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Petroleum Product Subsidies: Costly, Inequitable, and Rising

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EXECUTIVE SUMMARY

Petroleum product subsidies have again started to rise with the rebound in international prices. This note reviews recent developments in subsidy levels and argues that it is necessary to reform the policy framework for setting petroleum product prices in order to reduce the fiscal burden of these subsidies and to address climate change. In 2003, global consumer subsidies for petroleum products totaled nearly \$60 billion. They are projected to reach almost \$250 billion in 2010. Tax-inclusive subsidies, reflecting suboptimal taxation, are estimated to be much larger—\$740 billion in 2010, or 1 percent of global GDP. G-20 countries account for over 70 percent of tax-inclusive subsidies, with emerging G-20 countries accounting for a sizable share. Halving tax-inclusive subsidies could reduce projected fiscal deficits by one-sixth in subsidizing countries and could reduce greenhouse emissions by around 15 percent over the long run. Subsidy reform strategies should contain measures to mitigate the impact of higher prices on the poorest groups.

I. INTRODUCTION

1. **Petroleum product subsidies have increased in recent years.** Many countries did not fully pass through the sharp increases in international petroleum product prices that occurred in 2007 and early 2008, resulting in a marked increase in subsidies.² After declining along with oil prices during the second half of 2008, subsidies have again started to rise, renewing concerns about the fiscal costs. These concerns have been reinforced by the need in many countries to formulate an exit strategy from the recent crisis-related accumulation of public debt. The international community has also targeted the reform of fossil fuel subsidies as part of efforts to confront global warming, with the September 2009 G-20 Pittsburgh communiqué calling for a phase-out of these subsidies.
2. **This note discusses recent developments in petroleum product subsidies and options for reform.** Section II sets out a conceptual framework for defining and measuring price subsidies. Section III examines pricing policies and subsidy trends over the last five years. Section IV considers reform options.

II. DEFINING AND MEASURING PRICE SUBSIDIES

3. **A price subsidy is the difference between the price facing consumers or producers and a specified “optimal” benchmark price.** In an economy characterized by complete and perfectly competitive markets, where resources can be costlessly redistributed using lump-sum taxes and transfers, the marginal supply cost of a product is taken as the benchmark price. In practice, consumption taxes are needed to raise revenue or correct existing market failures, and in this context benchmark prices should also include “optimal

² Throughout the paper, the terms “petroleum products” and “petroleum” are used interchangeably.

taxes” in addition to marginal supply costs. A tax that is below its optimal level generates a “tax subsidy.” In practice, the concept of optimal taxes is difficult to operationalize since optimal taxes can differ across countries for a range of legitimate reasons (Box 1). However, it is important to attempt to estimate the magnitude of tax subsidies to ensure that these are given sufficient prominence in policy debates.

Box 1. Optimal Taxation of Petroleum Products

Countries have different consumption tax levels for many legitimate reasons, including government revenue requirements, the range of tax instruments available, concerns about income distribution, and the importance of local and global pollution. Basic economic principles suggest that taxes on petroleum products should be higher than those imposed on other consumer goods in light of both revenue and environmental considerations (Crawford, Keen, and Smith, 2008).

- *Revenue considerations:* According to the Ramsey Rule for efficient commodity taxation, tax levels across commodities should be inversely proportional to their price elasticity of demand in order to minimize the distortion in consumption. To the extent that petroleum consumption is relatively inelastic, this suggests that taxes should be higher on petroleum products.
- *Environmental considerations:* Efficiency objectives require that, in addition to being subject to revenue taxes, petroleum products be taxed at a rate that reflects the marginal environmental damage caused by their consumption. These costs include both local externalities (such as health risks due to air pollution) and the global externality of climate change.

While equity considerations may support some differentiation in tax levels across products (e.g., lower tax levels on products consumed more by the poor, such as kerosene), there is a limit to the extent of differentiation that can be maintained without severely distorting product markets. In addition, universal subsidies are an inefficient and costly approach to protecting poor households (see Section IV).

The importance of these factors varies across countries and over time. For example, countries with abundant natural resources tend to rely less on commodity taxation as a revenue source. Similarly, countries assign varied importance to environmental externalities and have different policy instruments to address them. For example, some countries have the technology to charge access prices on automobile travel at peak times in congested areas.

4. **This note will cover both “pre-tax subsidies”—defined as deviations of consumer prices from marginal supply costs—and tax-inclusive subsidies.**³ Since petroleum products are internationally traded, the marginal supply cost is the international price, adjusted for transportation, distribution, and marketing costs (Box 2). “Tax-inclusive subsidies” are estimated based on alternative optimal tax benchmarks.

