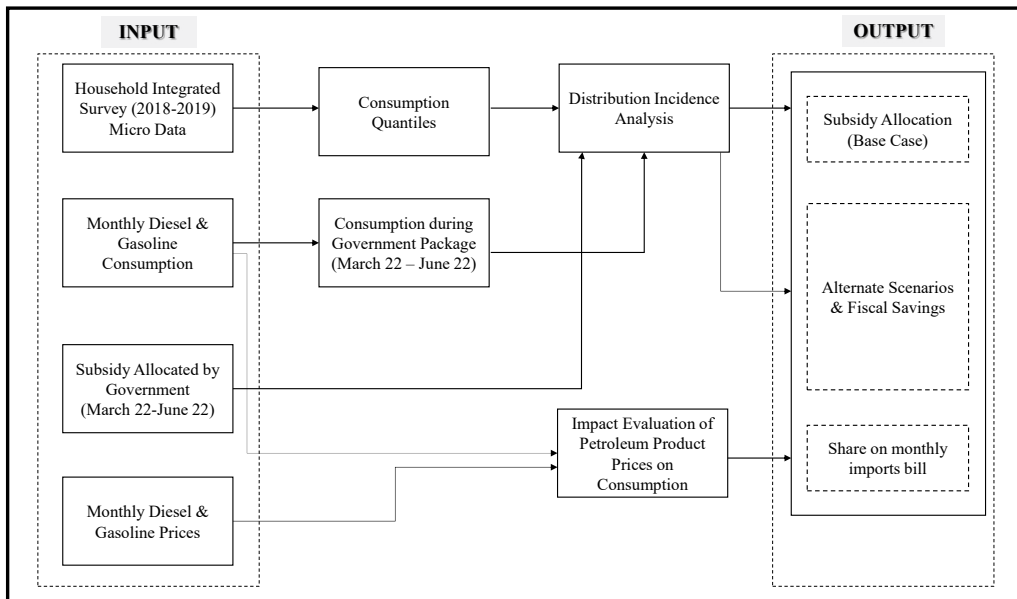


Fig. 5. Flowchart presenting the methodology for evaluating the impact of untargeted subsidies

Rys. 5. Schemat blokowy metodologii oceny wpływu dotacji niecelowych

As a first step, the microdata of HIES 2018–19 was sorted and consolidated into thirty-two consumption commodity variables to account for the annual expenditure of households for different commodities. The respective weights assigned to each household in the HIES 2018–19 microdata were utilized to compute and map the consumption distribution of the entire popu-

lation. Based on the respective consumption profile, all the households were segregated into consumption quintiles. Furthermore, the energy burden of each quintile and the relative share of different energy sources in the respective energy burden were calculated.

Following the mapping of the consumption of energy commodities, the distributional incidence model was developed to capture the direct impact of the incidence of energy subsidies (on account of petrol and diesel consumption) on different quintiles of households. For the purpose of capturing the monthly granularity of allocation of energy subsidies, the consumption of gasoline and diesel were obtained on a monthly basis from the OCAC (Oil Companies Advisory Council).

The next step was to ascertain the relevant percentage consumption of all the households (33.34 million) in the total national monthly consumption of gasoline and diesel. For this purpose, the HIICS 2015–16 microdata was utilized, wherein, the volumetric consumption (liters) by each quintile for both gasoline and diesel was estimated using: (a) the amount spent on the consumption of gasoline and diesel for transportation; (b) the average annual prices of gasoline and diesel for FY-16. The reason for the utilization of the previous household survey (HIICS 2015–16) is primarily due to the fact that HICS 2015–16 provided separate micro variables, for both gasoline and diesel consumption, for each household. Based on the aforesaid methodology, the relative percentage consumption share of gasoline and diesel by the household segment is to the tune of 59% and 4%, respectively, in the total annual consumption on the national level.