³ The methodology used to estimate consumer subsidies is often referred to as the “price-gap approach.” Koplow (2009) provides a detailed discussion of the advantages and limitations of this approach; an important limitation is that it ignores producer subsidies. Issues similar to those discussed for petroleum subsidies apply to subsidies for other fossil fuels; however, lack of data prevents an equally in-depth analysis. See IEA (2008) and IMF (2008a) for further analysis of non-petroleum fossil fuel subsidies. Earlier IMF work on subsidies includes Baig and others (2007), Coady and others (2006), Gillingham (2008), Gupta and others (2000, 2003), and IMF (2008a, 2008b). Related World Bank studies include Bacon and Kojima (2006, 2008) and Kojima (2009).

Box 2. Measurement of Petroleum Product Subsidies

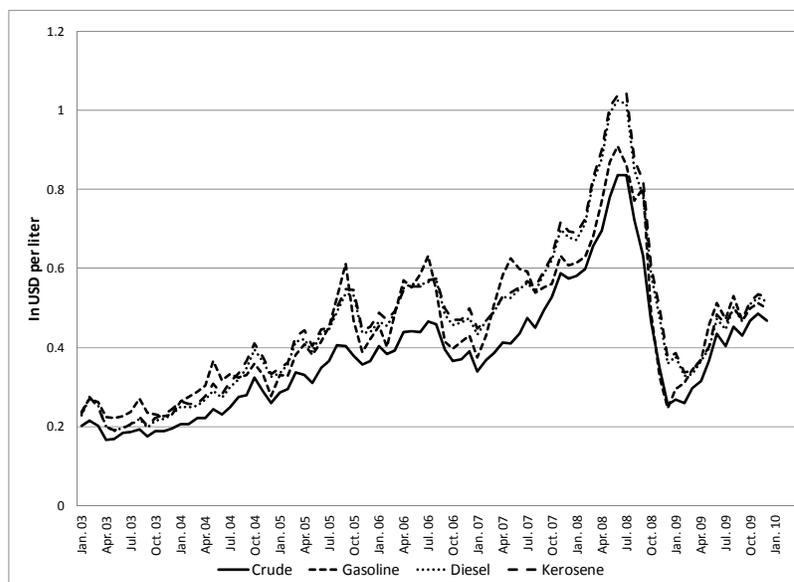
Estimates of the magnitude of consumer subsidies are based on a new database on domestic retail petroleum product prices from 2003 to 2009. Unit (per liter) subsidies are calculated as the difference between an appropriate benchmark price and domestic (tax-inclusive) retail prices. The benchmark price is taken as the international U.S. dollar price for the relevant product at the nearest international hub adjusted by \$0.10 per liter to allow for the cost of shipping the product from the hub to the country, as well as \$0.10 per liter to cover the distribution and retailing costs within the country. The domestic distribution and retailing costs were based on the per liter costs in the United States (U.S. Energy Information Administration, 2008). These are slightly higher than the adjustments used in Gupta and others (2003), in part because some of the costs—for instance, insurance—are related to the value of the product. For net oil importers, the benchmark price is thus the U.S. dollar price plus \$0.20, while for net oil exporters it is simply the U.S. dollar price (because the margins cancel out). Domestic retail prices and taxes are taken from publicly available sources for Organization of Economic Cooperation and Development (OECD) countries. For other countries, domestic prices were provided by country authorities to IMF staff, supplemented by survey data from the Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ, 2009). Petroleum product consumption levels used to calculate total subsidies are based on OECD and International Energy Agency (IEA) data, and include consumption by both households and enterprises.

The database on retail prices is available at www.imf.org/external/pubs/ft/spn/2010/data/spn1005.csv

III. SUBSIDIES HAVE INCREASED IN RECENT YEARS

5. The following analysis of petroleum subsidies covers three periods: (1) the surge in international prices up to mid-2008; (2) their collapse in the second half of 2008, followed by a rebound in 2009; and (3) current (2010) developments (Figure 1).

Figure 1. International Petroleum Product Spot Prices, 2003–2010



Source: U.S. Energy Information Administration.