The subsidy per liter for both gasoline and diesel were obtained by calculating the difference between the proposed (based on cost of service) and notified prices. The product of subsidy per liter and the relative monthly consumption of each fuel product yielded the total volume of allocated subsidy for each petroleum product. The calculated monthly subsidies computed through the aforementioned mechanism reconcile with the total allocated subsidy for petroleum products (under the package of the Prime Minister) as specified in the budgetary documents (Budget 2022–23). The relevant expressions are reproduced as under:

$$SG_m = (GC_m \cdot 0.59) \cdot (NP_{gasoline} - PP_{gasoline}) \quad (A)$$

$$SD_m = (DC_m \cdot 0.04) \cdot (NP_{diesel} - PP_{diesel}) \quad (B)$$

$$TS_m = SG_m + SD_m \quad (C)$$

where:

- SG_m – subsidy on gasoline for the given month,
- GC_m – consumption of gasoline (liters) for the given month,
- $NP_{gasoline}$ – average notified price of gasoline for the given month,

- $PP_{gasoline}$ – average proposed price of gasoline for the given month,
- SD_m – subsidy on diesel for the given month,
- DC_m – consumption of diesel (liters) for the given month,
- NP_{diesel} – average notified price of diesel for the given month,
- PP_{diesel} – average proposed price of diesel for the given month,
- TS_m – total subsidy on gasoline and diesel for the given month.

A factor of 0.59 for gasoline and 0.04 for diesel was incorporated to account for the exposure of subsidies limited to a household only.

The subsidy allocated to different quintiles of household was evaluated using the distribution incidence model. More specifically, the relative consumption share of each quintile of households was computed using the HIES 2018–19 microdata and the allocation of the subsidy to each quintile was computed through the expression provided below:

$$SG_{m,q} = SG_m \cdot GC_{m,q} \quad (D)$$

$$SD_{m,q} = SD_m \cdot DC_{m,q} \quad (E)$$

$$TS_{m,q} = SG_{m,q} + SD_{m,q} \quad (F)$$

where:

- $SG_{m,q}$ – subsidy on gasoline disbursed to household quintile ‘q’ for the given month,
- SG_m – subsidy on gasoline for the given month,
- $GC_{m,q}$ – percentage [%] gasoline consumption of quintile ‘q’,
- $SD_{m,q}$ – subsidy on diesel disbursed to household quintile ‘q’ for the given month,
- SD_m – subsidy on diesel for the given month,
- $DC_{m,q}$ – percentage [%] diesel consumption of quintile ‘q’,
- $TS_{m,q}$ – total subsidy on gasoline and diesel allocated to quintile ‘q’ for the given month.

Two scenarios were evaluated to gauge the relative ineffectiveness of the subsidy disbursement through price control mechanism (as adopted for the implementation of PM Relief Package) against the alternative targeted subsidies through the cash transfer under the social protection system that is in place. This will help to inform the future policy interventions for protecting the lowest quintiles from the global fuel prices shock without excessively constraining the fiscal space.

In the last step, the trend of the price movement of gasoline and diesel on their relative consumption were evaluated for a period of twelve months. The included period provides the short-run response of the gasoline and diesel consumers by the variation of the retail of the prices, which in turn impacts the current account balance.

2. Results and discussion

The energy burden of different household expenditure quintiles, based on the HIES 2018–19 microdata, is presented below in Table 5:

TABLE 5. Share of energy consumption in household expenditure by quintiles [%]

TABELA 5. Udział zużycia energii w wydatkach gospodarstw domowych według kwintyli [%]

Quintile	Q1	Q2	Q3	Q4	Q5
Energy Consumption	11.16	11.76	11.89	11.95	11.58

Source: prepared by the author based on the microdata of HIES 2018–19 (Pakistan Bureau of Statistics n.d.).

The result shows that the energy burden for the households in the lowest quintile is 11.16%, whereas it is 11.58% for the households in the highest (fifth) quintile. The breakdown of energy consumption into the respective energy components for each quintile is provided in the table below:

TABLE 6. Breakdown of energy burden by component in household consumption for each quintile [%]

TABELA 6. Rozkład obciążeń energetycznych w zużyciu gospodarstw domowych według kwintyli [%]

Fuel	Q1	Q2	Q3	Q4	Q5
Firewood	26.84	22.59	18.48	13.53	4.49
Kerosene Oil	0.35	0.21	0.15	0.10	0.03
Charcoal	0.58	0.41	0.28	0.14	0.08
Coal	0.05	0.04	0.04	0.03	0.01
Dung Cakes	4.88	4.41	3.40	2.00	0.61
Gas	2.46	3.39	4.09	5.25	6.54
LPG	2.35	3.70	5.04	6.13	4.59
CNG	0.01	0.09	0.14	0.56	2.45
Electricity	28.50	30.77	35.09	37.80	42.90
Generator	0.22	0.11	0.34	0.51	1.02
Cotton Sticks	8.32	5.02	3.31	1.37	0.40
Agri Waste & Bagasse	6.66	4.47	3.07	2.03	0.52
Petrol & Diesel	18.79	24.81	26.57	30.55	36.34
Total	100.00	100.00	100.00	100.00	100.00

Source: prepared by the author based on the microdata of HIES 2018–19 (Pakistan Bureau of Statistics n.d.).