6. **Changes in international petroleum prices have a substantial impact on both importing and exporting countries.** Absent policy or behavioral responses, the ratio of the value of net oil imports to GDP provides an estimate of the benefit/cost to a country, in percent of GDP, of a doubling of the international price of petroleum. The median beneficial impact of a doubling of prices with respect to 2007 levels is 24 percent of GDP for exporters (Table 1); one-quarter of exporting countries experience an impact greater than 40 percent, and five experience an impact greater than 70 percent. The median adverse impact for importers is around 5½ percent of GDP; one-fifth face an impact above 10 percent, and three face an impact greater than 20 percent.

Table 1. Oil Net Exporters and Importers, 2007

Country Group	Number of countries	Number of importers	Net imports to GDP (median)	Number of exporters	Net exports to GDP (median)
All countries	131	93	5.8	38	24.2
Advanced	32	28	3.3	4	1.7
Emerging	26	19	4.3	7	5.1
Developing	73	46	7.7	27	28.6

Sources: IEA, U.S. EIA, and IMF staff estimates.

Notes: Based on a sample of 131 countries that account for 94 percent of total oil trade.

7. **Full pass-through of international price changes can result in substantial efficiency gains for both net importers and net exporters.** Allowing for behavioral change, the magnitude of the efficiency gains from full pass-through (i.e., the avoided “deadweight loss”) depends on the price elasticities of demand and supply and the size of the price increase. Assuming a linear import demand curve, the efficiency gain from full pass-through compared to zero pass-through is $-0.5\eta\rho$, where $\eta < 0$ is the price elasticity of net import demand and ρ is the proportional increase in international prices (IMF, 2008b, Appendix VI). To illustrate: for a country importing all its oil, the import demand elasticity is equal to the price elasticity of consumption because the production elasticity is zero. Then, for a doubling of prices and a consumption elasticity of -0.6 , the efficiency gain is 30 percent of the impact in the absence of any pass-through.⁴ For the median importing country in Table 1, this gain for the economy amounts to almost 2 percent of GDP. For the more than threefold price increase observed between 2003 and 2008, the potential efficiency gains are clearly large.

⁴ The U.S. Department of Energy (1996) argues for a long-run gasoline price elasticity of -0.38 , but estimates in the empirical literature since 1990 find elasticities between -0.5 and -1.1 (see Parry and Small, 2005, and Schmalensee and Stoker, 1999, for references). Parry and Small used an estimate of -0.55 , with sensitivity analysis over the range -0.3 to -0.9 . A review of the literature on the price elasticity of gasoline by Dahl and Sterner (1991) found an average short-run elasticity of -0.26 , increasing to -0.86 in the long run.

A. Responses to Recent International Price Volatility

8. **The level of pass-through of the sharp rise in international prices up to mid-2008 was very low in many countries.** Pass-through is defined as the ratio of the absolute change in the domestic retail (tax-inclusive) price to the absolute change in the benchmark price. For gasoline and diesel, respectively, around two-thirds and one-half of countries failed to fully pass through international price increases (Table 2). More than three-quarters of countries did not fully pass through kerosene price increases. The pass-through was especially low for net oil exporters and for importing countries that already had subsidies in 2003.

Table 2. Median Pass-Through, End-2003 to Mid-2008

	Gasoline	Diesel	Kerosene
<i>Passthrough (in percent)</i>			
All countries	85	95	53
Advanced	102	120	...
Emerging	57	70	19
Developing	77	78	59
By oil trade:			
Importer 1/	96	106	79
Exporter	35	46	11
By tax level (per liter), 2003:			
With tax greater than US\$ 0.30	99	119	111
With tax less than US\$ 0.30	65	90	64
With subsidy	42	58	48
<i>Number of countries</i>			
Total	155	135	63
Passthrough less than 1.0	102	71	49
Passthrough less than 0.75	65	54	40
Passthrough less than 0.5	33	31	28

Sources: OECD, IEA, U.S. EIA, and IMF staff estimates.

Note: These products account for a combined 75 percent of total refined petroleum product consumption, and the country sample accounts for 98 percent of total petroleum product consumption.

1/ For oil importers, pass-through estimates vary between –81 and 331 percent for gasoline, between –15 and 292 percent for diesel, and between 2 and 130 percent for kerosene.

9. **The limited pass-through in many countries resulted in lower taxes and higher pre-tax subsidies.** The fall in the median tax level on petroleum products between 2003 and mid-2008 (Table 3) hides important variation across countries. Whereas the median tax level increased in countries that initially had high taxes (i.e., in 2003), the median tax in low-tax countries decreased and the median subsidy level in subsidizing countries increased. Petroleum product tax revenues decreased in 73 countries, with the decrease exceeding 1 percent of GDP in 41 countries. Subsidies increased in 27 countries, with the increase in subsidies exceeding 1 percent of GDP in 22 countries.