As evident from Table 6, the relative share of fuels like firewood, kerosene oil, charcoal, coal, and dung cakes progressively reduce in the total energy basket as we move from the lowest quintile to the highest quintile. By contrast, the share of energy components like petrol & diesel, electricity, CNG and LPG, etc. increases as we move forward to the higher expenditure quintiles.

The consumption of petrol & diesel, being the relevant energy commodities in this case study, is 18.79% (of the energy basket) in the first quintile and progressively increases to 36.24% (of the energy basket) in the highest expenditure quintile, showing that the relevant consumption of said commodities increases with the increase in income. The relative consumption of gasoline and diesel by each quintile is provided in Figure 6:

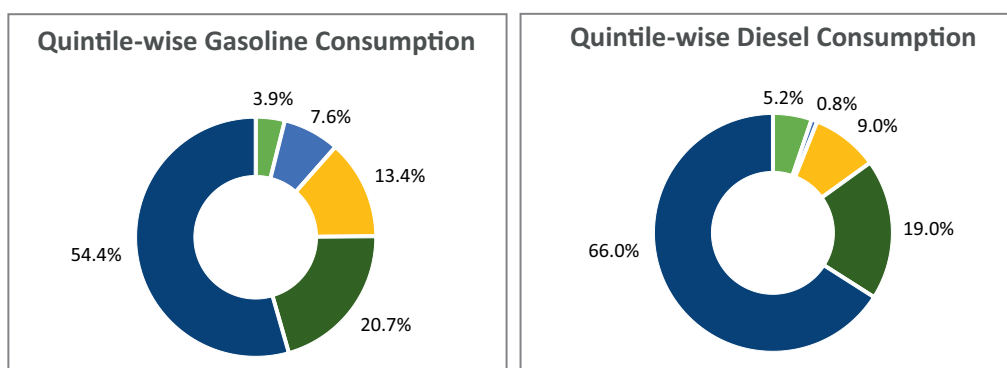


Fig. 6. Relative consumption of gasoline (left) & diesel (right) across quintiles

Rys. 6. Względne zużycie benzyny (po lewej) i oleju napędowego (po prawej) w poszczególnych kwintylach

As evident, the relative consumption of gasoline and diesel increases drastically as we move from the lowest to the highest quintile. For the first quintile, the relative share of gasoline and diesel consumption (of the total household consumption) accounts for 4% and 5%, respectively, whereas the relative share increases to 54% and 56% in the fifth quintile.

As our case study is focused on ascertaining the impacts of the PM Package, which was applicable from March to June 2022, the relevant monthly consumption of gasoline and diesel is provided below (Table 7).

The domestic consumption of gasoline and diesel by different quintiles of the household is tabulated as follows (Table 8).

From the above table, it is evident that the relative consumption of diesel constitutes only 6% of the cumulative consumption of gasoline and diesel by the households.

Based upon the relative consumption of gasoline and diesel from the months of March to June, 2022, the total subsidy allocated to the households, on account of the PM relief package, was to the tune of PKR 83.93 billion, which was disbursed to different consumption quintiles in the following proportions (Table 9).

The above table shows that only 4% (3.37 PKR billion) of the total subsidy under PM Package was allocated to the first quintile, which accounts for approximately 20% of the population

TABLE 7. The total amount of petrol and diesel consumption [liters]
or the months of March–June 2022

TABELA 7. Łączna wielkość zużycia benzyny i oleju napędowego [litry]
w miesiącach marzec–czerwiec 2022

Month	Petrol [million liters]	Diesel [million liters]
March 22	976	813
April 22	968	1,078
May 22	1,001	1,005
June 22	880	834
Total	3,825	3,730

Source: Oil Companies Advisory Council (OCAC).