Table 3. Median Tax Levels, End-2003 to Mid-2009

	End-2003	Mid-2008	End-2008	Mid-2009
Median tax levels (in US\$ per liter)	0.12	0.08	0.48	0.31
With tax greater than US\$ 0.30 in 2003	0.52	0.91	0.78	0.75
With tax less than US\$ 0.30 in 2003	0.11	0.04	0.45	0.24
With subsidy in 2003	-0.08	-0.38	0.18	0.12
Number of countries	145	145	145	145
With tax greater than US\$ 0.30	39	47	104	79
With tax less than US\$ 0.30	71	38	29	46
With subsidy	35	60	12	20
Consumption shares (in percent of total)				
With tax greater than US\$ 0.30	31	30	49	30
With tax less than US\$ 0.30	52	34	38	56
With subsidy	17	36	13	14

Sources: OECD, IEA, U.S. EIA, and IMF staff estimates.

Note: Tax levels are consumption-weighted average of gasoline, diesel, and kerosene taxes for each country. Some mid-2009 domestic prices are projections calculated by applying pass-through levels between 2003 and mid-2008 to end-2008 domestic prices.

10. **As a result, the absolute size of global pre-tax petroleum subsidies increased more than eightfold.** In 2003, the global pre-tax subsidy stood at nearly \$60 billion, but by mid-2008 this subsidy had increased to \$520 billion (or 0.7 percent of global GDP) (Table 4). Oil-exporting countries accounted for 50 percent of this subsidy, although they accounted for just under one-quarter of consumption. If the optimal tax is taken as \$0.30 (\$0.40) per liter,⁵ the corresponding global tax-inclusive subsidy for 2003 is estimated at over \$410 billion (\$580 billion), increasing to almost \$1,000 billion (\$1,210 billion) in mid-2008 or to 1.3 (1.6) percent of global GDP. G-20 countries accounted for around 70 percent of tax-inclusive subsidies, with emerging G-20 countries accounting for more than half (Figure 2a and 2b).

11. **Although global subsidies decreased as international prices fell sharply after mid-2008, they have started to increase with the rebound in international prices.** From end-2008 to mid-2009, global subsidies increased from around \$50 billion to almost \$140 billion (over twice the end-2003 level). Oil-exporting countries account for about 60 percent

⁵ Based on findings in the literature, we take \$0.30 and \$0.40 per liter as alternative benchmarks for optimal taxes when estimating tax-inclusive subsidies. Parry and Small (2005) evaluated the optimal tax level for gasoline for the UK and US, incorporating revenue requirements as well as externality costs related to global and local pollution, congestion, and accidents. The optimal per liter tax, in 2000 US prices, was estimated to be approximately 26 cents for the US and 35 cents for the UK. Most of the difference between these optimal taxes was attributable to differences in the valuation of externalities, especially those related to congestion. Only about 6.5 cents in the US, and 6.0 cents in the UK, reflected revenue considerations. More recently, Parry and Strand (2009) calculated the optimal externality tax in Chile at 48 cents per liter for gasoline and 45 cents per liter for diesel. Moreover, actual gasoline taxes in most OECD countries in 2007 were much higher than the estimated optimal taxes and ranged between \$0.13 and \$1.35, with a mean of \$0.98.

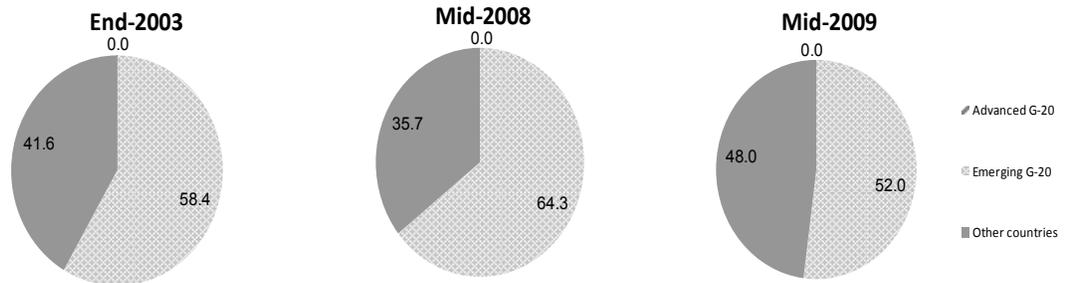
of this subsidy, compared to their global consumption share of just over 20 percent. The tax-inclusive subsidy at mid-2009, based on an optimal tax of \$0.30 (\$0.40) per liter, was around \$520 (\$720) billion, equivalent to 0.8 (1.0) percent of global GDP. G-20 countries again accounted for over 70 percent of tax-inclusive subsidies, with emerging G-20 countries accounting for nearly half.