TABLE 8. The total amount of gasoline and diesel consumption [million liters]
by quintiles for the months of March–June 2022

TABELA 8. Łączna wielkość zużycia benzyny i oleju napędowego [mln litrów]
w podziale na kwintyle w miesiącach marzec–czerwiec 2022

Fuel	Consumption [million liters]					
	Q1	Q2	Q3	Q4	Q5	Total
Gasoline	90	175	307	475	1,249	2,295
Diesel	8	1	13	28	98	149

Source: prepared by the author based on the monthly consumption data provided by OCAC.

TABLE 9. Subsidy allocated by quintiles for the months of March–June 2022

TABELA 9. Dotacja przyznana według kwintyli w miesiącach marzec–czerwiec 2022

Subsidized Fuel	Allocated Subsidy [billion PKR]				
	Q1	Q2	Q3	Q4	Q5
Gasoline	3.02	5.89	10.33	16.00	42.10
Diesel	0.35	0.05	0.59	1.25	4.35
Total	3.37	5.94	10.92	17.25	46.45

and 15% of the total number of households (Table 1). This demonstrates the extent of the regressiveness of the price control mechanism adopted for the disbursement of the subsidy to the households under the aforementioned package.

In order to measure the effectiveness of the allocation of subsidies through direct cash transfer (as an alternative to untargeted subsidies), two scenarios have been established to estimate the prospective outreach (in terms of population served) and fiscal consolidation that could have been achieved against the base scenario (price control mechanism) as demonstrated below.

Scenario 1: Direct Subsidy through cash transfer; Quintile 1 (Q1) only

In this scenario, the subsidy on gasoline and diesel consumption was disbursed directly through direct cash transfers under the existing BISP framework to all the households of the first quintile only. Implementation of the disbursement mechanism, as suggested in this scenario, would have enabled the government to protect 20% of the most vulnerable households from external fuel price shocks while passing the impact of fuel prices to the remaining household segments. The resultant savings in the fiscal space, under the instant scenario, amounts to PKR 80.56 billion (based on the subsidy not disbursed to higher quintiles as referred to in Table 9) which is in close proximity to the current federal expenditure of the education sector for FY21—22 (PKR 87 billion) and more than 50% of the health sector (PKR 154 billion).

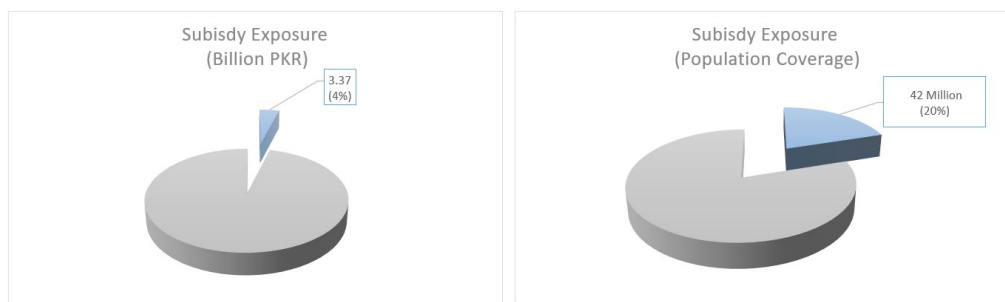


Fig. 7. Subsidy Outreach in Scenario 1

Rys. 7. Zasięg dotacji w scenariuszu 1

Scenario 2: Direct Subsidy through cash transfer; Quintile 1st (Q1) and 2nd (Q2) only:

In the second scenario, the subsidy on gasoline and diesel consumption was disbursed through direct cash transfer under the existing BISP framework to all the households of the first and second quintiles only. This scenario would have enabled insulating 40% of the population residing in approximately 11 million households (33% of the total households). As a result, the total subsidy allocated in this scenario amounts to PKR 9.31 billion, thereby providing much-needed fiscal cushion of PKR 74.62 billion (based upon the subsidy not disbursed to higher quintiles as referred to in Table 9).



Fig. 8. Subsidy Outreach in Scenario 2

Rys. 8. Zasięg dotacji w scenariuszu 2

For the purpose of evaluating the short-run impact of the change of retail prices of gasoline and diesel on their respective consumption, the national consumption of the analyzed products were utilized for the period of July 2021 to August 2022 (Oil Companies Advisory Council n.d.). The period also included the months following the abolishment of the subsidy to gauge the impact of the pass-through of the true prices of gasoline and diesel on their respective consumption. Figure 9 presents the trend of the prices of gasoline and diesel and their respective consumption levels for the stated period.

The trend clearly demonstrates the negative correlation of both of the fuel items with the prices. More specifically, the correlation of the gasoline and diesel consumption with the respective prices is to the tune of -0.77 and -0.61 respectively over the same period. The sharp fall in the consumption of gasoline and diesel in June and July 2022 is primarily attributed to the fact that the subsidy on petrol and diesel was significantly reduced by the government in the second half of June 2022 and was subsequently completely abolished in July 2022. The corresponding cumulative share of the refined petroleum products and crude oil in the total monthly imports of Pakistan is presented below (Fig. 10).

As evident from the trend, the share of the refined petroleum products and crude oil in the total imports remained within the band of 15–21% until February 2022. However, after the rapid increase in the global oil prices coupled with the simultaneous roll-out of untargeted subsidies by the Government of Pakistan, the share of petroleum products in the total imports witnessed a steep increase and reaching as high as 37% in June 2022. Following the partial reduction of subsidy in the second half of June 2022 and thereafter the complete abolishment in July 2022, the percentage share of petroleum products has declined from 37 to 23% (Pakistan Bureau of Statistics 2022). While the consumption of diesel and gasoline touched a historic low (over the observed period) in the months of July and August 2022, the same is not true for the share of the petroleum products in the total imports. This is primarily attributed to the fact that the global prices of the crude and refined oil products are significantly higher than those of the previous period (Fig. 4), which results in the higher dollar cost of serving even a low consumption demand of diesel and gasoline. This provides a key policy insight of the abolishment of the untargeted

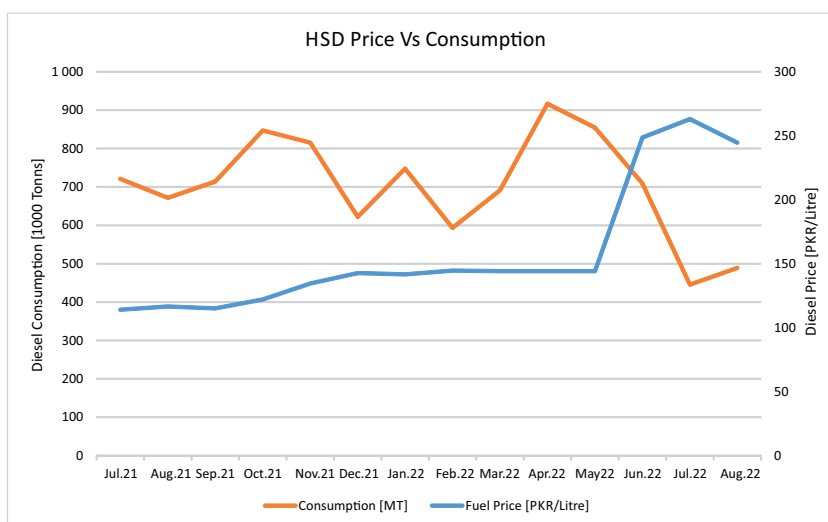
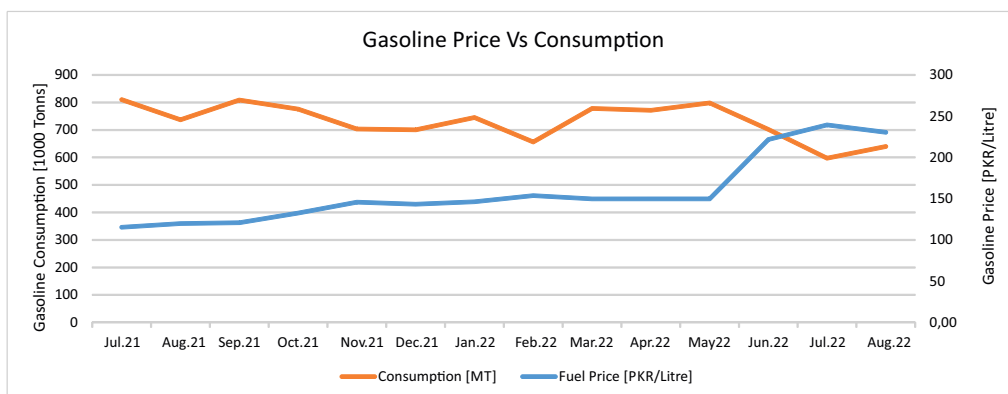