Table 4. Total World Fuel Subsidies

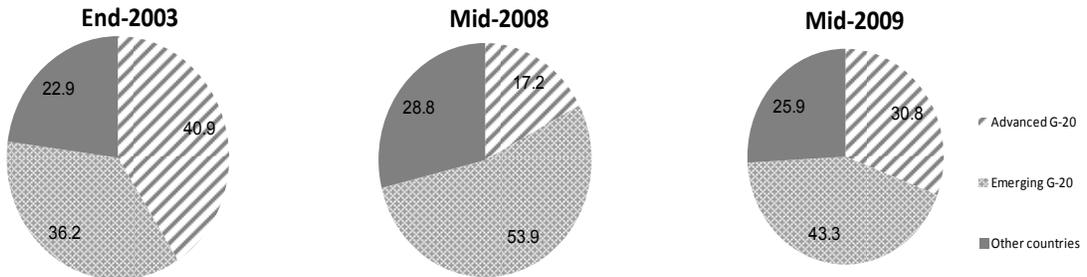
	End-2003	Mid-2008	Mid-2009	End-2010 (proj.)
<i>(In nominal billions US\$)</i>				
Pre-tax subsidy	57	519	136	240
Tax-inclusive subsidy				
Tax threshold US\$ 0.30 per liter	406	998	524	742
Tax threshold US\$ 0.40 per liter	579	1206	721	965
<i>(In percent of total GDP)</i>				
Pre-tax subsidy	0.1	0.7	0.2	0.3
Tax-inclusive subsidy				
Tax threshold US\$ 0.30 per liter	0.9	1.3	0.8	1.0
Tax threshold US\$ 0.40 per liter	1.3	1.6	1.0	1.3
<i>(In percent of total subsidy)</i>				
Pre-tax subsidy				
of which: Advanced	0.2	0.0	0.0	0.0
Emerging	66.0	70.3	60.5	64.6
Developing	33.8	29.7	39.5	35.4
of which: G-20	58.4	58.8	52.0	56.3
Advanced G-20	0.0	0.0	0.0	0.0
Emerging G-20	58.4	64.3	52.0	57.4
Tax-inclusive subsidy				
Tax threshold US\$ 0.30 per liter				
of which: Advanced	36.7	12.7	26.5	22.8
Emerging	45.6	63.9	52.4	56.7
Developing	17.7	23.4	21.1	20.5
of which: G-20	75.1	66.3	71.1	71.2
Advanced G-20	36.5	12.6	26.3	22.7
Emerging G-20	38.6	56.9	44.8	49.7
Tax threshold US\$ 0.40 per liter				
of which: Advanced	41.0	17.4	31.0	27.5
Emerging	43.1	60.9	50.5	53.9
Developing	15.9	21.7	18.6	18.6
of which: G-20	77.1	68.6	74.1	73.7
Advanced G-20	40.9	17.2	30.8	27.4
Emerging G-20	36.2	53.9	43.3	47.2

Source: IMF staff estimates.

Note: Country sample accounts for approximately 99 percent of world GDP.

Figure 2a. Share of Pre-Tax Subsidies in G-20 Countries

Source: IMF staff estimates.

Figure 2b. Share of Tax-inclusive (\$0.40) Subsidies in G-20 Countries

Source: IMF staff estimates.

B. Projected Petroleum Subsidies to End-2010

12. **Global subsidies are projected to increase substantially in 2010.** Based on commodity futures markets, IMF (2009b) projects that international crude prices will increase by almost one-third between mid-2009 and end-2010. Based on pass-through levels observed in countries between end-2003 and mid-2008, pre-tax subsidies could increase to \$240 billion (or nearly 0.3 percent of global GDP), while tax-inclusive subsidies could increase to between \$740 billion and \$970 billion (or 1.0–1.3 percent of global GDP), depending on the optimal tax benchmark chosen.