Fig. 9. Correlation of Gasoline (left) & HSD (right) monthly prices with monthly consumption

Rys. 9. Korelacja miesięcznych cen benzyny (po lewej) i oleju napędowego HSD (po prawej) z miesięcznym zużyciem

subsidy on the petroleum products (while protecting the vulnerable segment through direct cash-based subsidies), which in turns has a favorable impact on the current account of the country through a reduction in the imports bill.

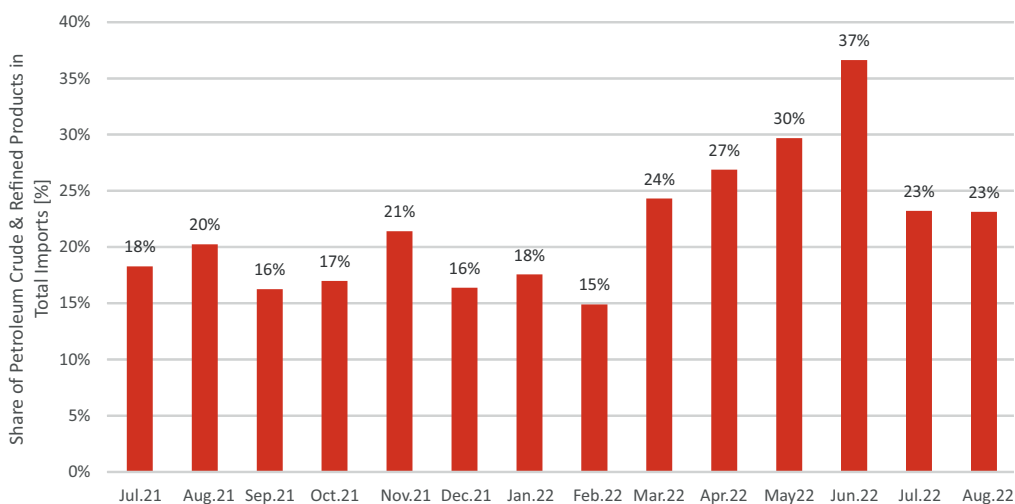


Fig. 10. Monthly percentage share of crude oil and refined petroleum products in the total imports

Rys. 10. Miesięczny procentowy udział ropy naftowej i produktów rafinacji ropy naftowej w imporcie ogółem

Conclusion and recommendations

The case study presented in this paper evaluated the relative ineffectiveness of untargeted subsidies on gasoline and diesel products employed by the Government of Pakistan for the period of four months from March 2022 to June 2022 to curb the cost-push inflation arising on account of high global oil prices. The distributional incidence model, developed on the basis of HIES 2018-19 microdata, was employed to evaluate the allocation of the untargeted subsidy to different household consumption quintiles.

The empirical results reflect that only 11% of the total subsidy (PKR 83.93 billion) was allocated to the lowest two quintiles (Q1 and Q2) representing 40% of the population. By contrast, the most liquid quintile of the household (Q5) received 55% of the total subsidy to the tune of PKR 46.45 billion. This demonstrates the level of regressiveness of the indirect subsidies implemented through the mechanism of price control and the prospects of efficiency gain that could be captured through the implementation of more targeted subsidy disbursement mechanisms.

To demonstrate the effectiveness of alternate mechanisms implemented through direct-cash transfer, two scenarios were evaluated wherein the bottom two quintiles were insulated from the unfavorable fuel price shocks through the deployment of the social protection system in place (BISP). For Scenario 1, where the first quintile was protected through BISP, the subsidy exposure was reduced by 96% while covering 20% of the population. In the second scenario, the bottom two quintiles were protected through a direct cash-transfer mechanism. As a result, the subsidy

requirement was reduced by 89% while covering 40% of the total population. It is pertinent to mention here that 89% of the domestic subsidy, i.e. PKR 74.63 billion, that could have been saved through targeted mechanisms, is equivalent to approximately 9.2% of the development budget (PKR 808 billion) allocated in the 2021–22 federal budget. Thus, the fiscal saving achieved through the proposed alternate mechanism could have been utilized to cope with the annual fiscal deficit and/or allocating the greater share of the subsidy to the other budget heads, inter-alia, health, education, infrastructure, etc.