13. **This increase would occur in the context of a more challenging global fiscal situation.** Many countries provided substantial policy support to address the consequences of the financial crisis (IMF, 2009a). Of the 58 countries with pre-tax subsidies in 2010, 46 have a projected fiscal deficit in 2010, with the deficit expected to exceed 3 percent of GDP in 27 of these countries. Reducing pre-tax subsidies by one-half would decrease the average projected deficit in these subsidizing countries from 2.1 percent of GDP to an average deficit of 0.8 percent of GDP. Reducing tax-inclusive subsidies by one-half would result in the

average deficit in subsidizing countries (94 countries if using the \$0.30 benchmark) falling by about one-sixth, from 6.3 percent of GDP to around 5.3 percent of GDP. Whereas emerging and developing countries account for all of projected pre-tax subsidies, they account for a smaller 75 percent of tax-inclusive subsidies. G-20 countries account for 57 percent of global pre-tax subsidies but over 70 percent of tax-inclusive subsidies. Emerging G-20 countries account for about half of tax-inclusive subsidies.

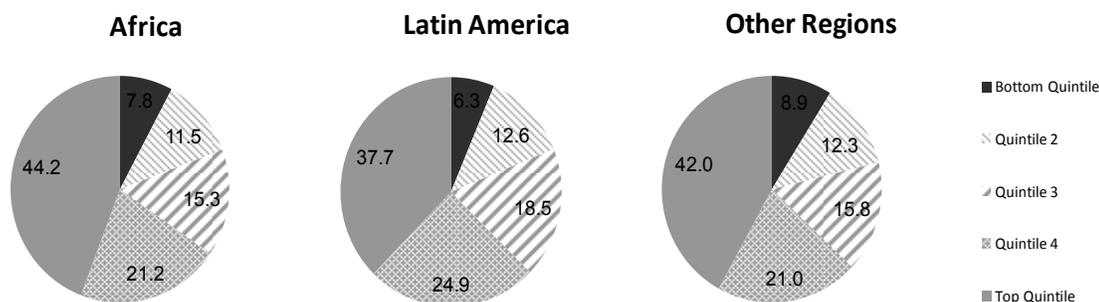
14. **Containing subsidies could have substantial environmental benefits in the form of reducing petroleum consumption and associated greenhouse gas emissions.** Based on estimates in IEA (2009), reducing subsidies by one-half could reduce greenhouse gas emissions by nearly 5 percent by 2050.⁶ Reducing tax-inclusive subsidies by one-half would result in larger emissions reductions of 14–17 percent by 2050. The potential gains are obviously higher if one takes a broader view of subsidies to include subsidies on other fossil fuels such as coal and natural gas.⁷

IV. SUBSIDY REFORM OPTIONS

15. **There are gains from targeting transfers, as most of the benefits from universal petroleum subsidies accrue to high-income households** (Figure 3). The benefits of gasoline subsidies are the most regressively distributed, with over 80 percent of total benefits accruing to the richest 40 percent of households. For diesel and liquefied petroleum gas (LPG), respectively, over 65 percent and 70 percent of benefits go to these income groups. Although the consumption of kerosene is more evenly distributed across income groups, a substantial amount of kerosene subsidies still go to high-income households. In Africa, more than 45 percent of kerosene subsidies accrue to the top two income quintiles. Although this share is substantially lower for countries from South and Central America, this reflects the relative unimportance of kerosene in these countries, where households tend to have greater access to electricity and LPG. However, the elimination of even badly targeted subsidies can have an adverse impact on poor households, requiring the implementation of measures to protect these groups.

⁶ Based on an estimated subsidy level of over \$310 billion per annum in the 20 largest non-OECD countries in 2007, IEA (2009) calculate that eliminating subsidies could reduce greenhouse gas emissions by around 12 percent by 2050. The ratio of these numbers is applied to half of the estimated \$237 billion in subsidies for 2010. The IEA calculation relates to all fossil fuels and to 2007 when petroleum product subsidies accounted for 65 percent of total fossil fuel subsidies. To the extent that petroleum products are less intensive in greenhouse gases than, say, coal, applying this ratio will result in an overestimate of the savings in emissions.

⁷ Issues and reform options discussed here in the context of petroleum product subsidies can be applied more broadly to other energy subsidies, both explicit (i.e., coal and natural gas subsidies) and implicit (i.e., subsidized inputs for electricity production).

Figure 3. Distribution of Petroleum Product Subsidies by Income Group

Source: Arze del Granado, Coady, and Gillingham (forthcoming).