On the external account, the abolishment of the untargeted subsidies results in the sharp response of consumption to the abnormal global price shocks. In the case of Pakistan, the correlation factors of gasoline and diesel consumption with their respective prices for the period of June 2021 to August 2022 are -0.71 and -0.61 , respectively. The abolishment of the untargeted subsidies also resulted in the significant reduction of the share of the petroleum products in the total imports from 37% in June 2022 to 23% in July and August 2022.

Considering the fact that the unfavorable and rapid movements of global oil prices have significant and prolonged implications on fiscal and current accounts as well as cost-push inflation (specifically for the economies that have a major dependence on energy imports in order to meet the energy demand), this case study provides a key insight on the relative ineffectiveness of the price-control based indirect subsidy mechanism employed for the co-optimization of the socio-economic objectives of the governments. This, in turn, calls for the development and the institutionalization of a robust social protection system to safeguard the most vulnerable segment of society while imposing minimum restraint on fiscal space. The implementation of the targeted subsidies shall not only enable the rational consumption of the petroleum products on account of the pass-through of true prices to the higher quintiles, which account for the major portion of the consumption of households of petroleum products, but also alleviate the pressure on the balance of payments under the head of petroleum imports. Lastly, the fiscal saving achieved through the implementation of target subsidies may be directed to accelerate the implementation of the energy transition agenda for the provision of affordable, secure and sustainable energy supply that is less prone to global price and supply shocks and doesn't pose the substantial threat of a twin deficit to the economy.

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Talha KHALID

Dotacje do paliw w celu ograniczenia inflacji spowodowanej kosztami: studium przypadku Pakistanu badające wpływ nieukierunkowanych dotacji na przestrzeń fiskalną i rachunek bieżący

Streszczenie

Gwałtowny wzrost światowych cen ropy naftowej, spowodowany słumionym popytem po COVID-19 i wojnie rosyjsko-ukraińskiej, znacząco przyczynił się do wzrostu inflacji oraz podwójnych deficytów, głównie w gospodarkach rozwijających się. Kierując się zamiarem ograniczenia inflacji, rządy kilku gospodarek zależnych od ropy naftowej wprowadziły środki fiskalne w celu zapewnienia natychmiastowej pomocy gospodarstwom domowym poprzez subsydiowanie składnika paliwowego koszyka konsumpcyjnego. W niniejszym artykule przedstawiono studium przypadku Pakistanu, w którym skuteczność nieukierunkowanych dotacji na benzynę i olej napędowy została porównana z alternatywnymi mechanizmami wypłat bezpośrednich. Z analizy wynika, że w ramach mechanizmu wydatkowania dopłat pośrednich opartych na kontroli cen tylko 11% ogółu dopłat krajowych kierowano do 40% najuboższych gospodarstw domowych, podczas gdy około 55% ogółu dopłat kierowano do 20% segmentu dobrze uposażonych gospodarstw domowych. Następnie w studium przypadku przeanalizowano działanie alternatywnego mechanizmu wypłaty dotacji bezpośrednich, co przekłada się na potencjalne oszczędności fiskalne w wysokości 74,63 mld PKR, przy zapewnieniu pokrycia 40% najniższego segmentu gospodarstw domowych. W tym badaniu oceniono również wpływ przeniesienia rzeczywistych cen na krajową konsumpcję benzyny i oleju napędowego w krótkim okresie, co uwidacznia się w znaczącym zmniejszeniu zużycia ropy naftowej w całkowitym rachunku z 37% do 23%, zapewniając w ten sposób duże odciążenie salda rachunku bieżącego. Ten wynik daje kluczowe wskazówki dla gospodarek, że w celu zinstytucjonalizowania niezbędnego systemu ochrony socjalnej trzeba stopniowo przejść do mechanizmu wypłat dotacji bezpośrednich, przy jednoczesnym dążeniu do powstrzymania inflacji wywołanej przez gwałtowne zmiany światowych cen ropy, poprzez powstrzymywanie wzrostu kosztów.

SŁOWA KLUCZOWE: inflacja, dotacje, analiza częstości dystrybucji, konsolidacja fiskalna, rachunek bieżący