Note: The countries covered are Bangladesh, Bolivia, Burkina Faso, Cameroon, Central African Republic, El Salvador, Gabon, Ghana, Jordan, Mali, Peru, Republic of Congo, and Senegal. Welfare quintiles are based on per capita household consumption.

16. **Subsidy reform often faces several obstacles:** (1) weak capacity to target mitigating measures to the poor; (2) lack of transparency in reporting of subsidies; (3) opposition by vested interests; (4) cross-border spillover effects; and (5) ad hoc price-setting mechanisms. Reform strategies need to address these issues.

A. Targeting Mitigating Measures

17. **Compensating the poor for eliminating subsidies requires a system to deliver compensation to the needy.** Because it may not be feasible to quickly put in place efficient safety nets based on targeted cash transfers, a gradual reform strategy may initially be needed.⁸ This could include the following steps (see Box 3 for specific country examples):

- **Temporarily maintaining universal subsidies on commodities that are more important in the budgets of the poor.** For instance, kerosene subsidies are relatively better targeted (Coady, Grosh, and Hoddinott, 2004). However, there is a limit to how much can be achieved through lower kerosene prices without severe disruption of petroleum product markets (for example, redirection of kerosene from the household sector to the transport sector for mixing with diesel, or cross-border smuggling).
- **Introducing a package of short-term measures to mitigate the adverse impact of price increases on the poor.** This includes existing programs that can be expanded

⁸ See Grosh and others (2008) for a more extensive discussion on the design and implementation of safety nets. With respect to the appropriate speed of reforms, Gupta and others (2000) find that a gradualist approach is most successful.

quickly, possibly with some improvements in targeting effectiveness (for instance, school meals, education and health user fees, subsidized mass urban transport, cash transfers to vulnerable groups, subsidies for consumption of water and electricity below a specified threshold).

- **Identifying high-priority public expenditures that benefit the poor.** These could include education and health expenditures as well as infrastructure expenditures such as roads and electrification schemes.

18. **Improving the design of safety net programs over time.** Targeting methods include: (1) targeting by using socioeconomic and demographic characteristics, such as the elderly, children, or the unemployed (categorical targeting), or those living in specific areas (geographic targeting); and (2) linking subsidies or cash benefits to a self-targeting work or schooling requirement.

19. **The appropriate speed and modalities of reform depend on several factors,** including the political and administrative capacity of the country and its fiscal and macroeconomic situation (for example, risks to growth and inflation).

Box 3. Mitigating Measures: Country Experience

Mozambique increased petroleum product prices by 38 percent in 2008.

- Budgetary allocations to a range of social protection programs were increased substantially (Direct Social Support, Social Benefits Through Work, Income Generation and Community Development).
- The level of cash benefits received by beneficiaries of the Food Subsidy Program was increased, with the minimum benefit increasing from 70 MT to 100 MT and the maximum benefit from 140 MT to 300 MT.
- The number of branches of the National Institute for Social Protection was increased from 19 to 30 to facilitate an expansion of the program.

Indonesia increased domestic petroleum product prices in both March and October 2005 (more than doubling prices) and again in May 2008 (prices of products were increased by 25–33 percent).

- A temporary cash transfer program was implemented in 2005 to mitigate the impact of price increases, aiding 19 million poor families, with targeting relying on existing databases. A similar cash transfer accompanied the price increases in 2008.
- Some budgetary savings from reducing subsidies were reallocated to existing education, health, and infrastructure programs that benefit low- and middle-income households.
- The subsidy on kerosene was reduced in conjunction with a program to increase the use of LPG as an alternative fuel source.

Jordan initiated a gradual reduction of petroleum product subsidies in 2005, culminating in full price liberalization in February 2008, when product prices were increased by 33–76 percent.

- The minimum wage was increased, and low-paid government employees received higher wage increases than other employees.
- A one-time bonus was given to low-income government employees and pensioners.
- An electricity lifeline tariff was maintained at current low levels—electricity access is almost universal.
- Cash transfers were provided to other low-income households whose heads were nongovernmental workers or pensioners.
- The government announced a plan to increase funding to the National Aid Fund as part of a program to improve the design and implementation of this national safety net program with World Bank assistance.

B. Promoting Transparency

20. Petroleum subsidies should be recorded transparently in government accounts.

Where these have fiscal consequences, they should be incorporated into the budget on a gross basis and explicitly identified. Off-budget subsidies should be identified and recorded in separate accounts; this may require improvements in the budget classification system. Arrangements whereby oil companies provide subsidies to consumers without explicit budget support should be clearly described and evaluated in budget documents (IMF, 2007). Transparency is also important for oil-exporting countries, for whom the opportunity cost of subsidies is the revenue forgone by not charging international prices domestically (oil producers that have recorded subsidies explicitly in the budget include Indonesia, Iran, Malaysia, Sudan, and Yemen).

21. Even subsidies that have no fiscal costs should be measured and analyzed and, where appropriate, reported in budget documents. Some subsidies do not affect government finances. A ban on exports of a particular good reduces the domestic price. This leads to a price subsidy for domestic consumers financed by producers. By contrast, an import tariff raises the price received by domestic producers, resulting in a producer subsidy financed by consumers.

22. Some countries have implemented specific subsidy reporting systems designed to help raise public awareness. Germany has published Biannual Subsidy Reports for many years. Switzerland has implemented an online subsidy database, in which individual subsidies are recorded.

C. Overcoming Vested Interests

23. Public information campaigns can help overcome vested interests. Public information should aim particularly at informing the potential beneficiaries (consumers and taxpayers) about the drawbacks of existing subsidies and the benefits of reform. When relevant, governments should also highlight that subsidies promote smuggling, shortages, black market activities, and corruption.

- Regarding the drawbacks of subsidies, in 2005 the government of Ghana used the finding of a Poverty and Social Impact Analysis that petroleum subsidies go predominantly to high-income groups to convince the public of the need to raise petroleum prices. To prepare the public for the price increase, parliamentary discussions on the subject were broadcast on television and radio (Coady and Newhouse, 2006).
- Regarding the benefits of reform, the Indonesian government ran a campaign in both 2005 and 2009 that directly linked the savings from petroleum price increases to a cash compensation program for the poor. Ghana also linked subsidy reform to increased resources for high-priority social spending.

D. Addressing Cross-Border Spillover Effects

24. **Cross-border spillovers of petroleum subsidies operate in many ways.** Subsidies alter trade patterns and divert benefits from their intended recipients. Low domestic petroleum prices provide incentives for smuggling, which benefits consumers in other countries. Subsidies for intermediate inputs may also be passed through to the prices of exported goods. Another important cross-border effect relates to environmental spillovers, including from global warming (Jones and Keen, 2009). Finally, lack of pass-through of international prices to domestic prices can have effects on global demand; lower domestic prices increase demand, which can further raise international prices.

25. **Because of these international spillovers, removing petroleum subsidies can benefit from multilateral cooperation.** When externalities are global, as with climate change, benefits of (potentially costly) unilateral action are limited. If other countries fail to take similar action, the gains are limited; if other countries do act, it can be in a country's perceived interest not to join in (the free-rider problem). Therefore, international cooperation in the area of subsidy policies is desirable.

E. Reforming Price-Setting Mechanisms

26. **Government direct control of domestic petroleum prices has often been an obstacle to subsidy reform.** Even if these prices are initially set or adjusted to eliminate subsidies, these can reemerge if prices are not adjusted to reflect market conditions. Reform of the pricing mechanism is thus essential in reforming petroleum subsidies.

- **The first-best solution is to liberalize petroleum prices.** Liberalization helps depoliticize petroleum product pricing. In regulated environments, people tend to see domestic prices as under the government's control and therefore to blame the government for price increases. There is evidence that liberalized regimes tend to be more politically robust than automatic pricing formulas (Baig and others, 2007). However, liberalizing prices requires preparation. For example, some refineries have been established under concession conventions, which would make it difficult to liberalize the market before the concessions expire. In countries where the market for petroleum products is dominated by the public sector, price liberalization requires liberalizing import and distribution activities. Regulatory frameworks may need to be strengthened, including the capacity to detect and discourage anti-competitive behavior.
- **If markets are imperfect or if governments are concerned about excessive price volatility, they can implement an automatic pricing mechanism that adjusts prices regularly in light of changes in international prices.** Often the pricing formulas are designed to smooth the pass-through of international prices to domestic prices. Smoothing mechanisms include moving averages, price adjustment caps and/or triggers, and price bands (see Bingham, Daniel, and Federico, 2003). Countries

that have implemented formula-based mechanisms (in some cases temporarily) include Bolivia, Chile, Republic of Congo, Dominica, Ghana, Gabon, Pakistan, Peru, South Africa, and Sri Lanka. However, such pricing formulas have often been suspended in the face of opposition to price adjustments. It is likely that the factors that promote subsidy reform more generally also promote the resilience of pricing mechanisms.

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